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Revision 0

Calculation of Soil Nonradiological Preliminary Remediation Goals for the Outdoor Worker Scenario

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

P.O. Box 1600
Richland, Washington 99352

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S. L. Lindberg
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ch2m SM
P.O. Box 1600
Richland, Washington 99352

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	Name /Position	Signature	Date
Preparer:	Sara Lindberg/Risk Assessor		10/17/2016
Checker:	Doug Evans/Risk Assessor	Doug Evans	10/17/2016
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PRIOR TO INITIATING MODELING:

Required training for modelers completed:

	Name /Position	Signature	Date
Integration Lead	WE Nichols / Modeling Team Leader		18 OCT 2016

Safety Software Approved:

	Name /Position	Signature	Date
Integration Lead	WE Nichols / Modeling Team Leader		18 OCT 2016

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	Name /Position	Signature	Date
Risk/Modeling Integration Manager:	AH Aly/Risk & Model Integr Manager		10/18/16

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Terms

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
ECF	environmental calculation file
EPA	U.S. Environmental Protection Agency
IRIS	Integrated Risk Information System
NCEA	National Center for Environmental Assessment
OSWER	Office of Solid Waste and Emergency Response
PPRTV	Provisional Peer Reviewed Toxicity Value
PRGs	Preliminary Remediation Goals
OU	operable unit
PEF	particulate emission factor
RfD	Reference Dose
RI/FS	Remedial Investigation/Feasibility Study
RAO	Remedial Action Objective
RME	Reasonable Maximum Exposure

1 Purpose

This environmental calculation file (ECF) documents assumptions and methods for development of nonradiological soil Preliminary Remediation Goals (PRGs) for an outdoor worker exposure scenario for use in the Remedial Investigation/Feasibility Study (RI/FS) Reports for the Inner Area source operable units (OUs) located within the Central Plateau of the Hanford Site. The PRGs are concentration goals for a specific medium (e.g. soil) that are intended to protect specified receptors from exposure to contaminants through identified exposure pathways and routes.

The PRGs documented in this Environmental Calculation represent concentration goals that are protective of a potential outdoor worker receptor. Potentially complete pathways associated with this scenario include the direct contact (incidental soil ingestion and dermal contact with soil) and inhalation pathways.

2 Background

The methods and parameters used in this ECF support the Central Plateau Inner Area cleanup principles and are based on guidance from the U.S. Environmental Protection Agency (EPA). Soil PRGs for nonradiological contaminants are calculated using a methodology that is consistent with the methodology used for the baseline risk assessments previously conducted at the Hanford Site that have been reviewed and approved by the regulatory agencies.

For the purposes of developing PRGs in this Environmental Calculation, the following target objective is used:

- Prevent unacceptable risk to human health from exposure to soils and/or debris contaminated with nonradiological contaminants less than 4.6 m (15 ft) below ground surface. The PRGs for individual carcinogenic substances correspond to the upper bound of the estimated excess lifetime cancer risk of one in one million (1×10^{-6}). The PRGs for individual noncarcinogenic substances are set at concentrations that are anticipated to result in no acute or chronic toxic effects on human health; this level corresponds to a hazard quotient of one.

This target objective has been developed only for the purpose of calculating PRGs that are presented in this Environmental Calculation. This target objective is not intended to supersede Remedial Action Objectives (RAOs) being developed as part of the Central Plateau RI/FS process. This Environmental Calculation document will be revised as needed to incorporate updates to these PRGs that may result from changes in RAOs occurring during development of the Central Plateau RI/FS Reports.

2.1 Exposure Routes

The potentially exposed receptor for this exposure scenario is an adult. The adult receptor may be exposed to shallow zone soil contaminants via incidental soil ingestion, inhalation of dust or vapors, and dermal absorption. This scenario is focused on work-related activities that are performed exclusively outdoors.

Potentially complete exposure routes associated with the direct contact and inhalation exposure pathways for the outdoor worker exposure scenario are as follows:

- Incidental ingestion of soil
- Dermal contact with soil
- Inhalation of vapors and dust in soil

2.2 References

For the soil direct contact and inhalation exposure pathways, contaminant PRGs are quantified using standard equations and procedures as specified in the following:

- EPA/540/1-89/002, *Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual (Part A), Interim Final*;
- EPA/540/R-92/003, *Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals): Interim*;
- EPA/540/R/99/005, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)*;
- EPA-540-R-070-002, *Risk Assessment Guidance for Superfund: Volume 1—Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment)*;
- EPA/540/R-96/018, *Soil Screening Guidance: User's Guide Second Edition;*
- OSWER 9355.4-24, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites;*
- OSWER Directive 9285.6-03, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual* Supplemental Guidance *"Standard Default Exposure Factors" Interim Final*;
- EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-equations-may-2016)

3 Methodology

The outdoor worker nonradiological PRGs were calculated using the PRG equations referenced in Section 2.2 using a combination of default and site-specific exposure assumptions that represent a plausible exposure setting for characterizing human health risks to an outdoor worker. The PRGs for direct contact with soil and inhalation of vapors and dust in soil are based on an acceptable target cancer risk level of 1×10^{-6} for carcinogens or a hazard quotient of 1 for noncarcinogens.

The direct contact and inhalation exposure pathways are considered potentially complete for the outdoor worker scenario. Exposure routes associated with the direct contact and inhalation pathways include incidental soil ingestion, dermal contact with soil, and the inhalation of vapors and dust in soil. The following subsections present exposure-route-specific equations used to calculate total and final PRGs for constituents with carcinogenic and noncarcinogenic effects. A summary of the input parameters used in the PRG equations is presented in Table 1.

Table 1. Summary of Exposure Parameters Used to Calculate Preliminary Remediation Goals for the Outdoor Worker Exposure Scenario.

Exposure Parameter	Symbol	Value	Units	Source
Averaging Time—outdoor worker (carcinogen)	AT_{ow}	25,550	days	EPA/540/1-89/002 (page 6-23) (70 years [lifetime] × 365 days/year)
Averaging Time—outdoor worker (noncarcinogen)	$AT_{ow\text{-}a}$	9,125	days	EPA/540/1-89/002 (page 6-23) OSWER 9355.4-24 (Exhibit 1-2, page 1-5) (25 years [ED_{ow}] × 365 days/year)
Body Weight—outdoor worker (worker)	BW_{ow}	80	kg	OSWER 9200.1-120
Cancer Slope Factor—oral	CSF_o	Chemical -specific	$[mg/(kg/day)]^{-1}$	See Table 7
Exposure Duration—outdoor worker	ED_{ow}	25	years	OSWER 9355.4-24 (Exhibit 1-2, page 1-5)
Exposure Frequency—outdoor worker	EF_{ow}	225	days/year	OSWER 9355.4-24 (Exhibit 1-2, page 1-5)
Exposure Time--outdoor worker	ET_{ow}	8	hours/day	OSWER 9285.6-03 (page 3)
Fraction of contaminant absorbed dermally from soil	ABS_d	Chemical -specific	unitless	See Table 7
Gastrointestinal Absorption Factor	GIABS	Chemical -specific	unitless	See Table 7
Ingestion Rate—outdoor worker (industrial)	IR_{ow}	100	mg/day	OSWER 9355.4-24 (Exhibit 1-2, page 1-5)
Inhalation Reference Concentration	RfC	Chemical-specific	mg/m^3	See Table 7
Inhalation Unit Risk Factor—inhalation	IUR	Chemical-specific	$(\mu g/m^3)^{-1}$	See Table 7
Lifetime	LT	70	years	EPA/540/1 -89/002 (page 6-22)
Particulate Emission Factor	PEF_w	7.30E+10	m^3/kg	ECF-HANFORD-10-0445
Reference Dose—oral	RfD_o	Chemical -specific	mg/(kg-day)	See Table 7
Relative Bioavailability Factor	RBA	Chemical -specific	unitless	OSWER 9200.1-113 OSWER 9285.7-80
Skin Area—outdoor worker (worker)	SA_{ow}	3527	cm^2/day	OSWER 9200.1-120
Soil Adherence Factor—outdoor worker (worker)	AF_{ow}	0.12	mg/cm^2	OSWER 9200.1-120
Threshold Health Quotient	THQ	1	unitless	EPA/540/R-92-003 (page viii)
Threshold Risk	TR	1.00E-06	unitless	EPA/540/R-92-003 (page viii)
Unit Conversion Factor (µg/mg)	$UCF_{\mu g/mg}$	1,000	µg/mg	1000 µg = 1 mg
Unit Conversion Factor (days/hour)	$UCF_{days/hour}$	0.04167	days/hour	1 day = 24 hours

Table 1. Summary of Exposure Parameters Used to Calculate Preliminary Remediation Goals for the Outdoor Worker Exposure Scenario.

Exposure Parameter	Symbol	Value	Units	Source
Unit Conversion Factor (days/year)	$UCF_{days/year}$	365	days/year	365 days = 1 year
Unit Conversion Factor (kg/mg)	$UCF_{kg/mg}$	1.00E-06	kg/mg	1 kg = 1,000,000 mg
Volatilization Factor	VF_s	Chemical-specific	m^3/kg	Calculated Value (Equation 7)

Notes:

ECF-HANFORD-10-0445, Rev. 0, *Calculation of Nonradiological Preliminary Remediation Goals in Soil for a Casual User Scenario for the 100 Areas and 300 Area Remedial Investigation/Feasibility Study Reports.*
EPA/540/1-89/002, *Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A), Interim Final.*
EPA/540/R-92-003, *Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals).*
OSWER 9200.1-113, *Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil.*
OSWER 9200.120, *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors.*
OSWER 9285.6-03, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, "Standard Default Exposure Factors", Interim Final.*
OSWER 9285.7-80, *Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment.*
OSWER 9355.4-24, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.*

3.1 PRG Equations for Incidental Soil Ingestion

The bases for the equations used to calculate PRGs associated with the incidental soil ingestion exposure route are summarized in Table 2. The parameters used to calculate PRGs for the incidental soil ingestion exposure route are presented and defined in Table 1. Equations are provided in the following subsections.

Table 2. Calculated Values and Reference Bases Used for the Incidental Soil Ingestion Route

Effect	Symbol for Calculated Value	Reference
Carcinogen	$PRG_{ow\_ca\_ing}$	EPA, 2016
Noncarcinogen	$PRG_{ow\_nc\_ing}$	EPA, 2016

Notes:

Notes:

PRG= Preliminary Remediation Goal

EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-equations-may-2016)

3.1.1 Incidental Soil Ingestion - Carcinogenic Effects

The following equations are used to calculate the carcinogenic PRG for the incidental soil ingestion exposure route:

$$PRG_{ow\_ca\_ing} = \frac{TR \times AT_{ow} \times BW_{ow}}{EF_{ow} \times ED_{ow} \times CFS_o \times RBA \times IR_{ow} \times UCF_{kg/mg}} \quad (1)$$

3.1.2 Incidental Soil Ingestion - Noncarcinogenic Effects

The following equations are used to calculate the noncarcinogenic PRG for the incidental soil ingestion exposure route:

$$PRG_{ow\_nc\_ing} = \frac{THQ \times AT_{ow-a} \times BW_{ow}}{EF_{ow} \times ED_{ow} \times \frac{RBA}{RfD_o} \times IR_{ow} \times UCF_{kg/mg}} \quad (2)$$

3.2 PRG Equations for Dermal Contact with Soil

The bases for the equations used to calculate PRGs associated with the dermal contact with soil exposure route are summarized in Table 3. The parameters used to calculate PRGs for dermal contact with soil exposure route are presented and defined in Table 1. Equations are provided in the following subsections.

Table 3. Calculated Values and Reference Bases Used for the Dermal Contact with Soil Route

Effect	Symbol for Calculated Value	Reference
Carcinogen	$PRG_{ow\_ca\_der}$	EPA, 2016
Noncarcinogen	$PRG_{ow\_nc\_der}$	EPA, 2016

Notes:

Notes:

Table 3. Calculated Values and Reference Bases Used for the Dermal Contact with Soil Route

Effect	Symbol for Calculated Value	Reference

PRG= Preliminary Remediation Goal

EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-equations-may-2016)

3.2.1 Dermal Contact with Soil - Carcinogenic Effects

The following equations are used to calculate the carcinogenic PRG for the dermal contact with soil exposure route:

$$PRG_{ow\_ca\_der} = \frac{TR \times AT_{ow} \times BW_{ow}}{EF_{ow} \times ED_{ow} \times \frac{CFS_o}{GIABS} \times SA_{ow} \times AF_{ow} \times ABS_d \times UCF_{kg/mg}} \quad (3)$$

3.2.2 Dermal Contact with Soil - Noncarcinogenic Effects

The following equations are used to calculate the noncarcinogenic PRG for the dermal contact with soil exposure route:

$$PRG_{ow\_nc\_der} = \frac{THQ \times AT_{ow-a} \times BW_{ow}}{EF_{ow} \times ED_{ow} \times \left(\frac{1}{RfD_o \times GIABS}\right) \times SA_{ow} \times AF_{ow} \times ABS_d \times UCF_{kg/mg}} \quad (4)$$

3.3 PRG Equations for the Inhalation of Vapors and Dust in Soil

The bases for the equations used to calculate PRGs associated with the inhalation of vapors and dust in soil exposure route are summarized in Table 4. The parameters used to calculate PRGs for the inhalation of vapors and dust in soil exposure route are presented and defined in Table 1. Equations are provided in the following subsections.

Table 4. Calculated Values and Reference Bases Used for the Inhalation of Vapors and Dust in Soil Route

Effect	Symbol for Calculated Value	Reference
Carcinogen	$PRG_{ow\_ca\_inh}$	EPA, 2016
Noncarcinogen	$PRG_{ow\_nc\_inh}$	EPA, 2016
Volatilization Factor	VF Q/C D_A	OSWER Directive 9355.4-24

Notes:

PRG= Preliminary Remediation Goal

VF= volatilization factor

D_A= apparent diffusivity

Table 4. Calculated Values and Reference Bases Used for the Inhalation of Vapors and Dust in Soil Route

Effect	Symbol for Calculated Value	Reference
Q/C= inverse of mean concentration at center of a source		
EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-equations-may-2016)		
OSWER 9355.4-24, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*		

3.3.1 Inhalation of Vapors and Dust in Soil - Carcinogenic Effects

The following equations are used to calculate the carcinogenic PRG for the inhalation of vapors and dust in soil exposure route:

$$PRG_{ow\_ca\_inh} = \frac{TR \times AT_{ow}}{EF_{ow} \times ED_{ow} \times ET_{ow} \times UCF_{days/hour} \times IUR \times UCF_{\mu g/mg} \times \left(\frac{1}{VF_s} + \frac{1}{PEF_w}\right)} \quad (5)$$

3.3.2 Inhalation of Vapors and Dust in Soil - Noncarcinogenic Effects

The following equations are used to calculate the noncarcinogenic PRG for the inhalation of vapors and dust in soil exposure route:

$$PRG_{ow\_nc\_inh} = \frac{THQ \times AT_{ow-a}}{EF_{ow} \times ED_{ow} \times ET_{ow} \times UCF_{days/hour} \times \frac{1}{RfC} \times \left(\frac{1}{VF_s} + \frac{1}{PEF_w}\right)} \quad (6)$$

3.3.3 Particulate Emission Factor

The methodology and calculation of the Hanford Site site-specific particulate emission factor (PEF) is documented in ECF-HANFORD-10-0445, Rev. 0, *Calculation of Nonradiological Preliminary Remediation Goals in Soil for a Casual User Scenario for the 100 Areas and 300 Area Remedial Investigation/Feasibility Study Reports.*

The site-specific value was developed using EPA guidance provided in OSWER 9355.4-24, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, in which the inhalation of contaminants in the form of respirable particles is assessed using a PEF. The PEF relates the contaminant concentration in soil with the concentration of respirable particles in the air due to fugitive dust emissions caused by wind from contaminated soil. It is noted that the generic PEF evaluates wind-borne emissions and does not consider dust emission from traffic or other forms of mechanical disturbance that could lead to greater emissions than assumed for wind-borne emissions.

3.3.4 Volatilization Factor Calculation

The following presents the equations used to calculate the chemical-specific volatilization factors for use in calculating inhalation PRGs for an outdoor worker exposure scenario. Definitions of variables and input values are provided in Table 5. Volatilization factors are only calculated for compounds designated as volatile by EPA, 2016 or by Ecology, 2015.

Table 5. Summary of Site-specific, Generic, and Chemical-Specific Input Parameters Used to Calculate Volatilization Factors for the Outdoor Worker Exposure Scenario. (2 Pages)

Input Parameter	Symbol	Value	Units	Source
A Constant	A	11.3161	unitless	OSWER Directive 9355.4-24; Exhibit D-2 for Boise Idaho.
Site Area	A_s	0.5	acres	OSWER Directive 9355.4-24
B Constant	B	19.6437	unitless	OSWER Directive 9355.4-24; Exhibit D-2 for Boise Idaho.
C Constant	C	224.8172	unitless	OSWER Directive 9355.4-24; Exhibit D-2 for Boise Idaho.
Apparent diffusivity	D_A	Chemical-Specific	cm^2/s	Equation 9 (EPA/540/R-96/018, page 26)
Diffusivity in air	D_i	Chemical-Specific	cm^2/s	see Table 6
Diffusivity in water	D_w	Chemical-Specific	cm^2/s	see Table 6
Fraction organic carbon in soil	f_{oc}	0.001	g/g	2013 WAC 173-340-747(4) Equation 747-2
Henry's law constant	H'	Chemical-Specific	dimensionless	see Table 6
Soil-water partition coefficient	K_d	Chemical-Specific	L/kg	see Table 6 [Equation 12 (for organic analytes $K_d=f_{oc} \times K_{oc}$) (OSWER 9355.4-24, page 4-24) inorganic K_d (for inorganic analytes)]
Soil organic carbon/water partition coefficient	K_{oc}	Chemical-Specific	L/kg	see Table 6
Soil porosity	n	0.434	unitless	Equation 10 (EPA/540/R-96/018, page 26)
Inverse of mean concentration at center of a source	Q/C	71.22808	g/m^2-s per kg/m^3	Equation 8 (OSWER 9355.4-24, Exhibit D-2)
Exposure Time	T	9.50E+08	s	EPA/540/R-96/018, page 26

Table 5. Summary of Site-specific, Generic, and Chemical-Specific Input Parameters Used to Calculate Volatilization Factors for the Outdoor Worker Exposure Scenario. (2 Pages)

Input Parameter	Symbol	Value	Units	Source
Volatilization Factor	VF	Chemical-Specific	m^3/kg	Equation 7 (EPA/540/R-96/018, page 26)
Air-filled soil porosity	Θ_a	0.284	L_{air}/L_{soil}	Equation 11 (EPA/540/R-96/018, page 26)
Water-filled soil porosity	Θ_w	0.15	L_{water}/L_{soil}	EPA/540/R-96/018, page 26
Dry soil bulk density	ρ_b	1.5	kg/L	EPA/540/R-96/018, page 26
Soil Particle density	ρ_s	2.65	kg/L	EPA/540/R-96/018, page 26

Notes:

ECF-HANFORD-10-0445, *Rev. 0, Calculation of Nonradiological Preliminary Remediation Goals in Soil for a Casual User Scenario for the 100 Areas and 300 Area Remedial Investigation/Feasibility Study Reports.*

EPA/540/R-96/018, *Soil Screening Guidance: User's Guide Second Edition*

OSWER 9355.4-24, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*

2013 WAC 173-340-747(4), "Model Toxics Control Act—Cleanup, Deriving Soil Concentrations for Groundwater Protection, Fixed Parameter Three-Phase Partitioning Model."

3.3.4.1 Volatilization Factors

For volatile analytes, the analyte specific volatilization factor is calculated with the following equations:

$$VF = \frac{\frac{Q}{C} \times (3.14 \times D_A \times T)^{\frac{1}{2}} \times 10^{-4} \left(\frac{m^2}{cm^2}\right)}{2 \times \rho_b \times D_A} \tag{7}$$

Where:

$$\frac{Q}{C} = A \times exp\left[\frac{(lnA_s - B)^2}{C}\right] \tag{8}$$

and:

$$D_A = \frac{\left(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w\right) / n^2}{\rho_b \times K_d + \theta_w + \theta_a \times H'} \tag{9}$$

Where:

$$n = 1 - \frac{\rho_b}{\rho_s} \tag{10}$$

and:

$$\theta_a = n - \theta_w \tag{11}$$

and:

$$K_d = K_{oc} \times f_{oc} \text{ (for organics only)} \tag{12}$$

3.3.5 Total PRG Equations

The following presents the equations used to calculate the total PRGs for all exposure routes combined. The bases for the equations are provided in EPA/540/R-92/003.

3.3.5.1 Carcinogenic Effects

$$PRG_{ow-ca-total} = \frac{1}{\frac{1}{PRG_{ow-ca-ing}} + \frac{1}{PRG_{ow-ca-der}} + \frac{1}{PRG_{ow-ca-inh}}} \tag{13}$$

3.3.5.2 Noncarcinogenic Effects

$$PRG_{ow-nc-total} = \frac{1}{\frac{1}{PRG_{ow-nc-ing}} + \frac{1}{PRG_{ow-nc-der}} + \frac{1}{PRG_{ow-nc-inh}}} \tag{14}$$

4 Assumptions and Inputs

Assumptions and inputs associated with the outdoor worker exposure scenario and human health toxicity values used in the human health PRG calculations are described below.

4.1 Assumptions and Inputs

The exposure assumptions and parameters used to calculate PRGs for the outdoor worker exposure scenario are presented in Table 1 through 5. Other key assumptions are as follows:

- The PRGs for the outdoor worker exposure scenario are based on the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) outdoor worker exposure scenario. The potentially exposed receptor is an adult. This scenario reflects a reasonably anticipated future use for the Inner Area of the Central plateau.
- The generic PEF evaluates wind-borne emissions and does not consider dust emission from traffic or other forms of mechanical disturbance that could lead to greater emissions than assumed here.
- The exposure routes involved with the outdoor worker exposure scenario are incidental soil ingestion, inhalation of volatiles and dust from soil, and dermal contact with soil.
- Exposure assumptions used to calculate the outdoor worker PRGs for carcinogens and noncarcinogens are listed in Table 1. The sources for each of the assumptions are also listed in Table 1.
- The exposure assumptions used to calculate the PRGs provide a Reasonable Maximum Exposure (RME) for the outdoor worker exposure scenario as defined in OSWER Directive 9285.6-03.
- Chemical-specific parameters used to calculate the volatilization factors are listed in Table 6. The sources for each of the values are also listed in Table 6.

4.2 Toxicity Values

The analyte-specific toxicity values presented Table 7 are determined using the recommended reference hierarchy as described in Cook, 2003, *Human Health Toxicity Values in Superfund Risk Assessments*. The hierarchy is summarized below.

- Tier 1 – The EPA Integrated Risk Information System (IRIS)
- Tier 2 – The EPA Provisional Peer Reviewed Toxicity Values (PPRTVs)
- Tier 3 – Other Toxicity Values

Tier 1 – IRIS
The preferred source of toxicity data is EPA's IRIS database (http://www.epa.gov/iris/index.html). Expert toxicologists at EPA have derived the values in this database and have undergone a thorough review and validation both within and outside EPA. If a toxicity value is available in IRIS, that value is used in preference to any other value.

Tier 2 – PPRTVs

If a toxicity value is not available in IRIS, the next source is EPA's PPRTVs. This source includes toxicity values that have been developed by the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center. This database is not available to the general public, but is accessible to EPA risk assessors via EPA's intranet. These values are also published at the EPA Regional Screening Levels website (EPA, 2016).

Tier 3 – Other Toxicity Values

Tier 3 includes additional EPA and non-EPA sources of toxicity information, including:

- The California EPA's Toxicity Criteria Database contains toxicity values that are peer reviewed and address both cancer and non-cancer effects.
- The Agency for Toxic Substances and Disease Registry's Minimal Risk Levels for Hazard Substances are peer-reviewed estimates of the daily human exposure to hazardous substances that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure.
- Toxicity values in EPA/540/R-97/036, *Health Effects Assessment Summary Tables*.

When Tier 1, Tier 2, or Tier 3 toxicity values are not available for a chemical, the toxicity values from the National Center for Environmental Assessment (NCEA) are used. The NCEA values can be found in RAIS (ORNL, 2016).

A derived oral reference dose (RfD) for nitrate was calculated from the RfD reported in IRIS (1.6 mg/kg-day) for nitrate as nitrogen (NO3--N) using the mass fraction of nitrogen in nitrate. The mass fraction of nitrogen in nitrate = mol wt N/mol wt NO3- = (14 g/mol)/(62 g/mol) = 0.226. The derived RfD for nitrate = (1.6 mg NO3- -N/kg-day) x (1 mg NO3-/0.226 mg NO3--N) = 7.1 mg NO3-/kg-day.

A derived RfD for nitrite was calculated from the RfD reported in IRIS (0.1 mg/kg-day) for nitrite as nitrogen (NO2--N) using the mass fraction of nitrogen in nitrite. The mass fraction of nitrogen in nitrite = mol wt N/mol wt NO2- = (14 g/mol)/(46 g/mol) = 0.304. The derived RfD for nitrite = (0.1 mg NO2--N/kg-day) x (1 mg NO2-/0.304 mg NO2--N) = 0.3 mg NO2-/kg-day.

Toxic equivalence factors (TEFs) were used to calculate toxicity values for dioxins, furans, and carcinogenic polyaromatic hydrocarbons (PAHs) as described in WAC 173-340-708(8)(D)(iii)(A)).

An IRIS Toxicological Review of Thallium and Compounds was developed and posted by EPA (http://www.epa.gov/iris/toxreviews/1012tr.pdf). However due to study and data quality limitations as stated in the IRIS Toxicological Review, an RfD was not derived. There are no human studies suitable for derivation of a provisional RfD. One of four animal studies was identified for the purpose of deriving an RfD that could be used for screening purposes. A screening RfD of 0.00005 mg/kgday was derived for soluble thallium; an uncertainty factor of 1,000 was applied to the no observed adverse effect level (NOAEL) to derive the RfD. Hair follicle atrophy in female rats was identified as the critical effect because atrophy of hair follicles is consistent with the atrophic changes observed in cases of human thallium poisoning. Thallium occurs naturally in the earth's crust. It is used in industry, but is also released due to combustion of fossil fuels, refinement of oil fractions, smelting of ores, and by some other industrial processes such as cement production and brickworks. Thallium is not known to have been released to the Hanford site from industrial use or other mechanisms listed above. As a result of the uncertainty associated with the screening RfD and because thallium was not released to the Hanford site, the screening RfD derived for soluble thallium is not used for development of a PRG for use in the RI/FS.

An IRIS Toxicological Review of Soluble Zirconium Compounds was developed and posted by EPA (http://hhpprtv.ornl.gov/issue_papers/Zirconium.pdf). There are no adequate human sub-chronic or

chronic duration studies regarding the toxicity of oral exposure to zirconium to derive an RfD. One animal study was identified for the purpose of deriving an RfD that could be used for screening purposes. A screening RfD of 0.00008 mg/kg-day was derived for soluble zirconium; an uncertainty factor of 10,000 was applied to the lowest observed adverse effect level (LOAEL) to derive the RfD. Glycosuria in urine and increased glucose and cholesterol levels were identified as the critical effect. Zirconium is a metallic element and exists as a soft, malleable ductile solid or gray to gold, amorphous powder. It is resistant to corrosion by water and steam, mineral acids, strong alkalis, organic acids, salt solutions, and molten salts. It was used at the Hanford site for cladding fuel elements. Although it was used as cladding for fuel elements, it is an inert material. As a result the high uncertainty associated with the screening RfD and because zirconium is inert and available information suggests that zirconium is not a toxic substance, the screening RfD derived for soluble zirconium is not used for development of a PRG.

For hexavalent chromium, the toxicity value used was obtained from a different source than recommended by the EPA Superfund hierarchy (Cook 2003). This difference is summarized as follows. For hexavalent chromium, the current assessment considers cancer effects only for inhalation exposures. An oral cancer slope factor has recently been published by the New Jersey Department of Environmental Protection (NJDEP). The oral cancer slope factor derived by NJDEP is 0.5 $(mg/kg\text{-}day)^{-1}$, as presented in NJDEP, 2009, *Derivation of an Ingestion-Based Soil Remediation Criterion for Cr+6 Based on the NTP Chronic Bioassay Data for Sodium Dichromate Dihydrate* . Assessing only inhalation cancer effects from hexavalent chromium has the potential to under-estimate cancer risk.

5 Software Applications

All supporting calculations are performed on electronic spreadsheets using Microsoft Excel[1] for nonradiological PRGs. The methodology and equations are described in Section 3.0, the exposure assumptions and inputs are provided in Section 4.0, and the nonradiological PRG calculations are presented in Section 6.0. The total and final outdoor worker nonradiological PRG calculations are presented in Section 7.0.

6 Calculation

PRGs for the outdoor worker exposure scenario are calculated using the methodology presented in Section 3. The detailed calculations are in a Microsoft Excel workbook named < ECF-Hanford-16-0134_OutdoorWorker_NonRad_PRGs_final.xlsx>. The worksheets used to calculate the nonradiological PRGs for the outdoor worker exposure scenario are provided in Appendix A. Table 8 summarizes the worksheets used to calculate the PRGs.

PRG calculations were validated by comparison with hand calculations. Hand calculations are included in Appendix B.

Table 8. Worksheets Used in the Calculation of Nonradiological PRGs for the Outdoor Worker Exposure Scenario

Worksheet	Description
Appendix A, Table A-1	Summary of Incidental Soil Ingestion PRG values for Carcinogens and Noncarcinogens

[1] Excel is a trademark of Microsoft Corporation, Redmond, Washington.

Table 8. Worksheets Used in the Calculation of Nonradiological PRGs for the Outdoor Worker Exposure Scenario

Worksheet	Description
Appendix A, Table A-2	Summary of Dermal Contact PRG values for Carcinogens and Noncarcinogens
Appendix A, Table A-3	Summary of Inhalation PRG values for Carcinogens and Noncarcinogens

7 Results/Conclusions

A summary of the total PRGs for the outdoor worker scenario are presented in Table 9.

8 References

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Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CAS#	Analyte	Diffusivity in Air[a] (D_a) (cm²/s)	Source	Diffusivity in Water[a] (D_w) (cm²/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[a] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = K_{oc} x f_{oc}	Source	Inorganic K_d[b] (cm³/g)	Source	Soil/Water Distribution Coefficients[b] (K_d)	Final K_d[c] (cm³/g)	Source	Apparent Diffusivity (D_A) (cm²/s)	Volatile?[d]	Volatilization Factor (VF) (m³/kg)
630-20-6	1,1,1,2-Tetrachloroethane	4.82E-02	EPA 2016	9.10E-06	EPA 2016	1.02E-01	EPA 2016	8.60E+01	8.60E-02	EPA 2016	--	--	--	8.60E-02	EPA 2016	1.28E-03	V	3.63E+03
71-55-6	1,1,1-Trichloroethane	6.48E-02	EPA 2016	9.60E-06	EPA 2016	7.05E-01	CLARC 2015	1.35E+02	1.35E-01	CLARC 2015	--	--	--	1.35E-01	CLARC 2015	6.61E-03	V	1.60E+03
79-34-5	1,1,2,2-Tetrachloroethane	4.89E-02	EPA 2016	9.29E-06	EPA 2016	1.41E-02	CLARC 2015	7.90E+01	7.90E-02	CLARC 2015	--	--	--	7.90E-02	CLARC 2015	2.03E-04	V	9.11E+03
79-00-5	1,1,2-Trichloroethane	6.69E-02	EPA 2016	1.00E-05	EPA 2016	3.74E-02	CLARC 2015	7.50E+01	7.50E-02	CLARC 2015	--	--	--	7.50E-02	CLARC 2015	7.32E-04	V	4.79E+03
75-34-3	1,1-Dichloroethane	8.36E-02	EPA 2016	1.06E-05	EPA 2016	2.30E-01	CLARC 2015	5.30E+01	5.30E-02	CLARC 2015	--	--	--	5.30E-02	CLARC 2015	5.22E-03	V	1.80E+03
75-35-4	1,1-Dichloroethene	8.63E-02	EPA 2016	1.10E-05	EPA 2016	1.07E+00	CLARC 2015	6.50E+01	6.50E-02	CLARC 2015	--	--	--	6.50E-02	CLARC 2015	1.34E-02	V	1.12E+03
96-18-4	1,2,3-Trichloropropane	5.75E-02	EPA 2016	9.24E-06	EPA 2016	1.40E-02	EPA 2016	1.16E+02	1.16E-01	EPA 2016	--	--	--	1.16E-01	EPA 2016	1.97E-04	V	9.24E+03
95-94-3	1,2,4,5-Tetrachlorobenzene	3.19E-02	EPA 2016	8.75E-06	EPA 2016	4.09E-02	EPA 2016	2.22E+03	2.22E+00	EPA 2016	--	--	--	2.22E+00	EPA 2016	2.99E-05	V	2.37E+04
120-82-1	1,2,4-Trichlorobenzene	3.96E-02	EPA 2016	8.40E-06	EPA 2016	5.82E-02	CLARC 2015	1.66E+03	1.66E+00	CLARC 2015	--	--	1.66E+00	1.66E+00	CLARC 2015	6.94E-05	V	1.56E+04
96-12-8	1,2-Dibromo-3-chloropropane	3.21E-02	EPA 2016	8.90E-06	EPA 2016	6.01E-03	EPA 2016	1.16E+02	1.16E-01	EPA 2016	--	--	--	1.16E-01	EPA 2016	4.77E-05	V	1.88E+04
106-93-4	1,2-Dibromoethane	4.30E-02	EPA 2016	1.04E-05	EPA 2016	2.66E-02	EPA 2016	6.60E+01	6.60E-02	CLARC 2015	--	--	--	6.60E-02	CLARC 2015	3.57E-04	V	6.87E+03
95-50-1	1,2-Dichlorobenzene	5.62E-02	EPA 2016	8.92E-06	EPA 2016	7.79E-02	CLARC 2015	3.79E+02	3.79E-01	CLARC 2015	--	--	3.79E-01	3.79E-01	CLARC 2015	4.72E-04	V	5.97E+03
107-06-2	1,2-Dichloroethane	8.57E-02	EPA 2016	1.10E-05	EPA 2016	4.01E-02	CLARC 2015	3.80E+01	3.80E-02	CLARC 2015	--	--	--	3.80E-02	CLARC 2015	1.26E-03	V	3.66E+03
540-59-0	1,2-Dichloroethene (Total)	8.84E-02	EPA 2016	1.13E-05	EPA 2016	1.67E-01	EPA 2016	3.96E+01	3.96E-02	EPA 2016	--	--	--	3.96E-02	EPA 2016	4.59E-03	V	1.91E+03
78-87-5	1,2-Dichloropropane	7.33E-02	EPA 2016	9.73E-06	EPA 2016	1.15E-01	CLARC 2015	4.70E+01	4.70E-02	CLARC 2015	--	--	--	4.70E-02	CLARC 2015	2.66E-03	V	2.51E+03
541-73-1	1,3-Dichlorobenzene	5.58E-02	ORNL 2016	8.85E-06	ORNL 2016	1.08E-01	ORNL 2016	3.75E+02	3.75E-01	ORNL 2016	--	--	4.34E-01	3.75E-01	ORNL 2016	6.48E-04	V	5.09E+03
106-46-7	1,4-Dichlorobenzene	5.50E-02	EPA 2016	8.68E-06	EPA 2016	9.96E-02	CLARC 2015	6.16E+02	6.16E-01	CLARC 2015	--	--	6.16E-01	6.16E-01	CLARC 2015	3.98E-04	V	6.50E+03
123-91-1	1,4-Dioxane	8.74E-02	EPA 2016	1.05E-05	EPA 2016	1.96E-04	EPA 2016	2.63E+00	2.63E-03	EPA 2016	--	--	--	2.63E-03	EPA 2016	9.54E-06	V	4.20E+04
71-36-3	1-Butanol	9.00E-02	EPA 2016	1.01E-05	EPA 2016	3.61E-04	CLARC 2015	6.92E+00	6.92E-03	CLARC 2015	--	--	--	6.92E-03	CLARC 2015	1.68E-05	V	3.17E+04
71-23-8	1-Propanol	1.04E-01	ORNL 2016	1.14E-05	ORNL 2016	3.03E-04	ORNL 2016	1.90E+00	1.90E-03	ORNL 2016	--	--	--	1.90E-03	ORNL 2016	1.72E-05	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	2.70E-02	EPA 2016	7.02E-06	EPA 2016	7.44E-07	EPA 2016	4.85E+01	4.85E-02	EPA 2016	--	--	--	4.85E-02	EPA 2016	3.07E-07	--	--
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	4.24E-02	EPA 2016	5.69E-06	EPA 2016	2.07E-03	EPA 2016	3.50E+05	3.50E+02	EPA 2016	--	--	--	3.50E+02	EPA 2016	1.35E-08	V	1.12E+06
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	4.44E-02	EPA 2016	5.86E-06	EPA 2016	6.62E-03	EPA 2016	2.14E+05	2.14E+02	EPA 2016	--	--	--	2.14E+02	EPA 2016	7.35E-08	V	4.78E+05
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	4.44E-02	EPA 2016	5.86E-06	EPA 2016	5.85E-03	EPA 2016	2.14E+05	2.14E+02	EPA 2016	--	--	--	2.14E+02	EPA 2016	6.49E-08	V	5.09E+05
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	4.67E-02	EPA 2016	6.06E-06	EPA 2016	1.16E-02	EPA 2016	1.31E+05	1.31E+02	EPA 2016	--	--	--	1.31E+02	EPA 2016	2.21E-07	V	2.76E+05
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	4.44E-02	EPA 2016	5.86E-06	EPA 2016	2.80E-03	EPA 2016	2.09E+05	2.09E+02	EPA 2016	--	--	--	2.09E+02	EPA 2016	3.18E-08	V	7.27E+05
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	4.67E-02	EPA 2016	6.06E-06	EPA 2016	3.78E-03	EPA 2016	1.31E+05	1.31E+02	EPA 2016	--	--	--	1.31E+02	EPA 2016	7.23E-08	V	4.82E+05
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	4.67E-02	EPA 2016	6.06E-06	EPA 2016	7.77E-03	EPA 2016	1.31E+05	1.31E+02	EPA 2016	--	--	--	1.31E+02	EPA 2016	1.48E-07	V	3.37E+05
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	4.67E-02	EPA 2016	6.06E-06	EPA 2016	1.18E-02	EPA 2016	1.28E+05	1.28E+02	EPA 2016	--	--	--	1.28E+02	EPA 2016	2.29E-07	V	2.71E+05
58-90-2	2,3,4,6-Tetrachlorophenol	5.03E-02	EPA 2016	5.88E-06	EPA 2016	3.61E-04	EPA 2016	2.80E+02	2.80E-01	CLARC 2015	--	--	--	2.80E-01	CLARC 2015	2.65E-06	--	--
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	2.89E-02	EPA 2016	7.76E-06	EPA 2016	3.55E-07	EPA 2016	1.07E+02	1.07E-01	EPA 2016	--	--	4.90E-02	1.07E-01	EPA 2016	2.41E-07	--	--
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	2.34E-02	EPA 2016	5.92E-06	EPA 2016	3.70E-07	EPA 2016	1.75E+02	1.75E-01	EPA 2016	--	--	8.00E-02	1.75E-01	EPA 2016	1.38E-07	--	--
95-95-4	2,4,5-Trichlorophenol	3.14E-02	EPA 2016	8.09E-06	EPA 2016	1.78E-04	CLARC 2015	1.60E+03	1.60E+00	CLARC 2015	--	--	1.60E+00	1.60E+00	CLARC 2015	2.06E-07	V	2.86E+05
88-06-2	2,4,6-Trichlorophenol	3.14E-02	EPA 2016	8.09E-06	EPA 2016	3.19E-04	CLARC 2015	3.81E+02	3.81E-01	CLARC 2015	--	--	3.81E-01	3.81E-01	CLARC 2015	1.22E-06	V	1.18E+05
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	2.79E-02	EPA 2016	7.34E-06	EPA 2016	1.45E-06	EPA 2016	2.96E+01	2.96E-02	EPA 2016	--	--	2.94E-02	2.96E-02	EPA 2016	3.76E-07	--	--
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	2.58E-02	EPA 2016	6.69E-06	EPA 2016	9.36E-08	EPA 2016	3.70E+02	3.70E-01	EPA 2016	--	--	1.00E-01	3.70E-01	EPA 2016	9.06E-08	--	--
120-83-2	2,4-Dichlorophenol	4.86E-02	EPA 2016	8.68E-06	EPA 2016	1.30E-04	CLARC 2015	1.47E+02	1.47E-01	CLARC 2015	--	--	1.47E-01	1.47E-01	CLARC 2015	1.59E-06	V	1.03E+05
105-67-9	2,4-Dimethylphenol	6.22E-02	EPA 2016	8.31E-06	EPA 2016	8.20E-05	CLARC 2015	2.09E+02	2.09E-01	CLARC 2015	--	--	2.09E-01	2.09E-01	CLARC 2015	1.05E-06	V	1.27E+05
51-28-5	2,4-Dinitrophenol	4.07E-02	EPA 2016	9.08E-06	EPA 2016	1.82E-05	CLARC 2015	1.00E-02	1.00E-05	CLARC 2015	--	--	1.00E-05	1.00E-05	CLARC 2015	9.70E-07	--	--
121-14-2	2,4-Dinitrotoluene	3.75E-02	EPA 2016	7.90E-06	EPA 2016	3.80E-06	CLARC 2015	9.55E+01	9.55E-02	CLARC 2015	--	--	9.55E-02	9.55E-02	CLARC 2015	2.95E-07	--	--
606-20-2	2,6-Dinitrotoluene	3.70E-02	EPA 2016	7.76E-06	EPA 2016	3.06E-05	CLARC 2015	6.92E+01	6.92E-02	CLARC 2015	--	--	6.92E-02	6.92E-02	CLARC 2015	6.48E-07	--	--
53-96-3	2-Acetylaminofluorene	5.16E-02	EPA 2016	6.03E-06	EPA 2016	7.85E-09	EPA 2016	2.21E+03	2.21E+00	EPA 2016	--	--	--	2.21E+00	EPA 2016	1.66E-08	--	--
78-93-3	2-Butanone	9.14E-02	EPA 2016	1.02E-05	EPA 2016	2.33E-03	EPA 2016	4.51E+00	4.51E-03	EPA 2016	--	--	--	4.51E-03	EPA 2016	1.09E-04	V	1.24E+04
111-76-2	2-Butoxyethanol	6.26E-02	EPA 2016	8.14E-06	EPA 2016	6.54E-05	EPA 2016	2.82E+00	2.82E-03	EPA 2016	--	--	--	2.82E-03	EPA 2016	2.62E-06	V	8.00E+04
91-58-7	2-Chloronaphthalene	4.47E-02	EPA 2016	7.73E-06	EPA 2016	1.31E-02	EPA 2016	2.48E+03	2.48E+00	EPA 2016	--	--	2.98E+00	2.48E+00	EPA 2016	1.21E-05	V	3.73E+04
95-57-8	2-Chlorophenol	6.61E-02	EPA 2016	9.48E-06	EPA 2016	1.60E-02	CLARC 2015	3.88E+02	3.88E-01	CLARC 2015	--	--	3.88E-01	3.88E-01	CLARC 2015	1.15E-04	V	1.21E+04
591-78-6	2-Hexanone	7.04E-02	EPA 2016	8.44E-06	EPA 2016	3.81E-03	EPA 2016	1.50E+01	1.50E-02	EPA 2016	--	--	--	1.50E-02	EPA 2016	1.24E-04	V	1.16E+04
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	3.06E-02	EPA 2016	8.24E-06	EPA 2016	5.44E-08	EPA 2016	2.96E+01	2.96E-02	EPA 2016	--	--	--	2.96E-02	EPA 2016	4.04E-07	--	--
91-57-6	2-methylnaphthalene	5.24E-02	EPA 2016	7.78E-06	EPA 2016	2.12E-02	EPA 2016	2.48E+03	2.48E+00	EPA 2016	--	--	2.98E+00	2.48E+00	EPA 2016	2.29E-05	V	2.71E+04
95-48-7	2-Methylphenol (cresol, o-)	7.28E-02	EPA 2016	9.32E-06	EPA 2016	4.92E-05	CLARC 2015	9.12E+01	9.12E-02	CLARC 2015	--	--	4.34E-01	9.12E-02	CLARC 2015	1.31E-06	V	1.13E+05
91-59-8	2-Naphthylamine	6.45E-02	EPA 2016	1.04E-05	EPA 2016	3.31E-06	EPA 2016	2.48E+03	2.48E+00	EPA 2016	--	--	--	2.48E+00	EPA 2016	3.00E-08	--	--
88-74-4	2-Nitroaniline	5.19E-02	EPA 2016	7.41E-06	EPA 2016	2.41E-06	EPA 2016	1.11E+02	1.11E-01	EPA 2016	--	--	5.27E-02	1.11E-01	EPA 2016	2.54E-07	--	--
88-75-5	2-Nitrophenol	6.05E-02	ORNL 2016	9.17E-06	ORNL 2016	5.23E-04	ORNL 2016	2.97E+02	2.97E-01	ORNL 2016	--	--	3.09E-01	2.97E-01	ORNL 2016	4.39E-06	--	--
108-10-1	2-Pentanone, 4-Methyl	6.98E-02	EPA 2016	8.35E-06	EPA 2016	5.64E-03	EPA 2016	1.26E+01	1.26E-02	EPA 2016	--	--	--	1.26E-02	EPA 2016	1.65E-04	V	9.53E+03
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	4.44E-02	EPA 2016	5.86E-06	EPA 2016	2.80E-03	EPA 2016	2.09E+05	2.09E+02	EPA 2016	--	--	--	2.09E+02	EPA 2016	3.18E-08	V	7.27E+05

Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CASN	Analyte	Diffusivity in Air[a] (D_a) (cm^2/s)	Source	Diffusivity in Water[a] (D_w) (cm^2/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[b] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = K_{oc} x f_{oc}	Source	Inorganic K_d[c] (cm^3/g)	Source	Soil/Water Distribution Coefficient[c] (K_d)	Final K_d[c] (cm^3/g)	Source	Apparent Diffusivity (D_a) (cm^2/s)	Volatile?[d]	Volatilization Factor (VF) (m^3/kg)
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	4.67E-02	EPA 2016	6.06E-06	EPA 2016	7.77E-03	EPA 2016	1.28E+05	1.28E+02	EPA 2016	--	--	--	1.28E+02	EPA 2016	1.51E-07	V	3.33E+05
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	4.94E-02	EPA 2016	5.04E-06	EPA 2016	3.84E-04	EPA 2016	7.81E+04	7.81E+01	EPA 2016	--	--	--	7.81E+01	EPA 2016	1.33E-06	--	--
91-94-1	3,3'-Dichlorobenzidine	4.75E-02	EPA 2016	5.55E-06	EPA 2016	1.64E-07	CLARC 2015	7.24E+02	7.24E-01	CLARC 2015	--	--	7.24E-01	7.24E-01	CLARC 2015	4.32E-08	--	--
119-93-7	3,3'-Dimethylbenzidine	5.34E-02	EPA 2016	6.24E-06	EPA 2016	2.57E-09	EPA 2016	3.19E+03	3.19E+00	EPA 2016	--	--	--	3.19E+00	EPA 2016	1.20E-08	--	--
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	4.94E-02	EPA 2016	6.27E-06	EPA 2016	9.12E-03	EPA 2016	7.81E+04	7.81E+01	EPA 2016	--	--	--	7.81E+01	EPA 2016	3.07E-07	V	2.34E+05
65794-96-9	3+4 Methylphenol (cresol, m+p)	4.02E-02	EPA 2016	4.70E-06	EPA 2016	2.53E-05	EPA 2016	3.07E+02	3.07E-01	EPA 2016	--	--	--	3.07E-01	EPA 2016	2.07E-07	--	--
56-49-5	3-Methylcholanthrene	2.41E-02	EPA 2016	6.14E-06	EPA 2016	2.14E-04	EPA 2016	9.62E+05	9.62E+02	EPA 2016	--	--	--	9.62E+02	EPA 2016	3.26E-10	--	--
99-09-2	3-Nitroaniline	5.19E-02	ORNL 2016	7.41E-06	ORNL 2016	3.23E-07	ORNL 2016	1.09E+02	1.09E-01	ORNL 2016	--	--	5.16E-02	1.09E-01	ORNL 2016	2.29E-07	--	--
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	4.06E-02	EPA 2016	4.74E-06	EPA 2016	1.64E-04	CLARC 2015	4.58E+04	4.58E+01	CLARC 2015	--	--	4.58E+01	4.58E+01	CLARC 2015	8.39E-09	--	--
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	2.30E-02	EPA 2016	5.86E-06	EPA 2016	8.61E-04	CLARC 2015	8.64E+04	8.64E+01	CLARC 2015	--	--	8.64E+01	8.64E+01	CLARC 2015	1.26E-08	V	1.15E+06
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	3.79E-02	EPA 2016	4.43E-06	EPA 2016	3.32E-04	CLARC 2015	6.78E+05	6.78E+02	CLARC 2015	--	--	6.78E+02	6.78E+02	CLARC 2015	1.03E-09	--	--
534-52-1	4,6-Dinitro-2-methylphenol	5.59E-02	EPA 2016	6.53E-06	EPA 2016	5.72E-05	EPA 2016	7.54E+02	7.54E-01	EPA 2016	--	--	6.02E-01	7.54E-01	EPA 2016	2.48E-07	--	--
2/1/1918	4-Amino-3,5,6-trichloropicolinic acid	4.90E-02	EPA 2016	5.73E-06	EPA 2016	2.18E-12	EPA 2016	3.88E+01	3.88E-02	EPA 2016	--	--	--	3.88E-02	EPA 2016	2.62E-07	--	--
92-67-1	4-Aminobiphenyl	6.21E-02	EPA 2016	7.26E-06	EPA 2016	5.97E-06	EPA 2016	2.47E+03	2.47E+00	EPA 2016	--	--	--	2.47E+00	EPA 2016	2.56E-08	--	--
101-55-3	4-Bromophenylphenyl ether	2.78E-02	ORNL 2016	7.37E-06	ORNL 2016	4.78E-03	ORNL 2016	3.06E+03	3.06E+00	ORNL 2016	--	--	4.16E+00	3.06E+00	ORNL 2016	2.24E-06	--	--
59-50-7	4-Chloro-3-methylphenol	6.96E-02	EPA 2016	8.13E-06	EPA 2016	1.00E-04	EPA 2016	4.92E+02	4.92E-01	EPA 2016	--	--	--	4.92E-01	EPA 2016	7.15E-07	--	--
106-47-8	4-Chloroaniline	7.04E-02	EPA 2016	1.03E-05	EPA 2016	1.36E-05	CLARC 2015	6.61E+01	6.61E-02	CLARC 2015	--	--	7.25E-02	6.61E-02	CLARC 2015	7.01E-07	V	1.56E+05
7005-72-3	4-Chlorophenylphenyl ether	2.69E-02	ORNL 2016	6.96E-06	ORNL 2016	3.68E-03	ORNL 2016	3.08E+03	3.08E+00	ORNL 2016	--	--	--	3.08E+00	ORNL 2016	1.67E-06	--	--
106-44-5	4-Methylphenol (cresol, p-)	7.24E-02	EPA 2016	9.24E-06	EPA 2016	4.09E-05	EPA 2016	3.00E+02	3.00E-01	EPA 2016	--	--	4.34E-01	3.00E-01	EPA 2016	5.40E-07	V	1.76E+05
100-01-6	4-Nitroaniline	6.37E-02	EPA 2016	9.75E-06	EPA 2016	5.15E-06	EPA 2016	1.09E+02	1.09E-01	EPA 2016	--	--	5.16E-02	1.09E-01	EPA 2016	2.97E-07	--	--
100-02-7	4-Nitrophenol	6.41E-02	ORNL 2016	9.94E-06	ORNL 2016	1.70E-08	ORNL 2016	2.91E+02	2.91E-01	ORNL 2016	--	--	3.09E-01	2.91E-01	ORNL 2016	1.62E-07	--	--
99-55-8	5-Nitro-o-toluidine	6.67E-02	EPA 2016	7.79E-06	EPA 2016	3.39E-07	EPA 2016	1.79E+02	1.79E-01	EPA 2016	--	--	--	1.79E-01	EPA 2016	1.82E-07	--	--
83-32-9	Acenaphthene	5.06E-02	EPA 2016	8.33E-06	EPA 2016	6.36E-03	CLARC 2015	4.90E+03	4.90E+00	CLARC 2015	--	--	4.90E+00	4.90E+00	CLARC 2015	3.44E-06	V	6.99E+04
208-96-8	Acenaphthylene	4.50E-02	ORNL 2016	6.98E-06	ORNL 2016	4.66E-03	ORNL 2016	5.03E+03	5.03E+00	ORNL 2016	--	--	6.12E+00	5.03E+00	ORNL 2016	2.19E-06	--	--
67-64-1	Acetone	1.06E-01	EPA 2016	1.15E-05	EPA 2016	1.59E-03	CLARC 2015	5.75E-01	5.75E-04	CLARC 2015	--	--	6.00E-04	5.75E-04	CLARC 2015	8.97E-05	V	1.37E+04
75-05-8	Acetonitrile	1.34E-01	EPA 2016	1.41E-05	EPA 2016	1.41E-03	EPA 2016	4.67E+00	4.67E-03	EPA 2016	--	--	--	4.67E-03	EPA 2016	9.68E-05	V	1.32E+04
98-86-2	Acetophenone	6.52E-02	EPA 2016	8.72E-06	EPA 2016	4.25E-04	EPA 2016	5.19E+01	5.19E-02	EPA 2016	--	--	--	5.19E-02	EPA 2016	1.01E-05	V	4.08E+04
107-02-8	Acrolein	1.12E-01	EPA 2016	1.22E-05	EPA 2016	4.99E-03	EPA 2016	1.00E+00	1.00E-03	EPA 2016	--	--	--	1.00E-03	EPA 2016	2.92E-04	V	7.59E+03
79-06-1	Acrylamide	1.10E-01	EPA 2016	1.33E-05	EPA 2016	6.95E-08	EPA 2016	5.69E+00	5.69E-03	EPA 2016	--	--	--	5.69E-03	EPA 2016	8.03E-07	V	1.45E+05
107-13-1	Acrylonitrile	1.14E-01	EPA 2016	1.23E-05	EPA 2016	5.64E-03	EPA 2016	8.51E+00	8.51E-03	EPA 2016	--	--	--	8.51E-03	EPA 2016	3.13E-04	V	7.33E+03
309-00-2	Aldrin	2.28E-02	EPA 2016	5.84E-06	EPA 2016	6.97E-03	CLARC 2015	4.87E+04	4.87E+01	CLARC 2015	--	--	4.87E+01	4.87E+01	CLARC 2015	1.74E-07	V	3.11E+06
107-05-1	Allyl chloride	9.36E-02	EPA 2016	1.08E-05	EPA 2016	4.50E-01	EPA 2016	3.96E+01	3.96E-02	EPA 2016	--	--	--	3.96E-02	EPA 2016	9.98E-03	V	1.30E+03
319-84-6	Alpha-BHC	4.33E-02	EPA 2016	5.06E-06	EPA 2016	4.35E-04	CLARC 2015	1.76E+03	1.76E+00	CLARC 2015	--	--	1.76E+00	1.76E+00	CLARC 2015	5.86E-07	--	--
5103-71-9	Alpha-Chlordane	2.15E-02	EPA 2016	5.45E-06	EPA 2016	1.99E-03	CLARC 2015	5.13E+04	5.13E+01	CLARC 2015	--	--	5.10E+01	5.13E+01	CLARC 2015	4.50E-08	V	6.11E+05
7429-90-5	Aluminum	--	--	--	--	--	--	--	--	--	1.50E+03	EPA 2016	--	1.50E+03	EPA 2016	--	--	--
62-53-3	Aniline	8.30E-02	EPA 2016	1.01E-05	EPA 2016	8.26E-06	EPA 2016	7.02E+01	7.02E-02	EPA 2016	--	--	--	7.02E-02	EPA 2016	2.52E-06	V	8.16E+04
120-12-7	Anthracene	3.90E-02	EPA 2016	7.85E-06	EPA 2016	2.67E-03	CLARC 2015	2.35E+04	2.35E+01	CLARC 2015	--	--	2.35E+01	2.35E+01	CLARC 2015	2.37E-07	V	2.66E+05
7440-36-0	Antimony	--	--	--	--	--	--	--	--	--	4.50E+01	CLARC 2015	3.76E+00	4.50E+01	CLARC 2015	--	--	--
140-57-8	Aramite	2.03E-02	EPA 2016	5.03E-06	EPA 2016	7.77E-06	EPA 2016	5.55E+03	5.55E+00	EPA 2016	--	--	--	5.55E+00	EPA 2016	7.13E-09	--	--
12674-11-2	Aroclor-1016	1.71E-02	EPA 2016	4.16E-06	EPA 2016	8.18E-03	EPA 2016	1.07E+05	1.07E+02	CLARC 2015	--	--	1.07E+02	1.07E+02	CLARC 2015	6.96E-08	V	4.92E+05
11104-28-2	Aroclor-1221	3.25E-02	EPA 2016	7.23E-06	EPA 2016	9.32E-03	EPA 2016	8.40E+03	8.40E+00	EPA 2016	--	--	1.03E+01	8.40E+00	EPA 2016	1.90E-06	V	9.40E+04
11141-16-5	Aroclor-1232	3.34E-02	EPA 2016	7.52E-06	EPA 2016	3.01E-02	EPA 2016	8.40E+03	8.40E+00	EPA 2016	--	--	1.03E+01	8.40E+00	EPA 2016	6.31E-06	V	5.16E+04
53469-21-9	Aroclor-1242	2.39E-02	EPA 2016	6.11E-06	EPA 2016	1.40E-02	EPA 2016	7.81E+04	7.81E+01	EPA 2016	--	--	4.46E+01	7.81E+01	EPA 2016	2.26E-07	V	2.71E+05
12672-29-6	Aroclor-1248	1.63E-02	EPA 2016	3.94E-06	EPA 2016	1.80E-02	EPA 2016	7.65E+04	7.65E+01	EPA 2016	--	--	4.39E+01	7.65E+01	EPA 2016	2.04E-07	V	2.87E+05
11097-69-1	Aroclor-1254	2.37E-02	EPA 2016	6.10E-06	EPA 2016	1.16E-02	EPA 2016	1.31E+05	1.31E+02	EPA 2016	--	--	7.56E+01	1.31E+02	EPA 2016	1.12E-07	V	3.87E+05
11096-82-5	Aroclor-1260	2.20E-02	EPA 2016	5.61E-06	EPA 2016	1.37E-02	EPA 2016	8.22E+05	8.22E+02	CLARC 2015	--	--	8.22E+02	8.22E+02	CLARC 2015	1.96E-08	V	9.25E+05
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7440-38-2	Arsenic	--	--	--	--	--	--	--	--	--	2.90E+01	CLARC 2015	3.00E+00	2.90E+01	CLARC 2015	--	--	--
103-33-3	Azobenzene	3.59E-02	EPA 2016	7.47E-06	EPA 2016	5.52E-04	EPA 2016	3.76E+03	3.76E+00	EPA 2016	--	--	--	3.76E+00	EPA 2016	2.66E-07	V	2.43E+05
7440-39-3	Barium	--	--	--	--	--	--	--	--	--	4.10E+01	CLARC 2015	2.50E+01	4.10E+01	CLARC 2015	--	--	--
71-43-2	Benzene	8.95E-02	EPA 2016	1.03E-05	EPA 2016	2.28E-01	CLARC 2015	6.20E+01	6.20E-02	CLARC 2015	--	--	--	6.20E-02	CLARC 2015	5.30E-03	V	1.78E+03
56-55-3	Benzo(a)anthracene	2.61E-02	EPA 2016	6.75E-06	EPA 2016	1.37E-04	CLARC 2015	3.58E+05	3.58E+02	CLARC 2015	--	--	3.60E+02	3.58E+02	CLARC 2015	6.53E-10	V	5.08E+06
50-32-8	Benzo(a)pyrene	4.76E-02	EPA 2016	5.56E-06	EPA 2016	4.63E-05	CLARC 2015	9.69E+05	9.69E+02	CLARC 2015	--	--	5.50E+03	9.69E+02	CLARC 2015	1.58E-10	--	--

Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CASN	Analyte	Diffusivity in Air[a] (D_a) (cm^2/s)	Source	Diffusivity in Water[a] (D_w) (cm^2/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[a] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = $K_{oc} \times f_{oc}$	Source	Inorganic K_d[a] (cm^3/g)	Source	Soil/Water Distribution Coefficient[b] (K_d)	Fixed K_d[c] (cm^3/g)	Source	Apparent Diffusivity (D_{eff}) (cm^2/s)	Volatile?[d]	Volatilization Factor (VF) (m^3/kg)
205-99-2	Benzo(b)fluoranthene	4.76E-02	EPA 2016	5.56E-06	EPA 2016	4.55E-03	CLARC 2015	1.23E+06	1.23E+03	CLARC 2015	--	--	8.03E+02	1.23E+03	CLARC 2015	9.41E-09	--	--
191-24-2	Benzo(g,h,i)perylene	4.48E-02	ORNL 2016	5.23E-06	ORNL 2016	1.35E-05	ORNL 2016	1.95E+06	1.95E+03	ORNL 2016	--	--	2.68E+03	1.95E+03	ORNL 2016	3.35E-11	--	--
207-08-9	Benzo(k)fluoranthene	4.76E-02	EPA 2016	5.56E-06	EPA 2016	3.40E-05	CLARC 2015	1.23E+06	1.23E+03	CLARC 2015	--	--	1.23E+03	1.23E+03	CLARC 2015	9.88E-11	--	--
65-85-0	Benzoic acid	7.02E-02	EPA 2016	9.79E-06	EPA 2016	6.31E-05	CLARC 2015	6.00E-01	6.00E-04	CLARC 2015	--	--	--	6.00E-04	CLARC 2015	2.96E-06	--	--
100-51-6	Benzyl alcohol	7.31E-02	EPA 2016	9.37E-06	EPA 2016	1.38E-05	EPA 2016	2.15E+01	2.15E-02	EPA 2016	--	--	--	2.15E-02	EPA 2016	9.32E-07	V	1.34E+05
7440-41-7	Beryllium	--	--	--	--	--	--	--	--	--	7.90E+02	CLARC 2015	7.90E+02	7.90E+02	CLARC 2015	--	--	--
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	2.77E-02	EPA 2016	7.40E-06	EPA 2016	3.05E-05	CLARC 2015	2.14E+03	2.14E+00	CLARC 2015	--	--	2.14E+00	2.14E+00	CLARC 2015	4.10E-08	--	--
108-60-1	Bis(2-chloro-1-methylethyl)ether	3.99E-02	EPA 2016	7.36E-06	EPA 2016	3.03E-03	EPA 2016	8.29E+01	8.29E-02	EPA 2016	--	--	3.92E-02	8.29E-02	EPA 2016	3.54E-05	V	2.18E+04
111-91-1	Bis(2-Chloroethoxy)methane	6.12E-02	EPA 2016	7.15E-06	EPA 2016	1.57E-04	EPA 2016	1.44E+01	1.44E-02	EPA 2016	--	--	2.77E-03	1.44E-02	EPA 2016	4.88E-06	--	--
111-44-4	Bis(2-chloroethyl) ether	5.67E-02	EPA 2016	8.71E-06	EPA 2016	7.38E-04	CLARC 2015	7.60E+01	7.60E-02	CLARC 2015	--	--	7.60E-02	7.60E-02	CLARC 2015	1.30E-05	V	3.60E+04
117-81-7	Bis(2-ethylhexyl) phthalate	1.73E-02	EPA 2016	4.18E-06	EPA 2016	4.18E-06	CLARC 2015	1.11E+05	1.11E+02	CLARC 2015	--	--	1.10E+02	1.11E+02	CLARC 2015	2.73E-10	--	--
7440-69-9	Bismuth	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7440-42-8	Boron	--	--	--	--	--	--	--	--	--	3.00E+00	EPA 2016	3.00E+00	3.00E+00	EPA 2016	--	--	--
24959-67-9	Bromide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	5.63E-02	EPA 2016	1.07E-05	EPA 2016	6.56E-02	CLARC 2015	5.50E+01	5.50E-02	CLARC 2015	--	--	--	5.50E-02	CLARC 2015	1.17E-03	V	3.78E+03
75-25-2	Bromoform	3.57E-02	EPA 2016	1.04E-05	EPA 2016	2.19E-02	CLARC 2015	1.26E+02	1.26E-01	CLARC 2015	--	--	--	1.26E-01	CLARC 2015	1.81E-04	V	9.63E+03
74-83-9	Bromomethane	1.00E-01	EPA 2016	1.35E-05	EPA 2016	2.56E-01	CLARC 2015	9.00E+00	9.00E-03	CLARC 2015	--	--	--	9.00E-03	CLARC 2015	8.71E-03	V	1.39E+03
85-68-7	Butylbenzylphthalate	2.08E-02	EPA 2016	5.17E-06	EPA 2016	5.17E-05	CLARC 2015	1.37E+04	1.37E+01	CLARC 2015	--	--	1.38E+01	1.37E+01	CLARC 2015	6.52E-09	--	--
7440-43-9	Cadmium	--	--	--	--	--	--	--	--	--	7.50E+01	EPA 2016	3.00E+01	7.50E+01	EPA 2016	--	--	--
7440-70-2	Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
86-74-8	Carbazole	4.17E-02	ORNL 2016	7.45E-06	ORNL 2016	6.26E-07	CLARC 2015	3.39E+03	3.39E+00	CLARC 2015	--	--	3.39E+00	3.39E+00	CLARC 2015	1.39E-08	--	--
75-15-0	Carbon disulfide	1.06E-01	EPA 2016	1.30E-05	EPA 2016	1.24E+00	CLARC 2015	4.57E+01	4.57E-02	CLARC 2015	--	--	--	4.57E-02	CLARC 2015	1.85E-02	V	9.54E+02
56-23-5	Carbon tetrachloride	5.71E-02	EPA 2016	9.78E-06	EPA 2016	1.25E+00	CLARC 2015	1.52E+02	1.52E-01	CLARC 2015	--	--	1.52E-01	1.52E-01	CLARC 2015	7.79E-03	V	1.47E+03
57-74-9	Chlordane	2.15E-02	EPA 2016	5.45E-06	EPA 2016	1.99E-03	CLARC 2015	5.13E+04	5.13E+01	CLARC 2015	--	--	5.10E+01	5.13E+01	CLARC 2015	4.50E-08	V	8.11E+05
16887-00-6	Chloride	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
108-90-7	Chlorobenzene	7.21E-02	EPA 2016	9.48E-06	EPA 2016	1.52E-01	CLARC 2015	2.24E+02	2.24E-01	CLARC 2015	--	--	--	2.24E-01	CLARC 2015	1.66E-03	V	3.19E+03
510-15-6	Chlorobenzilate	2.18E-02	EPA 2016	5.48E-06	EPA 2016	2.96E-06	EPA 2016	1.54E+03	1.54E+00	EPA 2016	--	--	--	1.54E+00	EPA 2016	2.33E-08	--	--
75-00-3	Chloroethane	1.04E-01	EPA 2016	1.16E-05	EPA 2016	4.54E-01	EPA 2016	2.17E+01	2.17E-02	EPA 2016	--	--	--	2.17E-02	EPA 2016	1.21E-02	V	1.18E+03
67-66-3	Chloroform	7.69E-02	EPA 2016	1.09E-05	EPA 2016	1.50E-01	CLARC 2015	5.30E+01	5.30E-02	CLARC 2015	--	--	--	5.30E-02	CLARC 2015	3.39E-03	V	2.23E+03
74-87-3	Chloromethane	1.24E-01	EPA 2016	1.36E-05	EPA 2016	3.61E-01	EPA 2016	6.00E+00	6.00E-03	CLARC 2015	--	--	--	6.00E-03	CLARC 2015	1.37E-02	V	1.11E+03
126-99-8	Chloroprene	8.41E-02	EPA 2016	1.00E-05	EPA 2016	2.29E+00	EPA 2016	6.07E+01	6.07E-02	EPA 2016	--	--	--	6.07E-02	EPA 2016	1.73E-02	V	9.86E+02
7440-47-3	Chromium	--	--	--	--	--	--	--	--	--	1.80E+06	EPA 2016	2.00E+02	1.80E+06	EPA 2016	--	--	--
218-01-9	Chrysene	2.61E-02	EPA 2016	6.75E-06	EPA 2016	3.68E-03	CLARC 2015	3.98E+05	3.98E+02	CLARC 2015	--	--	2.00E+02	3.98E+02	CLARC 2015	1.37E-08	--	--
156-59-2	cis-1,2-Dichloroethylene	8.84E-02	EPA 2016	1.13E-05	EPA 2016	1.67E-01	CLARC 2015	3.55E+01	3.55E-02	CLARC 2015	--	--	--	3.55E-02	CLARC 2015	4.71E-03	V	1.89E+03
10061-01-5	cis-1,3-Dichloropropene	7.63E-02	EPA 2016	1.01E-05	EPA 2016	7.26E-01	CLARC 2015	2.70E+01	2.70E-02	CLARC 2015	--	--	--	2.70E-02	CLARC 2015	1.12E-02	V	1.23E+03
7440-48-4	Cobalt	--	--	--	--	--	--	--	--	--	4.50E+01	EPA 2016	5.00E+01	4.50E+01	EPA 2016	--	--	--
PCB1242/1016	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7440-50-8	Copper	--	--	--	--	--	--	--	--	--	2.20E+01	CLARC 2015	2.20E+01	2.20E+01	CLARC 2015	--	--	--
57-12-5	Cyanide	2.11E-01	EPA 2016	2.46E-05	EPA 2016	4.15E-03	EPA 2016	--	--	--	9.90E+00	EPA 2016	9.90E+00	9.90E+00	EPA 2016	4.68E-06	V	5.99E+04
110-82-7	Cyclohexane	8.00E-02	EPA 2016	9.11E-06	EPA 2016	6.13E+00	EPA 2016	1.46E+02	1.46E-01	EPA 2016	--	--	--	1.46E-01	EPA 2016	1.86E-02	V	9.51E+02
108-94-1	Cyclohexanone	7.68E-02	EPA 2016	9.38E-06	EPA 2016	3.68E-04	EPA 2016	1.74E+01	1.74E-02	EPA 2016	--	--	--	1.74E-02	EPA 2016	1.33E-05	V	3.55E+04
75-99-0	Dalapon	6.01E-02	EPA 2016	9.41E-06	EPA 2016	2.31E-05	EPA 2016	3.23E+00	3.23E-03	EPA 2016	--	--	2.74E-03	3.23E-03	EPA 2016	6.51E-07	V	1.61E+05
124-18-5	Decane	4.51E-02	ORNL 2016	6.40E-06	ORNL 2016	2.11E+02	ORNL 2016	1.45E+03	1.45E+00	ORNL 2016	--	--	--	1.45E+00	ORNL 2016	1.22E-02	--	--
319-86-8	Delta-BHC	4.33E-02	ORNL 2016	5.06E-06	ORNL 2016	2.10E-04	ORNL 2016	2.81E+03	2.81E+00	ORNL 2016	--	--	3.38E+00	2.81E+00	ORNL 2016	1.78E-07	--	--
2303-16-4	Diallate	4.55E-02	EPA 2016	5.31E-06	EPA 2016	1.55E-04	EPA 2016	6.44E+02	6.44E-01	EPA 2016	--	--	--	6.44E-01	EPA 2016	5.51E-07	--	--
53-70-3	Dibenz(a,h)anthracene	4.46E-02	EPA 2016	5.21E-06	EPA 2016	6.03E-07	CLARC 2015	1.79E+06	1.79E+03	CLARC 2015	--	--	1.79E+03	1.79E+03	CLARC 2015	1.93E-11	--	--
132-64-9	Dibenzofuran	6.51E-02	EPA 2016	7.38E-06	EPA 2016	8.71E-03	EPA 2016	9.16E+03	9.16E+00	EPA 2016	--	--	1.13E+01	9.16E+00	EPA 2016	3.26E-06	V	7.15E+04
124-48-1	Dibromochloromethane	3.66E-02	EPA 2016	1.06E-05	EPA 2016	3.21E-02	CLARC 2015	6.31E+01	6.31E-02	CLARC 2015	--	--	--	6.31E-02	CLARC 2015	3.71E-04	V	6.73E+03
74-95-3	Dibromomethane	5.51E-02	EPA 2016	1.19E-05	EPA 2016	3.36E-02	EPA 2016	2.17E+01	2.17E-02	EPA 2016	--	--	--	2.17E-02	EPA 2016	7.71E-04	V	4.67E+03
1918-00-9	Dicamba	2.92E-02	EPA 2016	7.80E-06	EPA 2016	8.91E-08	EPA 2016	2.90E+01	2.90E-02	EPA 2016	--	--	2.88E-02	2.90E-02	EPA 2016	3.85E-07	--	--
75-71-8	Dichlorodifluoromethane	7.60E-02	EPA 2016	1.08E-05	EPA 2016	1.40E+01	EPA 2016	4.39E+01	4.39E-02	EPA 2016	--	--	--	4.39E-02	EPA 2016	2.03E-02	V	9.10E+02
120-36-5	Dichloroprop	4.99E-02	ORNL 2016	5.83E-06	ORNL 2016	4.99E-07	ORNL 2016	4.85E+01	4.85E-02	ORNL 2016	--	--	2.94E-02	4.85E-02	ORNL 2016	2.58E-07	--	--
60-57-1	Dieldrin	2.33E-02	EPA 2016	6.01E-06	EPA 2016	6.19E-04	CLARC 2015	2.55E+04	2.55E+01	CLARC 2015	--	--	2.56E+01	2.55E+01	CLARC 2015	3.14E-08	--	--
60-29-7	Diethyl ether	8.52E-02	EPA 2016	9.36E-06	EPA 2016	5.03E-02	EPA 2016	9.70E+00	9.70E-03	EPA 2016	--	--	--	9.70E-03	EPA 2016	1.92E-03	V	2.96E+03

Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CASI	Analyte	Diffusivity in Air[a] (D_a) (cm^2/s)	Source	Diffusivity in Water[a] (D_w) (cm^2/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[a] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = K_{oc} x f_{oc}	Source	Inorganic K_d[b] (cm^3/g)	Source	Soil/Water Distribution Coefficient[c] (K_d)	Final K_d[d] (cm^3/g)	Source	Apparent Diffusivity (D_s) (cm^2/s)	Volatile?[e]	Volatilization Factor (VF) (m^3/kg)
84-66-2	Diethylphthalate	2.61E-02	EPA 2016	6.72E-06	EPA 2016	1.85E-05	CLARC 2015	8.20E+01	8.20E-02	CLARC 2015	--	--	8.20E-02	8.20E-02	CLARC 2015	3.76E-07	--	--
60-51-5	Dimethoate	2.61E-02	EPA 2016	6.74E-06	EPA 2016	9.93E-09	EPA 2016	1.28E+01	1.28E-02	EPA 2016	--	--	--	1.28E-02	EPA 2016	3.80E-07	--	--
131-11-3	Dimethyl phthalate	2.99E-02	ORNL 2016	7.14E-06	ORNL 2016	8.05E-06	ORNL 2016	3.16E+01	3.16E-02	ORNL 2016	--	--	3.71E-02	3.16E-02	ORNL 2016	4.42E-07	--	--
84-74-2	Di-n-butylphthalate	2.14E-02	EPA 2016	5.33E-06	EPA 2016	3.85E-08	CLARC 2015	1.57E+03	1.57E+00	CLARC 2015	--	--	1.57E+00	1.57E+00	CLARC 2015	2.03E-08	--	--
117-84-0	Di-n-octylphthalate	3.56E-02	EPA 2016	4.15E-06	EPA 2016	2.74E-03	CLARC 2015	8.32E+07	8.32E+04	CLARC 2015	--	--	8.32E+04	8.32E+04	CLARC 2015	6.27E-11	--	--
88-85-7	Dinoseb(2-secButyl-4,6-dinitrophenol)	2.53E-02	EPA 2016	6.52E-06	EPA 2016	1.86E-05	EPA 2016	4.29E+03	4.29E+00	EPA 2016	--	--	3.54E+00	4.29E+00	EPA 2016	1.51E-08	--	--
298-04-4	Disulfoton	2.25E-02	EPA 2016	5.67E-06	EPA 2016	8.83E-05	EPA 2016	8.38E+02	8.38E-01	EPA 2016	--	--	--	8.38E-01	EPA 2016	1.51E-07	--	--
959-98-8	Endosulfan I	2.25E-02	EPA 2016	5.76E-06	EPA 2016	4.59E-04	CLARC 2015	2.04E+03	2.04E+00	CLARC 2015	--	--	2.04E+00	2.04E+00	CLARC 2015	2.74E-07	V	2.48E+05
33213-65-9	Endosulfan II	2.25E-02	EPA 2016	5.76E-06	EPA 2016	4.59E-04	CLARC 2015	2.04E+03	2.04E+00	CLARC 2015	--	--	2.04E+00	2.04E+00	CLARC 2015	2.74E-07	V	2.48E+05
1031-07-8	Endosulfan sulfate	3.37E-02	ORNL 2016	3.94E-06	ORNL 2016	1.33E-05	ORNL 2016	9.85E+03	9.85E+00	ORNL 2016	--	--	2.04E+00	9.85E+00	ORNL 2016	4.91E-09	--	--
72-20-8	Endrin	3.62E-02	EPA 2016	4.22E-06	EPA 2016	3.08E-04	CLARC 2015	1.08E+04	1.08E+01	CLARC 2015	--	--	1.08E+01	1.08E+01	CLARC 2015	5.88E-08	--	--
7421-93-4	Endrin Aldehyde	3.62E-02	ORNL 2016	4.22E-06	ORNL 2016	1.71E-04	ORNL 2016	3.27E+03	3.27E+00	ORNL 2016	--	--	1.08E+01	3.27E+00	ORNL 2016	1.06E-07	--	--
53494-70-5	Endrin ketone	3.62E-02	ORNL 2016	4.22E-06	ORNL 2016	8.26E-07	ORNL 2016	9.72E+03	9.72E+00	ORNL 2016	--	--	1.08E+01	9.72E+00	ORNL 2016	2.89E-09	--	--
64-17-5	Ethanol	1.24E-01	ORNL 2016	1.32E-05	ORNL 2016	2.04E-04	ORNL 2016	1.05E+00	1.05E-03	ORNL 2016	--	--	--	1.05E-03	ORNL 2016	1.42E-05	--	--
141-78-6	Ethyl acetate	8.23E-02	EPA 2016	9.70E-06	EPA 2016	5.48E-03	EPA 2016	5.58E+00	5.58E-03	EPA 2016	--	--	--	5.58E-03	EPA 2016	2.26E-04	V	8.63E+03
97-63-2	Ethyl methacrylate	6.53E-02	EPA 2016	8.38E-06	EPA 2016	2.34E-02	EPA 2016	1.67E+01	1.67E-02	EPA 2016	--	--	--	1.67E-02	EPA 2016	6.74E-04	V	5.00E+03
100-41-4	Ethylbenzene	6.85E-02	EPA 2016	8.46E-06	EPA 2016	3.23E-01	CLARC 2015	2.04E+02	2.04E-01	CLARC 2015	--	--	--	2.04E-01	CLARC 2015	3.23E-03	V	2.28E+03
107-21-1	Ethylene glycol	1.17E-01	EPA 2016	1.36E-05	EPA 2016	2.45E-06	EPA 2016	1.00E+00	1.00E-03	EPA 2016	--	--	1.00E-03	1.00E-03	EPA 2016	1.01E-08	V	1.29E+05
206-44-0	Fluoranthene	2.78E-02	EPA 2016	7.18E-06	EPA 2016	6.60E-04	CLARC 2015	4.91E+04	4.91E+01	CLARC 2015	--	--	4.91E+01	4.91E+01	CLARC 2015	2.07E-08	--	--
86-73-7	Fluorene	4.40E-02	EPA 2016	7.89E-06	EPA 2016	2.61E-03	CLARC 2015	7.71E+03	7.71E+00	CLARC 2015	--	--	7.71E+00	7.71E+00	CLARC 2015	7.90E-07	V	1.46E+05
16984-48-8	Fluoride	--	--	--	--	--	--	--	--	--	1.50E+02	EPA 2016	1.50E+02	1.50E+02	EPA 2016	--	--	--
58-89-9	Gamma-BHC (Lindane)	4.33E-02	EPA 2016	5.06E-06	EPA 2016	5.74E-04	CLARC 2015	1.35E+03	1.35E+00	CLARC 2015	--	--	1.35E+00	1.35E+00	CLARC 2015	9.34E-07	--	--
5566-34-7	Gamma-Chlordane	2.15E-02	EPA 2016	5.45E-06	EPA 2016	1.99E-03	CLARC 2015	5.13E+04	5.13E+01	CLARC 2015	--	--	5.13E+01	5.13E+01	CLARC 2015	4.50E-08	V	6.11E+05
76-44-8	Heptachlor	2.23E-02	EPA 2016	5.70E-06	EPA 2016	4.47E-02	CLARC 2015	9.53E+03	9.53E+00	CLARC 2015	--	--	9.53E+00	9.53E+00	CLARC 2015	5.53E-06	V	5.52E+04
1024-57-3	Heptachlor epoxide	2.40E-02	EPA 2016	6.25E-06	EPA 2016	3.90E-04	CLARC 2015	8.32E+04	8.32E+01	CLARC 2015	--	--	8.32E+01	8.32E+01	CLARC 2015	6.46E-09	V	1.61E+06
118-74-1	Hexachlorobenzene	2.90E-02	EPA 2016	7.85E-06	EPA 2016	5.41E-02	CLARC 2015	8.00E+04	8.00E+01	CLARC 2015	--	--	8.00E+01	8.00E+01	CLARC 2015	1.04E-06	V	1.27E+05
87-68-3	Hexachlorobutadiene	2.67E-02	EPA 2016	7.03E-06	EPA 2016	3.34E-01	CLARC 2015	5.37E+04	5.37E+01	CLARC 2015	--	--	5.37E+01	5.37E+01	CLARC 2015	8.84E-06	V	4.36E+04
77-47-4	Hexachlorocyclopentadiene	2.72E-02	EPA 2016	7.22E-06	EPA 2016	1.11E+00	CLARC 2015	2.00E+05	2.00E+02	CLARC 2015	--	--	2.00E+02	2.00E+02	CLARC 2015	8.04E-06	V	4.57E+04
67-72-1	Hexachloroethane	3.21E-02	EPA 2016	8.89E-06	EPA 2016	1.59E-01	CLARC 2015	1.78E+03	1.78E+00	CLARC 2015	--	--	1.78E+00	1.78E+00	CLARC 2015	1.42E-04	V	1.09E+04
70-30-4	Hexachlorophene	3.46E-02	EPA 2016	4.04E-06	EPA 2016	2.24E-11	EPA 2016	6.69E+05	6.69E+02	EPA 2016	--	--	--	6.69E+02	EPA 2016	3.84E-11	--	--
110-54-3	Hexane	7.31E-02	EPA 2016	8.17E-06	EPA 2016	7.40E+01	CLARC 2015	3.41E+03	3.41E+00	CLARC 2015	--	--	--	3.41E+00	CLARC 2015	1.65E-02	V	1.01E+03
18540-29-9	Hexavalent Chromium	--	--	--	--	--	--	--	--	--	1.90E+01	CLARC 2015	0.00E+00	1.90E+01	CLARC 2015	--	--	--
302-01-2	Hydrazine	1.73E-01	EPA 2016	1.90E-05	EPA 2016	2.50E-05	EPA 2016	--	--	--	--	--	1.43E-02	1.43E-02	DOE/RL-96-17	3.07E-06	V	7.40E+04
193-39-5	Indeno(1,2,3-cd)pyrene	4.48E-02	EPA 2016	5.23E-06	EPA 2016	6.56E-05	CLARC 2015	3.47E+06	3.47E+03	CLARC 2015	--	--	3.47E+03	3.47E+03	CLARC 2015	5.47E-11	--	--
7439-89-6	Iron	--	--	--	--	--	--	--	--	--	2.50E+01	EPA 2016	--	2.50E+01	EPA 2016	--	--	--
78-83-1	Isobutyl alcohol	8.97E-02	EPA 2016	1.00E-05	EPA 2016	4.00E-04	EPA 2016	2.92E+00	2.92E-03	EPA 2016	--	--	--	2.92E-03	EPA 2016	1.92E-05	V	2.99E+04
78-59-1	Isophorone	5.25E-02	EPA 2016	7.53E-06	EPA 2016	2.72E-04	CLARC 2015	4.68E+01	4.68E-02	CLARC 2015	--	--	4.68E-02	4.68E-02	CLARC 2015	5.51E-06	V	5.53E+04
98-82-8	Isopropylbenzene	8.03E-02	EPA 2016	7.86E-06	EPA 2016	4.70E-01	EPA 2016	6.98E+02	6.98E-01	EPA 2016	--	--	--	6.98E-01	EPA 2016	1.70E-03	V	3.14E+03
143-50-0	Kepone	1.96E-02	EPA 2016	4.91E-06	EPA 2016	2.20E-06	EPA 2016	1.75E+04	1.75E+01	EPA 2016	--	--	--	1.75E+01	EPA 2016	1.90E-09	--	--
7439-92-1	Lead	--	--	--	--	--	--	--	--	--	1.00E+04	CLARC 2015	3.00E+01	1.00E+04	CLARC 2015	--	--	--
7439-93-2	Lithium	--	--	--	--	--	--	--	--	--	3.00E+02	EPA 2016	5.00E+01	3.00E+02	EPA 2016	--	--	--
7439-95-4	Magnesium	--	--	--	--	--	--	--	--	--	4.50E+00	ORNL 2016	--	4.50E+00	ORNL 2016	--	--	--
7439-96-5	Manganese	--	--	--	--	--	--	--	--	--	6.50E+01	EPA 2016	5.00E+01	6.50E+01	EPA 2016	--	--	--
99-65-0	m-Dinitrobenzene	4.85E-02	EPA 2016	9.21E-06	EPA 2016	2.00E-06	EPA 2016	3.52E+02	3.52E-01	EPA 2016	--	--	--	3.52E-01	EPA 2016	1.41E-07	--	--
7439-97-6	Mercury	--	--	--	--	--	--	--	--	--	5.20E+01	CLARC 2015	3.00E+01	5.20E+01	CLARC 2015	--	--	--
126-98-7	Methacrylonitrile	9.64E-02	EPA 2016	1.06E-05	EPA 2016	1.01E-02	EPA 2016	1.31E+01	1.31E-02	EPA 2016	--	--	--	1.31E-02	EPA 2016	4.52E-04	V	6.10E+03
67-56-1	Methanol	1.58E-01	EPA 2016	1.65E-05	EPA 2016	1.86E-04	EPA 2016	1.00E+00	1.00E-03	EPA 2016	--	--	--	1.00E-03	EPA 2016	1.66E-05	V	3.19E+04
72-43-5	Methoxychlor	2.21E-02	EPA 2016	5.59E-06	EPA 2016	6.48E-04	CLARC 2015	8.00E+04	8.00E+01	CLARC 2015	--	--	8.00E+01	8.00E+01	CLARC 2015	9.96E-09	--	--
80-62-6	Methyl methacrylate	7.50E-02	EPA 2016	9.21E-06	EPA 2016	1.30E-02	EPA 2016	9.14E+00	9.14E-03	EPA 2016	--	--	--	9.14E-03	EPA 2016	4.68E-04	V	6.00E+03
66-27-3	Methyl methanesulfonate	7.89E-02	EPA 2016	1.06E-05	EPA 2016	1.65E-04	EPA 2016	4.33E+00	4.33E-03	EPA 2016	--	--	--	4.33E-03	EPA 2016	7.28E-06	--	--
298-00-0	Methyl parathion	2.50E-02	EPA 2016	6.44E-06	EPA 2016	4.09E-06	EPA 2016	7.29E+02	7.29E-01	EPA 2016	--	--	--	7.29E-01	EPA 2016	5.59E-08	--	--
75-09-2	Methylene chloride	9.99E-02	EPA 2016	1.25E-05	EPA 2016	8.98E-02	CLARC 2015	1.00E+01	1.00E-02	CLARC 2015	--	--	1.00E-02	1.00E-02	CLARC 2015	3.77E-03	V	2.11E+03
7439-98-7	Molybdenum	--	--	--	--	--	--	--	--	--	2.00E+01	EPA 2016	2.00E+01	2.00E+01	EPA 2016	--	--	--
108-38-3	m-Xylene	6.84E-02	EPA 2016	8.44E-06	EPA 2016	3.01E-01	CLARC 2015	1.96E+02	1.96E-01	CLARC 2015	--	--	--	1.96E-01	CLARC 2015	3.11E-03	V	2.33E+03

Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CAS#	Analyte	Diffusivity in Air[a] (D_a) (cm^2/s)	Source	Diffusivity in Water[a] (D_w) (cm^2/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[a] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = K_{oc} x f_{oc}	Source	Inorganic K_d[c] (cm^3/g)	Source	Soil/Water Distribution Coefficients[c] (K_d)	Final K_d[c] (cm^3/g)	Source	Apparent Diffusivity (D_A) (cm^2/s)	Volatile?[d]	Volatilization Factor (VF) (m^3/kg)
91-20-3	Naphthalene	6.05E-02	EPA 2016	8.38E-06	EPA 2016	1.98E-02	CLARC 2015	1.19E+03	1.19E+00	CLARC 2015	--	--	1.19E+00	1.19E+00	CLARC 2015	4.93E-05	V	1.85E+04
104-51-8	n-Butylbenzene	5.28E-02	EPA 2016	7.33E-06	EPA 2016	6.50E-01	EPA 2016	1.48E+03	1.48E+00	EPA 2016	--	--	--	1.48E+00	EPA 2016	1.07E-03	V	3.96E+03
7440-02-0	Nickel	--	--	--	--	--	--	--	--	--	6.50E+01	CLARC 2015	6.50E+01	6.50E+01	CLARC 2015	--	--	--
14797-55-8	Nitrate	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
14797-65-0	Nitrite	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
98-95-3	Nitrobenzene	6.81E-02	EPA 2016	9.45E-06	EPA 2016	9.84E-04	CLARC 2015	1.19E+02	1.19E-01	CLARC 2015	--	--	1.19E-01	1.19E-01	CLARC 2015	1.66E-05	V	3.19E+04
NO3-N	Nitrogen in Nitrate	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
NO2-N	Nitrogen in Nitrite	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
930-55-2	Nitrosopyrrolidine	8.00E-02	EPA 2016	1.01E-05	EPA 2016	2.00E-06	EPA 2016	9.19E+01	9.19E-02	EPA 2016	--	--	--	9.19E-02	EPA 2016	3.78E-07	V	2.11E+05
55-18-5	n-Nitrosodiethylamine	7.38E-02	EPA 2016	9.13E-06	EPA 2016	1.48E-04	EPA 2016	8.29E+01	8.29E-02	EPA 2016	--	--	--	8.29E-02	EPA 2016	3.51E-06	V	6.92E+04
62-75-9	n-Nitrosodimethylamine	9.88E-02	EPA 2016	1.15E-05	EPA 2016	7.44E-05	EPA 2016	2.28E+01	2.28E-02	EPA 2016	--	--	--	2.28E-02	EPA 2016	3.78E-06	V	6.67E+04
924-16-3	n-Nitrosodi-n-butylamine	4.22E-02	EPA 2016	6.63E-06	EPA 2016	5.40E-04	EPA 2016	9.15E+02	9.15E-01	EPA 2016	--	--	--	9.15E-01	EPA 2016	1.24E-06	V	1.17E+05
621-64-7	n-Nitrosodi-n-dipropylamine	5.64E-02	EPA 2016	7.76E-06	EPA 2016	9.23E-05	CLARC 2015	2.40E+01	2.40E-02	CLARC 2015	--	--	2.40E-02	2.40E-02	CLARC 2015	2.64E-06	--	--
86-30-6	n-Nitrosodiphenylamine	5.59E-02	EPA 2016	6.53E-06	EPA 2016	2.05E-04	CLARC 2015	1.29E+03	1.29E+00	CLARC 2015	--	--	1.29E+00	1.29E+00	CLARC 2015	4.69E-07	--	--
10595-95-6	n-Nitrosomethylethylamine	8.41E-02	EPA 2016	9.99E-06	EPA 2016	5.89E-05	EPA 2016	4.35E+01	4.35E-02	EPA 2016	--	--	--	4.35E-02	EPA 2016	2.28E-06	V	8.59E+04
59-89-2	n-Nitrosomorpholine	7.98E-02	EPA 2016	9.33E-06	EPA 2016	1.00E-06	EPA 2016	2.25E+01	2.25E-02	EPA 2016	--	--	--	2.25E-02	EPA 2016	5.18E-07	--	--
100-75-4	n-Nitrosopiperidine	6.99E-02	EPA 2016	9.18E-06	EPA 2016	3.45E-05	EPA 2016	1.68E+02	1.68E-01	EPA 2016	--	--	--	1.68E-01	EPA 2016	6.98E-07	--	--
95-47-6	o-Xylene	6.88E-02	EPA 2016	8.53E-06	EPA 2016	2.13E-01	CLARC 2015	2.41E+02	2.41E-01	CLARC 2015	--	--	--	2.41E-01	CLARC 2015	2.05E-03	V	2.86E+03
56-38-2	Parathion	2.29E-02	EPA 2016	5.82E-06	EPA 2016	1.22E-05	EPA 2016	2.42E+03	2.42E+00	EPA 2016	--	--	--	2.42E+00	EPA 2016	2.06E-08	--	--
60-11-7	p-Dimethylaminoazobenzene	5.13E-02	EPA 2016	6.00E-06	EPA 2016	1.64E-06	EPA 2016	2.03E+03	2.03E+00	EPA 2016	--	--	--	2.03E+00	EPA 2016	1.79E-08	--	--
608-93-5	Pentachlorobenzene	2.94E-02	EPA 2016	7.95E-06	EPA 2016	2.87E-02	EPA 2016	3.21E+04	3.21E+01	CLARC 2015	--	--	--	3.21E+01	CLARC 2015	1.40E-06	V	1.10E+05
76-01-7	Pentachloroethane	3.15E-02	EPA 2016	8.57E-06	EPA 2016	7.93E-02	EPA 2016	1.36E+02	1.36E-01	EPA 2016	--	--	--	1.36E-01	EPA 2016	5.30E-04	V	5.63E+03
82-68-8	Pentachloronitrobenzene (PCNB)	2.63E-02	EPA 2016	6.92E-06	EPA 2016	1.81E-03	EPA 2016	6.00E+03	6.00E+00	EPA 2016	--	--	--	6.00E+00	EPA 2016	4.22E-07	V	2.00E+05
87-86-5	Pentachlorophenol	2.95E-02	EPA 2016	8.01E-06	EPA 2016	1.00E-06	CLARC 2015	5.92E+02	5.92E-01	CLARC 2015	--	--	5.92E-01	5.92E-01	CLARC 2015	7.58E-06	--	--
62-44-2	Phenacetin	5.98E-02	EPA 2016	6.98E-06	EPA 2016	8.71E-09	EPA 2016	4.10E+01	4.10E-02	EPA 2016	--	--	--	4.10E-02	EPA 2016	3.15E-07	--	--
85-01-8	Phenanthrene	3.45E-02	ORNL 2016	6.69E-06	ORNL 2016	1.73E-03	ORNL 2016	1.67E+04	1.67E+01	ORNL 2016	--	--	2.35E+01	1.67E+01	ORNL 2016	1.92E-07	--	--
108-95-2	Phenol	8.34E-02	EPA 2016	1.03E-05	EPA 2016	1.63E-05	CLARC 2015	2.88E+01	2.88E-02	CLARC 2015	--	--	2.88E-02	2.88E-02	CLARC 2015	1.07E-06	V	1.26E+05
298-02-2	Phorate	2.33E-02	EPA 2016	5.90E-06	EPA 2016	1.79E-04	EPA 2016	4.60E+02	4.60E-01	EPA 2016	--	--	--	4.60E-01	EPA 2016	4.64E-07	--	--
14265-44-2	Phosphate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--	--	--	3.50E+00	EPA 2016	--	3.50E+00	EPA 2016	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--	--	--	3.50E+00	ORNL 2016	--	3.50E+00	ORNL 2016	--	--	--
9/7/7440	Potassium	--	--	--	--	--	--	--	--	--	5.50E+00	ORNL 2016	--	5.50E+00	ORNL 2016	--	--	--
106-50-3	p-Phenylenediamine	8.37E-02	EPA 2016	9.78E-06	EPA 2016	2.75E-08	EPA 2016	3.38E+01	3.38E-02	EPA 2016	--	--	--	3.38E-02	EPA 2016	4.65E-07	--	--
23950-58-5	Pronamide	4.71E-02	EPA 2016	5.50E-06	EPA 2016	3.99E-07	EPA 2016	4.05E+02	4.05E-01	EPA 2016	--	--	--	4.05E-01	EPA 2016	7.12E-06	--	--
129-00-0	Pyrene	2.78E-02	EPA 2016	7.25E-06	EPA 2016	4.51E-04	CLARC 2015	6.80E+04	6.80E+01	CLARC 2015	--	--	6.80E+01	6.80E+01	CLARC 2015	1.05E-08	V	1.27E+06
110-86-1	Pyridine	9.31E-02	EPA 2016	1.09E-05	EPA 2016	4.50E-04	EPA 2016	7.17E+01	7.17E-02	EPA 2016	--	--	--	7.17E-02	EPA 2016	1.34E-05	V	3.54E+04
94-59-7	Safrol	4.42E-02	EPA 2016	7.59E-06	EPA 2016	3.71E-04	EPA 2016	2.07E+02	2.07E-01	EPA 2016	--	--	--	2.07E-01	EPA 2016	3.00E-06	--	--
7782-49-2	Selenium	--	--	--	--	--	--	--	--	--	5.00E+00	CLARC 2015	5.00E+00	5.00E+00	CLARC 2015	--	--	--
7440-21-3	Silicon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7440-22-4	Silver	--	--	--	--	--	--	--	--	--	8.30E+00	CLARC 2015	9.00E+01	8.30E+00	CLARC 2015	--	--	--
7440-23-5	Sodium	--	--	--	--	--	--	--	--	--	1.00E+02	ORNL 2016	--	1.00E+02	ORNL 2016	--	--	--
7440-24-6	Strontium	--	--	--	--	--	--	--	--	--	3.50E+01	EPA 2016	2.50E+01	3.50E+01	EPA 2016	--	--	--
100-42-5	Styrene	7.11E-02	EPA 2016	8.78E-06	EPA 2016	1.13E-01	CLARC 2015	9.12E+02	9.12E-01	CLARC 2015	--	--	--	9.12E-01	CLARC 2015	4.14E-04	V	6.37E+03
14808-79-8	Sulfate	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--	--	--	--	--	0.00E+00	0.00E+00	DOE/RL-96-1	--	--	--
99-35-4	sym-Trinitrobenzene	2.90E-02	EPA 2016	7.69E-06	EPA 2016	2.66E-07	EPA 2016	1.68E+03	1.68E+00	EPA 2016	--	--	--	1.68E+00	EPA 2016	2.76E-08	--	--
127-18-4	Tetrachloroethene	5.05E-02	EPA 2016	9.46E-06	EPA 2016	7.54E-01	CLARC 2015	2.65E+02	2.65E-01	CLARC 2015	--	--	--	2.65E-01	CLARC 2015	3.99E-03	V	2.05E+03
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	2.12E-02	EPA 2016	5.28E-06	EPA 2016	1.82E-04	EPA 2016	2.66E+02	2.66E-01	EPA 2016	--	--	--	2.66E-01	EPA 2016	6.53E-07	--	--
7440-28-0	Thallium	--	--	--	--	--	--	--	--	--	7.10E+01	CLARC 2015	--	7.10E+01	CLARC 2015	--	--	--
7440-31-5	Tin	--	--	--	--	--	--	--	--	--	2.50E+02	EPA 2016	1.30E+02	2.50E+02	EPA 2016	--	--	--
7440-32-6	Titanium	--	--	--	--	--	--	--	--	--	1.00E+03	ORNL 2016	--	1.00E+03	ORNL 2016	--	--	--
108-88-3	Toluene	7.78E-02	EPA 2016	9.20E-06	EPA 2016	2.72E-01	CLARC 2015	1.40E+02	1.40E-01	CLARC 2015	--	--	1.40E-01	1.40E-01	CLARC 2015	3.87E-03	V	2.08E+03
1336-36-3	Total PCBs	2.43E-02	EPA 2016	6.27E-06	EPA 2016	1.70E-02	EPA 2016	3.09E+05	3.09E+02	CLARC 2015	--	--	3.09E+02	3.09E+02	CLARC 2015	7.13E-08	V	4.86E+05

Table 6. Summary of Chemical-Specific Input Parameters and Volatilization Factors

CASd	Analyte	Diffusivity in Air[a] (D_a) (cm^2/s)	Source	Diffusivity in Water[a] (D_w) (cm^2/s)	Source	Dimensionless Henry's Law Constant[a] (H')	Source	Soil-Carbon Partition Coefficient[a] (K_{oc}) (L/kg)	Soil/Water Distribution Coefficient K_d Organic (L/kg) = K_{oc} x f_{oc}	Source	Inorganic K_d[b] (cm^3/g)	Source	Soil/Water Distribution Coefficient[c] (K_d)	Final K_d[c] (cm^3/g)	Source	Apparent Diffusivity (D_{app}) (cm^2/s)	Volatile?[d]	Volatilization Factor (VF) (m^3/kg)
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	5.00E+01	5.00E+01	DOE/RL-96-1	--	--	--
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--	--	--	--	--	5.00E+01	5.00E+01	DOE/RL-96-1	--	--	--
TPHGASOLIN	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--	--	--	--	--	5.00E+01	5.00E+01	DOE/RL-96-1	--	--	--
PHKEROSEN	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--	--	--	--	--	5.00E+01	5.00E+01	DOE/RL-96-1	--	--	--
TPHOILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--	--	--	--	--	5.00E+01	5.00E+01	DOE/RL-96-1	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	2.43E-02	EPA 2016	6.27E-06	EPA 2016	1.70E-02	EPA 2016	3.09E+05	3.09E+02	CLARC 2015	--	--	3.09E+02	3.09E+02	CLARC 2015	7.13E-08	V	4.86E+05
8001-35-2	Toxaphene	3.24E-02	EPA 2016	3.79E-06	EPA 2016	2.46E-04	CLARC 2015	9.58E+04	9.58E+01	CLARC 2015	--	--	9.58E+01	9.58E+01	CLARC 2015	4.68E-09	--	--
156-60-5	trans-1,2-Dichloroethylene	8.76E-02	EPA 2016	1.12E-05	EPA 2016	3.85E-01	CLARC 2015	3.80E+01	3.80E-02	CLARC 2015	--	--	--	3.80E-02	CLARC 2015	8.52E-03	V	1.40E+03
10061-02-6	trans-1,3-Dichloropropene	7.63E-02	EPA 2016	1.01E-05	EPA 2016	7.29E-01	CLARC 2015	2.70E+01	2.70E-02	CLARC 2015	--	--	--	2.70E-02	CLARC 2015	1.12E-02	V	1.23E+03
5103-74-2	trans-Chlordane	2.15E-02	EPA 2016	5.45E-06	EPA 2016	1.99E-03	CLARC 2015	5.13E+04	5.13E+01	CLARC 2015	--	--	5.10E+01	5.13E+01	CLARC 2015	4.50E-08	V	6.11E+05
126-73-8	Tributyl phosphate	2.12E-02	EPA 2016	5.23E-06	EPA 2016	5.76E-05	EPA 2016	2.35E+03	2.35E+00	EPA 2016	--	--	1.89E+00	2.35E+00	EPA 2016	4.01E-08	--	--
79-01-6	Trichloroethene	6.87E-02	EPA 2016	1.02E-05	EPA 2016	4.22E-01	CLARC 2015	9.40E+01	9.40E-02	CLARC 2015	--	--	--	9.40E-02	CLARC 2015	5.64E-03	V	1.73E+03
75-69-4	Trichloromonofluoromethane	6.54E-02	EPA 2016	1.00E-05	EPA 2016	3.97E+00	EPA 2016	4.39E+01	4.39E-02	EPA 2016	--	--	--	4.39E-02	EPA 2016	1.54E-02	V	1.04E+03
7440-61-1	Uranium	--	--	--	--	--	--	--	--	--	4.50E+02	ORNL 2016	2.00E+00	4.50E+02	ORNL 2016	--	--	--
7440-62-2	Vanadium	--	--	--	--	--	--	--	--	--	1.00E+03	CLARC 2015	1.00E+03	1.00E+03	CLARC 2015	--	--	--
108-05-4	Vinyl acetate	8.49E-02	EPA 2016	1.00E-05	EPA 2016	2.10E-02	CLARC 2015	5.25E+00	5.25E-03	CLARC 2015	--	--	--	5.25E-03	CLARC 2015	8.70E-04	V	4.40E+03
75-01-4	Vinyl chloride	1.07E-01	EPA 2016	1.20E-05	EPA 2016	1.11E+00	CLARC 2015	1.86E+01	1.86E-02	CLARC 2015	--	--	--	1.86E-02	CLARC 2015	1.93E-02	V	9.34E+02
1330-20-7	Xylenes (total)	6.85E-02	EPA 2016	8.46E-06	EPA 2016	2.79E-01	CLARC 2015	2.33E+02	2.33E-01	CLARC 2015	--	--	2.33E-01	2.33E-01	CLARC 2015	2.64E-03	V	2.52E+03
7440-66-6	Zinc	--	--	--	--	--	--	--	--	--	6.20E+01	CLARC 2015	3.00E+01	6.20E+01	CLARC 2015	--	--	--
7440-67-7	Zirconium	--	--	--	--	--	--	--	--	--	3.00E+03	EPA 2016	--	3.00E+03	EPA 2016	--	--	--

DOE/RL-96-17 Rev. 6. *Remedial Design Report/Remedial Action Work Plan (RDR/RAWP) for the 100 Area*

Ecology, 2015. *Cleanup Levels and Risk Calculation (CLARC), CLARC Data Tables—July 2015, downloaded September 28, 2016.*

EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016)

ORNL, 2016, Risk Assessment Information System, Oak Ridge National Laboratory, Oak Ridge, Tennessee, available on the Internet at < http://rais.ornl.gov/ >.

a. Chemical-specific parameters (Diffusivity, H, K_{oc}, and K_d) were obtained from the following sources, in order of preference, as available:

1. Ecology, 2015, Cleanup Levels and Risk Calculation (CLARC), CLARC Data Tables—July 2015, downloaded September 28, 2016.
2. EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016)
3. ORNL, 2016, Risk Assessment Information System, Oak Ridge National Laboratory, Oak Ridge, Tennessee, available on the Internet at < http://rais.ornl.gov/ >.

b. Table E-2, DOE/RL-96-17 Rev. 6, Remedial Design Report/Remedial Action Work Plan (RDR/RAWP) for the 100 Area

c. Final Kd selected per the following order of preference: Ecology, 2015; EPA 2016; ORNL, 2016; DOE/RL/96-17

d. Is designted as volatile per CLARC, 2015 and/or EPA, 2016

e. The following summarizes differences between the table above and the cited references

1,2-Dichloroethene (Total) (540-59-0) used the parameter information for Dichloroethylene, 1,2-cis- (156-59-2)

3+4 Methylphenol (cresol, m+p) (65794-96-9) used the parameter information for Cresols (1319-77-3)

Alpha-Chlordane (5103-71-9): Uses the parameter information for chlordane (12789-03-6) in the EPA Regional Screening Level Table and/or for chlordane (57-74-9) in CLARC 2015

Arsenic (7440-38-2) references the CLARC (2013) Kd instead of DOE/RL-96-17

Chlordane (57-74-9): Uses the parameter information for chlordane (12789-03-6) in the EPA Regional Screening Level Table and/or for Chlordane (alpha-, gamma-) in DOE/RL 96-17

gamma-Chlordane (5566-34-7): Uses the parameter information for chlordane (12789-03-6) in the EPA Regional Screening Level Table and/or for chlordane (57-74-9) in CLARC 2015

trans-Chlordane (5103-74-2): Uses the parameter information for chlordane (12789-03-6) in the EPA Regional Screening Level Table; Henry's Constant and/or for chlordane (57-74-9) in CLARC 2015 and/or for Chlordane (alpha-, gamma-) in DOE/RL 96-17

Endosulfan I (959-98-8): Uses the parameter information for Endosulfan (115-29-7) in the EPA Regional Screening Level Table and/or in CLARC 2015

Endosulfan II (33213-65-9): Uses the parameter information for Endosulfan (115-29-7) in the EPA Regional Screening Level Table and/or in CLARC 2015

Mercury (7439-97-6): References Mercuric Chloride (and other Mercury Salts) (7487-94-7)—no diffusivity or Henry's constant.

Total Polychlorinated Biphenyls (TOTALPCB): Uses the parameter information for Polychlorinated Biphenyls (high risk) (1336-36-3) in the EPA Regional Screening Level Table

cis-1,3-Dichloropropene (10061-01-5): Uses the parameter information for 1,3-dichloropropene (542-75-6) in the EPA Regional Screening Level Table and/or in CLARC 2015

trans-1,3-Dichloropropene (10061-02-6): Uses the parameter information for 1,3-dichloropropene (542-75-6) in the EPA Regional Screening Level Table and/or in CLARC 2015

Uranium (7440-61-1): Uses the parameter information for Uranium (Soluble Salts) and/or Uranium, leoluble Compounds as available

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($[mg/kg\text{-}day]^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($[\mu g/m^3]^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
630-20-6	1,1,1,2-Tetrachloroethane	2.60E-02	I	3.00E-02	I	7.40E-06	I	--	--	V	1.00E+00	1.00E+00	--
71-55-6	1,1,1-Trichloroethane	--	--	2.00E+00	I	--	--	5.00E+00	I	V	1.00E+00	1.00E+00	--
79-34-5	1,1,2,2-Tetrachloroethane	2.00E-01	I	2.00E-02	I	5.80E-05	C	--	--	V	1.00E+00	1.00E+00	--
79-00-5	1,1,2-Trichloroethane	5.70E-02	I	4.00E-03	I	1.60E-05	I	2.00E-04	X	V	1.00E+00	1.00E+00	--
75-34-3	1,1-Dichloroethane	5.70E-03	C	2.00E-01	P	1.60E-06	C	--	--	V	1.00E+00	1.00E+00	--
75-35-4	1,1-Dichloroethene	--	--	5.00E-02	I	--	--	2.00E-01	I	V	1.00E+00	1.00E+00	--
96-18-4	1,2,3-Trichloropropane	3.00E+01	I	4.00E-03	I	--	--	3.00E-04	I	V	1.00E+00	1.00E+00	--
95-94-3	1,2,4,5-Tetrachlorobenzene	--	--	3.00E-04	I	--	--	--	--	V	1.00E+00	1.00E+00	--
120-82-1	1,2,4-Trichlorobenzene	2.90E-02	P	1.00E-02	I	--	--	2.00E-03	P	V	1.00E+00	1.00E+00	--
96-12-8	1,2-Dibromo-3-chloropropane	8.00E-01	P	2.00E-04	P	6.00E-03	P	2.00E-04	I	V	1.00E+00	1.00E+00	--
106-93-4	1,2-Dibromoethane	2.00E+00	I	9.00E-03	I	6.00E-04	I	9.00E-03	I	V	1.00E+00	1.00E+00	--
95-50-1	1,2-Dichlorobenzene	--	--	9.00E-02	I	--	--	2.00E-01	H	V	1.00E+00	1.00E+00	--
107-06-2	1,2-Dichloroethane	9.10E-02	I	6.00E-03	X	2.60E-05	I	7.00E-03	P	V	1.00E+00	1.00E+00	--
540-59-0	1,2-Dichloroethene (Total)	--	--	9.00E-03	H	--	--	--	--	V	1.00E+00	--	--
78-87-5	1,2-Dichloropropane	3.60E-02	C	9.00E-02	A	1.00E-05	C	4.00E-03	I	V	1.00E+00	1.00E+00	--
541-73-1	1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	V	--	--	--
106-46-7	1,4-Dichlorobenzene	5.40E-03	C	7.00E-02	A	1.10E-05	C	8.00E-01	I	V	1.00E+00	1.00E+00	--
123-91-1	1,4-Dioxane	1.00E-01	I	3.00E-02	I	5.00E-06	I	3.00E-02	I	V	1.00E+00	1.00E+00	--
71-36-3	1-Butanol	--	--	1.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	--
71-23-8	1-Propanol	--	--	--	--	--	--	--	--	--	--	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	--	--	1.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.90E+00	WAC	2.30E-05	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.90E+00	WAC	2.30E-06	E	1.10E-03	WAC	1.30E-03	E	V	1.00E+00	1.00E+00	1.40E-01
58-90-2	2,3,4,6-Tetrachlorophenol	--	--	3.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	--	--	1.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	--	--	8.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
95-95-4	2,4,5-Trichlorophenol	--	--	1.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
88-06-2	2,4,6-Trichlorophenol	1.10E-02	I	1.00E-03	P	3.10E-06	I	--	--	V	1.00E+00	1.00E+00	1.00E-01

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($(mg/kg\text{-}day)^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($(\mu g/m^3)^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	--	--	1.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	5.00E-02
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	--	--	8.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
120-83-2	2,4-Dichlorophenol	--	--	3.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
105-67-9	2,4-Dimethylphenol	--	--	2.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
51-28-5	2,4-Dinitrophenol	--	--	2.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
121-14-2	2,4-Dinitrotoluene	3.10E-01	C	2.00E-03	I	8.90E-05	C	--	--	--	1.00E+00	1.00E+00	1.02E-01
606-20-2	2,6-Dinitrotoluene	1.50E+00	P	3.00E-04	X	--	--	--	--	--	1.00E+00	1.00E+00	9.90E-02
53-96-3	2-Acetylaminofluorene	3.80E+00	C	--	--	1.30E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
78-93-3	2-Butanone	--	--	6.00E-01	I	--	--	5.00E+00	I	V	1.00E+00	1.00E+00	--
111-76-2	2-Butoxyethanol	--	--	1.00E-01	I	--	--	1.80E+00	I	V	1.00E+00	1.00E+00	1.00E-01
91-58-7	2-Chloronaphthalene	--	--	8.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
95-57-8	2-Chlorophenol	--	--	5.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
591-78-6	2-Hexanone	--	--	5.00E-03	I	--	--	3.00E-02	I	V	1.00E+00	1.00E+00	--
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	--	--	5.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
91-57-6	2-methylnaphthalene	--	--	4.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
95-48-7	2-Methylphenol (cresol, o-)	--	--	5.00E-02	I	--	--	6.00E-01	C	V	1.00E+00	1.00E+00	1.00E-01
91-59-8	2-Naphthylamine	1.80E+00	C	--	--	--	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
88-74-4	2-Nitroaniline	--	--	1.00E-02	X	--	--	5.00E-05	X	--	1.00E+00	1.00E+00	1.00E-01
88-75-5	2-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--
108-10-1	2-Pentanone, 4-Methyl	--	--	--	--	--	--	3.00E+00	I	V	1.00E+00	1.00E+00	--
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	3.90E+03	WAC	2.30E-06	E	1.10E+00	WAC	1.30E-06	E	V	1.00E+00	1.00E+00	1.40E-01
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	1.30E+04	WAC	7.00E-09	E	3.80E+00	WAC	4.00E-07	E	V	1.00E+00	1.00E+00	1.40E-01
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	1.30E+01	WAC	7.00E-06	E	3.80E-03	WAC	4.00E-04	E	--	1.00E+00	1.00E+00	1.40E-01
91-94-1	3,3'-Dichlorobenzidine	4.50E-01	I	--	--	3.40E-04	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
119-93-7	3,3'-Dimethylbenzidine	1.10E+01	P	--	--	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	3.90E+01	WAC	2.30E-06	E	1.10E-02	WAC	1.30E-04	E	V	1.00E+00	1.00E+00	1.40E-01
65794-96-9	3+4 Methylphenol (cresol, m+p)	--	--	1.00E-01	A	--	--	8.00E-01	C	--	1.00E+00	1.00E+00	1.00E-01
56-49-5	3-Methylcholanthrene	2.20E+01	C	--	--	6.30E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
99-09-2	3-Nitroaniline	2.10E-02	PPRTV Archive	3.00E-04	PPRTV Archive	--	--	1.00E-03	PPRTV Archive	--	1.00E+00	1	0.1
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	2.40E-01	I	--	--	6.90E-05	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	3.40E-01	I	--	--	9.70E-05	C	--	--	V	1.00E+00	1.00E+00	--
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	3.40E-01	I	5.00E-04	I	9.70E-05	I	--	--	--	1.00E+00	1.00E+00	3.00E-02
534-52-1	4,6-Dinitro-2-methylphenol	--	--	8.00E-05	X	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
1918-02-1	4-Amino-3,5,6-trichloropicolinic acid	--	--	7.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

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		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] ((CSF_o) $[(mg/kg\text{-}day)^{-1}]$)	Source[b]	Oral Reference Dose[a] ((RfD_o) [mg/kg-day])	Source[b]	Inhalation Unit Risk[a] (IUR) $[(\mu g/m^3)^{-1}]$	Source[b]	Inhalation Reference Concentration[a] (RfC) [mg/m^3]	Source[b]	Volatile[c]	RGA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
92-67-1	4-Aminobiphenyl	2.10E+01	C	--	--	6.00E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
101-55-3	4-Bromophenylphenyl ether	--	--	--	--	--	--	--	--	--	--	--	--
59-50-7	4-Chloro-3-methylphenol	--	--	1.00E-01	A	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
106-47-8	4-Chloroaniline	2.00E-01	P	4.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
7005-72-3	4-Chlorophenylphenyl ether	--	--	--	--	--	--	--	--	--	--	--	--
106-44-5	4-Methylphenol (cresol, p-)	--	--	1.00E-01	A	--	--	6.00E-01	C	V	1.00E+00	1.00E+00	1.00E-01
100-01-8	4-Nitroaniline	2.00E-02	P	4.00E-03	P	--	--	6.00E-03	P	--	1.00E+00	1.00E+00	1.00E-01
100-02-7	4-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--
99-55-8	5-Nitro-o-toluidine	9.00E-03	P	2.00E-02	X	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
83-32-9	Acenaphthene	--	--	6.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
208-96-8	Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--
67-64-1	Acetone	--	--	9.00E-01	I	--	--	3.10E+01	A	V	1.00E+00	1.00E+00	--
75-05-8	Acetonitrile	--	--	--	--	--	--	6.00E-02	I	V	1.00E+00	1.00E+00	--
98-86-2	Acetophenone	--	--	1.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	--
107-02-8	Acrolein	--	--	5.00E-04	I	--	--	2.00E-05	I	V	1.00E+00	1.00E+00	--
79-06-1	Acrylamide	5.00E-01	I	2.00E-03	I	1.00E-04	I	6.00E-03	I	V	1.00E+00	1.00E+00	1.00E-01
107-13-1	Acrylonitrile	5.40E-01	I	4.00E-02	A	6.80E-05	I	2.00E-03	I	V	1.00E+00	1.00E+00	--
309-00-2	Aldrin	1.70E+01	I	3.00E-05	I	4.90E-03	I	--	--	V	1.00E+00	1.00E+00	--
107-05-1	Allyl chloride	2.10E-02	C	--	--	6.00E-06	C	1.00E-03	I	V	1.00E+00	1.00E+00	--
319-84-6	Alpha-BHC	6.30E+00	I	8.00E-03	A	1.80E-03	I	--	--	--	1.00E+00	1.00E+00	1.00E-01
5103-71-9	Alpha-Chlordane	3.50E-01	I	5.00E-04	I	1.00E-04	I	7.00E-04	I	V	1.00E+00	1.00E+00	4.00E-02
7429-90-5	Aluminum	--	--	1.00E+00	P	--	--	5.00E-03	P	--	1.00E+00	1.00E+00	--
62-53-3	Aniline	5.70E-03	I	7.00E-03	P	1.80E-06	C	1.00E-03	I	V	1.00E+00	1.00E+00	1.00E-01
120-12-7	Anthracene	--	--	3.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
7440-36-0	Antimony	--	--	4.00E-04	I	--	--	--	--	--	1.00E+00	1.80E-01	--
140-57-8	Aramite	2.50E-02	I	5.00E-02	H	7.10E-06	I	--	--	--	1.00E+00	1.00E+00	1.00E-01
12674-11-2	Aroclor-1016	7.00E-02	S	7.00E-05	I	2.00E-05	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
11104-28-2	Aroclor-1221	2.00E+00	S	--	--	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
11141-16-5	Aroclor-1232	2.00E+00	S	--	--	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
53469-21-9	Aroclor-1242	2.00E+00	S	--	--	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
12672-29-6	Aroclor-1248	2.00E+00	S	--	--	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
11097-69-1	Aroclor-1254	2.00E+00	S	2.00E-05	I	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
11096-82-5	Aroclor-1260	2.00E+00	S	--	--	5.70E-04	S	--	--	V	1.00E+00	1.00E+00	1.40E-01
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--	--	--	--	--	--

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($[mg/kg\text{-}day]^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($[\mu g/m^3]^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[f] (unitless)
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--	--	--	--	--	--
7440-38-2	Arsenic	1.50E+00	I	3.00E-04	I	4.30E-03	I	1.50E-05	C	--	6.00E-01	1.00E+00	3.00E-02
103-33-3	Azobenzene	1.10E-01	I	--	--	3.10E-05	I	--	--	V	1.00E+00	1.00E+00	--
7440-39-3	Barium	--	--	2.00E-01	I	--	--	5.00E-04	H	--	1.00E+00	7.00E-02	--
71-43-2	Benzene	5.50E-02	I	4.00E-03	I	7.80E-06	I	3.00E-02	I	V	1.00E+00	1.00E+00	--
56-55-3	Benzo(a)anthracene	7.30E-01	WAC	--	--	1.10E-04	WAC	--	--	V	1.00E+00	1.00E+00	1.30E-01
50-32-8	Benzo(a)pyrene	7.30E+00	WAC	--	--	1.10E-03	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
205-99-2	Benzo(b)fluoranthene	7.30E-01	WAC	--	--	1.10E-04	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
191-24-2	Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--	--	--	--
207-08-9	Benzo(k)fluoranthene	7.30E-01	WAC	--	--	1.10E-04	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
65-85-0	Benzoic acid	--	--	4.00E+00	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
100-51-6	Benzyl alcohol	--	--	1.00E-01	P	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
7440-41-7	Beryllium	--	--	2.00E-03	I	2.40E-03	I	2.00E-05	I	--	1.00E+00	7.00E-03	--
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	1.80E+00	I	--	--	5.30E-04	I	--	--	--	1.00E+00	1.00E+00	1.00E-01
108-60-1	Bis(2-chloro-1-methylethyl)ether	--	--	4.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	--
111-91-1	Bis(2-Chloroethoxy)methane	--	--	3.00E-03	P	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
111-44-4	Bis(2-chloroethyl) ether	1.10E+00	I	--	--	3.30E-04	I	--	--	V	1.00E+00	1.00E+00	--
117-81-7	Bis(2-ethylhexyl) phthalate	1.40E-02	I	2.00E-02	I	2.40E-06	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
7440-69-9	Bismuth	--	--	--	--	--	--	--	--	--	--	--	--
7440-42-8	Boron	--	--	2.00E-01	I	--	--	2.00E-02	H	--	1.00E+00	1.00E+00	--
24959-67-9	Bromide	--	--	--	--	--	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	6.20E-02	I	2.00E-02	I	3.70E-05	C	--	--	V	1.00E+00	1.00E+00	--
75-25-2	Bromoform	7.90E-03	I	2.00E-02	I	1.10E-06	I	--	--	V	1.00E+00	1.00E+00	--
74-83-9	Bromomethane	--	--	1.40E-03	I	--	--	5.00E-03	I	V	1.00E+00	1.00E+00	--
85-68-7	Butylbenzylphthalate	1.90E-03	P	2.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
7440-43-9	Cadmium	--	--	1.00E-03	I	1.80E-03	I	1.00E-05	A	--	1.00E+00	2.50E-02	1.00E-03
7440-70-2	Calcium	--	--	--	--	--	--	--	--	--	--	--	--
86-74-8	Carbazole	2.00E-02	H	--	--	--	--	--	--	--	1.00E+00	1	0.1
75-15-0	Carbon disulfide	--	--	1.00E-01	I	--	--	7.00E-01	I	V	1.00E+00	1.00E+00	--
56-23-5	Carbon tetrachloride	7.00E-02	I	4.00E-03	I	6.00E-06	I	1.00E-01	I	V	1.00E+00	1.00E+00	--
57-74-9	Chlordane	3.50E-01	I	5.00E-04	I	1.00E-04	I	7.00E-04	I	V	1.00E+00	1.00E+00	4.00E-02
16887-00-6	Chloride	--	--	--	--	--	--	--	--	--	--	--	--
108-90-7	Chlorobenzene	--	--	2.00E-02	I	--	--	5.00E-02	P	V	1.00E+00	1.00E+00	--
510-15-6	Chlorobenzilate	1.10E-01	C	2.00E-02	I	3.10E-05	C	--	--	--	1.00E+00	1.00E+00	1.00E-01

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($(mg/kg\text{-}day)^{-1}$)	Source[b]	Oral Reference Dose[c] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($(\mu g/m^3)^{-1}$)	Source[b]	Inhalation Reference Concentration[c] (RfC) (mg/m^3)	Source[b]	Volatile[f]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
75-00-3	Chloroethane	--	--	--	--	--	--	1.00E+01	I	V	1.00E+00	1.00E+00	--
67-66-3	Chloroform	3.10E-02	C	1.00E-02	I	2.30E-06	I	9.80E-02	A	V	1.00E+00	1.00E+00	--
74-87-3	Chloromethane	--	--	--	--	--	--	9.00E-02	I	V	1.00E+00	1.00E+00	--
126-99-8	Chloroprene	--	--	2.00E-02	H	3.00E-04	I	2.00E-02	I	V	1.00E+00	1.00E+00	--
7440-47-3	Chromium	--	--	1.50E+00	I	--	--	--	--	--	1.00E+00	1.30E-02	--
218-01-9	Chrysene	7.30E-02	WAC	--	--	1.10E-06	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
156-59-2	cis-1,2-Dichloroethylene	--	--	2.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
10061-01-5	cis-1,3-Dichloropropene	1.00E-01	I	3.00E-02	I	4.00E-06	I	2.00E-02	I	V	1.00E+00	1.00E+00	--
7440-48-4	Cobalt	--	--	3.00E-04	P	9.00E-03	P	6.00E-06	P	--	1.00E+00	1.00E+00	--
PCB1242/1016	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--	--	--	--	--	--
7440-50-8	Copper	--	--	4.00E-02	H	--	--	--	--	--	1.00E+00	1.00E+00	--
57-12-5	Cyanide	--	--	6.00E-04	I	--	--	8.00E-04	S	V	1.00E+00	1.00E+00	--
110-82-7	Cyclohexane	--	--	--	--	--	--	6.00E+00	I	V	1.00E+00	1.00E+00	--
108-94-1	Cyclohexanone	--	--	5.00E+00	I	--	--	7.00E-01	P	V	1.00E+00	1.00E+00	--
75-99-0	Dalapon	--	--	3.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.00E-01
124-18-5	Decane	--	--	--	--	--	--	--	--	--	--	--	--
319-86-8	Delta-BHC	--	--	--	--	--	--	--	--	--	--	--	--
2303-16-4	Diallate	6.10E-02	H	--	--	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
53-70-3	Dibenz[a,h]anthracene	7.30E-01	WAC	--	--	1.10E-04	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
132-64-9	Dibenzofuran	--	--	1.00E-03	X	--	--	--	--	V	1.00E+00	1.00E+00	3.00E-02
124-48-1	Dibromochloromethane	8.40E-02	I	2.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	--
74-95-3	Dibromomethane	--	--	--	--	--	--	4.00E-03	X	V	1.00E+00	1.00E+00	--
1918-00-9	Dicamba	--	--	3.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
75-71-8	Dichlorodifluoromethane	--	--	2.00E-01	I	--	--	1.00E-01	X	V	1.00E+00	1.00E+00	--
120-36-5	Dichloroprop	--	--	--	--	--	--	--	--	--	--	--	--
60-57-1	Dieldrin	1.60E+01	I	5.00E-05	I	4.60E-03	I	--	--	--	1.00E+00	1.00E+00	1.00E-01
60-29-7	Diethyl ether	--	--	2.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	--
84-66-2	Diethylphthalate	--	--	8.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
60-51-5	Dimethoate	--	--	2.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
131-11-3	Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--	--	--
84-74-2	Di-n-butylphthalate	--	--	1.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
117-84-0	Di-n-octylphthalate	--	--	1.00E-02	P	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
88-85-7	Dinoseb(2-secButyl-4,6-dinitrophenol)	--	--	1.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
298-04-4	Disulfoton	--	--	4.00E-05	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) $[(mg/kg\text{-}day)^{-1}]$	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) $[(\mu g/m^3)^{-1}]$	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
959-98-8	Endosulfan I	--	--	6.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
33213-65-9	Endosulfan II	--	--	6.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
1031-07-8	Endosulfan sulfate	--	--	--	--	--	--	--	--	--	--	--	--
72-20-8	Endrin	--	--	3.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
7421-93-4	Endrin Aldehyde	--	--	--	--	--	--	--	--	--	--	--	--
53494-70-5	Endrin ketone	--	--	--	--	--	--	--	--	--	--	--	--
64-17-5	Ethanol	--	--	--	--	--	--	--	--	--	--	--	--
141-78-6	Ethyl acetate	--	--	9.00E-01	I	--	--	7.00E-02	P	V	1.00E+00	1.00E+00	--
97-63-2	Ethyl methacrylate	--	--	--	--	--	--	3.00E-01	P	V	1.00E+00	1.00E+00	--
100-41-4	Ethylbenzene	1.10E-02	C	1.00E-01	I	2.50E-06	C	1.00E+00	I	V	1.00E+00	1.00E+00	--
107-21-1	Ethylene glycol	--	--	2.00E+00	I	--	--	4.00E-01	C	V	1.00E+00	1.00E+00	1.00E-01
206-44-0	Fluoranthene	--	--	4.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.30E-01
86-73-7	Fluorene	--	--	4.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
16984-48-8	Fluoride	--	--	6.00E-02	I	--	--	1.30E-02	C	--	1.00E+00	1.00E+00	--
58-89-9	Gamma-BHC (Lindane)	1.10E+00	C	3.00E-04	I	3.10E-04	C	--	--	--	1.00E+00	1.00E+00	4.00E-02
5566-34-7	Gamma-Chlordane	3.50E-01	I	5.00E-04	I	1.00E-04	I	7.00E-04	I	V	1.00E+00	1.00E+00	4.00E-02
76-44-8	Heptachlor	4.50E+00	I	5.00E-04	I	1.30E-03	I	--	--	V	1.00E+00	1.00E+00	--
1024-57-3	Heptachlor epoxide	9.10E+00	I	1.30E-05	I	2.60E-03	I	--	--	V	1.00E+00	1.00E+00	--
118-74-1	Hexachlorobenzene	1.60E+00	I	8.00E-04	I	4.60E-04	I	--	--	V	1.00E+00	1.00E+00	--
87-68-3	Hexachlorobutadiene	7.80E-02	I	1.00E-03	P	2.20E-05	I	--	--	V	1.00E+00	1.00E+00	--
77-47-4	Hexachlorocyclopentadiene	--	--	6.00E-03	I	--	--	2.00E-04	I	V	1.00E+00	1.00E+00	--
67-72-1	Hexachloroethane	4.00E-02	I	7.00E-04	I	1.10E-05	C	3.00E-02	I	V	1.00E+00	1.00E+00	--
70-30-4	Hexachlorophene	--	--	3.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
110-54-3	Hexane	--	--	--	--	--	--	7.00E-01	I	V	1.00E+00	1.00E+00	--
18540-29-9	Hexavalent Chromium	--	--	3.00E-03	I	8.40E-02	B	1.00E-04	I	--	1.00E+00	2.50E-02	--
302-01-2	Hydrazine	3.00E+00	I	--	--	4.90E-03	I	3.00E-05	P	V	1.00E+00	1.00E+00	--
193-39-5	Indeno(1,2,3-cd)pyrene	7.30E-01	WAC	--	--	1.10E-04	WAC	--	--	--	1.00E+00	1.00E+00	1.30E-01
7439-89-6	Iron	--	--	7.00E-01	P	--	--	--	--	--	1.00E+00	1.00E+00	--
78-83-1	Isobutyl alcohol	--	--	3.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	--
78-59-1	Isophorone	9.50E-04	I	2.00E-01	I	--	--	2.00E+00	C	V	1.00E+00	1.00E+00	1.00E-01
98-82-8	Isopropylbenzene	--	--	1.00E-01	I	--	--	4.00E-01	I	V	1.00E+00	1.00E+00	--
143-50-0	Kepone	1.00E+01	I	3.00E-04	I	4.60E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
7439-92-1	Lead	--	--	--	--	--	--	--	--	--	6.00E-01	--	--
7439-93-2	Lithium	--	--	2.00E-03	P	--	--	--	--	--	1.00E+00	1.00E+00	--

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($[mg/kg\text{-}day]^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($[\mu g/m^3]^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
7439-95-4	Magnesium	--	--	--	--	--	--	--	--	--	--	--	--
7439-96-5	Manganese	--	--	1.40E-01	I	--	--	5.00E-05	I	--	1.00E+00	1.00E+00	--
99-65-0	m-Dinitrobenzene	--	--	1.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
7439-97-6	Mercury	--	--	3.00E-04	I	--	--	3.00E-04	S	--	1.00E+00	7.00E-02	--
126-98-7	Methacrylonitrile	--	--	1.00E-04	I	--	--	3.00E-02	P	V	1.00E+00	1.00E+00	--
67-56-1	Methanol	--	--	2.00E+00	I	--	--	2.00E+01	I	V	1.00E+00	1.00E+00	--
72-43-5	Methoxychlor	--	--	5.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
80-62-6	Methyl methacrylate	--	--	1.40E+00	I	--	--	7.00E-01	I	V	1.00E+00	1.00E+00	--
66-27-3	Methyl methanesulfonate	9.90E-02	C	--	--	2.80E-05	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
298-00-0	Methyl parathion	--	--	2.50E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
75-09-2	Methylene chloride	2.00E-03	I	6.00E-03	I	1.00E-08	I	6.00E-01	I	V	1.00E+00	1.00E+00	--
7439-98-7	Molybdenum	--	--	5.00E-03	I	--	--	--	--	--	1.00E+00	1.00E+00	--
108-38-3	m-Xylene	--	--	2.00E-01	S	--	--	1.00E-01	S	V	1.00E+00	1.00E+00	--
91-20-3	Naphthalene	--	--	2.00E-02	I	3.40E-05	C	3.00E-03	I	V	1.00E+00	1.00E+00	1.30E-01
104-51-8	n-Butylbenzene	--	--	5.00E-02	P	--	--	--	--	V	1.00E+00	1.00E+00	--
7440-02-0	Nickel	--	--	2.00E-02	I	2.60E-04	C	9.00E-05	A	--	1.00E+00	4.00E-02	--
14797-55-8	Nitrate	--	--	7.10E+00	I	--	--	--	--	--	1.00E+00	1.00E+00	--
14797-65-0	Nitrite	--	--	3.30E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	--
98-95-3	Nitrobenzene	--	--	2.00E-03	I	4.00E-05	I	9.00E-03	I	V	1.00E+00	1.00E+00	--
NO3-N	Nitrogen in Nitrate	--	--	1.60E+00	I	--	--	--	--	--	1.00E+00	1.00E+00	--
NO2-N	Nitrogen in Nitrite	--	--	1.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	--
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	--	1.00E+00	I	--	--	--	--	--	1.00E+00	1.00E+00	--
930-55-2	Nitrosopyrrolidine	2.10E+00	I	--	--	6.10E-04	I	--	--	V	1.00E+00	1.00E+00	1.00E-01
55-18-5	n-Nitrosodiethylamine	1.50E+02	I	--	--	4.30E-02	I	--	--	V	1.00E+00	1.00E+00	1.00E-01
62-75-9	n-Nitrosodimethylamine	5.10E+01	I	8.00E-06	P	1.40E-02	I	4.00E-05	X	V	1.00E+00	1.00E+00	--
924-16-3	n-Nitrosodi-n-butylamine	5.40E+00	I	--	--	1.60E-03	I	--	--	V	1.00E+00	1.00E+00	--
621-64-7	n-Nitrosodi-n-dipropylamine	7.00E+00	I	--	--	2.00E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
86-30-6	n-Nitrosodiphenylamine	4.90E-03	I	--	--	2.80E-08	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
10595-95-6	n-Nitrosomethylethylamine	2.20E+01	I	--	--	6.30E-03	C	--	--	V	1.00E+00	1.00E+00	--
59-89-2	n-Nitrosomorpholine	6.70E+00	C	--	--	1.90E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
100-75-4	n-Nitrosopiperidine	9.40E+00	C	--	--	2.70E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
95-47-6	o-Xylene	--	--	2.00E-01	S	--	--	1.00E-01	S	V	1.00E+00	1.00E+00	--
56-38-2	Parathion	--	--	6.00E-03	H	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
60-11-7	p-Dimethylaminoazobenzene	4.60E+00	C	--	--	1.30E-03	C	--	--	--	1.00E+00	1.00E+00	1.00E-01

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) ($[mg/kg\text{-}day]^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ($[\mu g/m^3]^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
608-93-5	Pentachlorobenzene	--	--	8.00E-04	I	--	--	--	--	V	1.00E+00	1.00E+00	--
76-01-7	Pentachloroethane	9.00E-02	P	--	--	--	--	--	--	V	1.00E+00	1.00E+00	--
82-68-8	Pentachloronitrobenzene (PCNB)	2.60E-01	H	3.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
87-86-5	Pentachlorophenol	4.00E-01	I	5.00E-03	I	5.10E-06	C	--	--	--	1.00E+00	1.00E+00	2.50E-01
62-44-2	Phenacetin	2.20E-03	C	--	--	6.30E-07	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
85-01-8	Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--
108-95-2	Phenol	--	--	3.00E-01	I	--	--	2.00E-01	C	V	1.00E+00	1.00E+00	1.00E-01
298-02-2	Phorate	--	--	2.00E-04	H	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
14265-44-2	Phosphate	--	--	--	--	--	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--	--	--	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--	--	--	--	--	--
7440-09-7	Potassium	--	--	--	--	--	--	--	--	--	--	--	--
106-50-3	p-Phenylenediamine	--	--	1.90E-01	H	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
23950-58-5	Pronamide	--	--	7.50E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
129-00-0	Pyrene	--	--	3.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	1.30E-01
110-86-1	Pyridine	--	--	1.00E-03	I	--	--	--	--	V	1.00E+00	1.00E+00	--
94-59-7	Safrol	2.20E-01	C	--	--	6.30E-05	C	--	--	--	1.00E+00	1.00E+00	1.00E-01
7782-49-2	Selenium	--	--	5.00E-03	I	--	--	2.00E-02	C	--	1.00E+00	1.00E+00	--
7440-21-3	Silicon	--	--	--	--	--	--	--	--	--	--	--	--
7440-22-4	Silver	--	--	5.00E-03	I	--	--	--	--	--	1.00E+00	4.00E-02	--
7440-23-5	Sodium	--	--	--	--	--	--	--	--	--	--	--	--
7440-24-6	Strontium	--	--	6.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	--
100-42-5	Styrene	--	--	2.00E-01	I	--	--	1.00E+00	I	V	1.00E+00	1.00E+00	--
14808-79-8	Sulfate	--	--	--	--	--	--	--	--	--	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--	--	--	--	--	--
99-35-4	sym-Trinitrobenzene	--	--	3.00E-02	I	--	--	--	--	--	1.00E+00	1.00E+00	1.90E-02
127-18-4	Tetrachloroethene	2.10E-03	I	6.00E-03	I	2.60E-07	I	4.00E-02	I	V	1.00E+00	1.00E+00	--
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	--	--	5.00E-04	I	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
7440-28-0	Thallium	--	--	--	--	--	--	--	--	--	--	--	--
7440-31-5	Tin	--	--	6.00E-01	H	--	--	--	--	--	1.00E+00	1.00E+00	--
7440-32-6	Titanium	--	--	--	--	--	--	--	--	--	--	--	--
108-88-3	Toluene	--	--	8.00E-02	I	--	--	5.00E+00	I	V	1.00E+00	1.00E+00	--
1336-36-3	Total PCBs	2.00E+00	I	--	--	5.70E-04	I	--	--	V	1.00E+00	1.00E+00	1.40E-01
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF$_o$) ([mg/kg-day]$^{-1}$)	Source[b]	Oral Reference Dose[a] (RfD$_o$) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) ([µg/m^3]$^{-1}$)	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS$_d$[e] (unitless)
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--	--	--	--	--	--
TPHGASOLINE	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--	--	--	--	--	--
TPHKEROSENE	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--	--	--	--	--	--
TPH/OILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--	--	--	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	2.00E+00	I	--	--	5.70E-04	I	--	--	V	1.00E+00	1.00E+00	1.40E-01
8001-35-2	Toxaphene	1.10E+00	I	--	--	3.20E-04	I	--	--	--	1.00E+00	1.00E+00	1.00E-01
156-60-5	trans-1,2-Dichloroethylene	--	--	2.00E-02	I	--	--	--	--	V	1.00E+00	1.00E+00	--
10061-02-6	trans-1,3-Dichloropropene	1.00E-01	I	3.00E-02	I	4.00E-06	I	2.00E-02	I	V	1.00E+00	1.00E+00	--
5103-74-2	trans-Chlordane	3.50E-01	I	5.00E-04	I	1.00E-04	I	7.00E-04	I	V	1.00E+00	1.00E+00	4.00E-02
126-73-8	Tributyl phosphate	9.00E-03	P	1.00E-02	P	--	--	--	--	--	1.00E+00	1.00E+00	1.00E-01
79-01-6	Trichloroethene	4.60E-02	I	5.00E-04	I	4.10E-06	I	2.00E-03	I	V	1.00E+00	1.00E+00	--
75-69-4	Trichloromonofluoromethane	--	--	3.00E-01	I	--	--	--	--	V	1.00E+00	1.00E+00	--
7440-61-1	Uranium	--	--	3.00E-03	I	--	--	4.00E-05	A	--	1.00E+00	1.00E+00	--
7440-62-2	Vanadium	--	--	5.00E-03	S	--	--	1.00E-04	A	--	1.00E+00	2.60E-02	--
108-05-4	Vinyl acetate	--	--	1.00E+00	H	--	--	2.00E-01	I	V	1.00E+00	1.60E+00	--
75-01-4	Vinyl chloride	7.20E-01	I	3.00E-03	I	4.40E-06	I	1.00E-01	I	V	1.00E+00	1.00E+00	--
1330-20-7	Xylenes (total)	--	--	2.00E-01	I	--	--	1.00E-01	I	V	1.00E+00	1.00E+00	--
7440-66-6	Zinc	--	--	3.00E-01	I	--	--	--	--	--	1.00E+00	1.00E+00	--
7440-67-7	Zirconium	--	--	--	--	--	--	--	--	--	--	--	--

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS #	Analyte Name	Oral Cancer Slope Factor[a] (CSF_o) $[(mg/kg\text{-}day)^{-1}]$	Source[b]	Oral Reference Dose[a] (RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) $[(\mu g/m^3)^{-1}]$	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)
540-59-0	1,2-Dichloroethene (Total)												
91-59-8	2-Naphthylamine												
65794-96-9	3+4 Methylphenol (cresol, m+p)												
99-09-2	3-Nitroaniline												
5103-71-9	Alpha-Chlordane												
7440-43-9	Cadmium (Diet)												
86-74-8	Carbazole												
57-74-9	Chlordane												
7440-47-3	Chromium (III), Insoluble salts												
10061-01-5	cis-1,3-Dichloropropene												
959-98-8	Endosulfan I												
33213-65-9	Endosulfan II												
16984-48-8	Fluoride												
5566-34-7	gamma-Chlordane												
18540-29-9	Hexavalent Chromium												
7439-96-5	Manganese (Diet)												
7439-97-6	Mercury												
14797-55-8	Nitrate												
14797-65-0	Nitrite												
NO3-N	Nitrogen in Nitrate												
NO2-N	Nitrogen in Nitrite												
NO2+NO3-N	Nitrogen in Nitrite and Nitrate												
14265-44-2	Phosphate												
7723-14-0	Phosphorus												
PO4-P	Phosphorus in phosphate												
7440-28-0	Thallium												
1336-36-3	Total PCBs												
TOTALPCB	Total Polychlorinated Biphenyls												
10061-02-6	trans-1,3-Dichloropropene												
5103-74-2	trans-Chlordane												
7440-61-1	Uranium												
7440-67-7	Zirconium												

a. Source = U.S. Environmental Protection Agency web site "Regional Screening Levels for Chemical Contaminants at Superfund Sites" (EPA, May 2016) (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016).

b. Reference key:
- A = The Agency for Toxic Substances and Disease Registry (ATSDR)
- C = The California Environmental Protection Agency (CalEPA)
- E = Environmental Criteria and Assessment Office
- H = Health Effects Assessment Summary Tables (HEAST)
- I = EPA's Integrated Risk Information System (IRIS)
- P = Provisional Peer Reviewed Toxicity Values (PPRTV)
- S = Special case chemical; basis for value discussed on EPA Regional Screening Levels web site (EPA, 2016)
- WAC = Value calculated using a toxicity equivalency factor (TEF) as provided by WAC 173-340-708(8), "Human Health Risk Assessment Procedures, Carcinogenic Potency Factor" and WAC 173-340-900, "Tables"
- X = Appendix PPRTV

c. Is designated as volatile per EPA 2016 or CLARC 2015.

d. Relative Bioavailability (RBA) as documented in:
- OSWER 9200.1-113, "Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil," and
- OSWER 9285.7-80, "Guidance for Evaluating the Oral Bioavailability of Metals in Soils for Use in Human Health Risk Assessment"

e. Chemical-specific parameters gastrointestinal absorption factor (GIABS) and dermal absorption factor (ABS_d) were obtained from the following sources, in order of preference, as available:
1. EPA, 2016, "Regional Screening Levels for Chemical Contaminants at Superfund Sites," (https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016)
2. ORNL, 2016, Risk Assessment Information System, Oak Ridge National Laboratory, Oak Ridge, Tennessee, available on the internet at < http://rais.ornl.gov/ >.

f. The following summarizes general toxicity (as applicable) differences between the table above and the EPA Regional Screening Level Table (May 2016)
- 1,2-Dichloroethene (Total) (540-59-0): Uses the toxicity information obtained from Risk Assessment Information System (ORNL, 2016)
- 2-Naphthylamine (91-59-8): EPA, 2016 lists "0" for IUR; assume it is "--" (divide by zero issue)
- 3+4 Methylphenol (cresol, m+p)(65794-96-9): Uses the toxicity information for cresols (1319-77-3)
- 3-Nitroaniline (99-09-2): Uses the toxicity information obtained from Risk Assessment Information System (ORNL, 2016)
- Alpha-Chlordane (5103-71-9): Uses the toxicity information for chlordane (12789-03-6) in the EPA Regional Screening Level Table
- Cadmium (7440-43-9): Uses the toxicity information for Cadmium (Diet) (7440-49-9) in the EPA Regional Screening Level Table
- Carbazole (86-74-8): Uses the toxicity information obtained from Risk Assessment Information System (ORNL, 2016)
- Chlordane (57-74-9): Uses the toxicity information for chlordane (12789-03-6) in the EPA Regional Screening Level Table
- Chromium (7440-47-3): Uses the toxicity information for Chromium (III), Insoluble salts (16065-83-1) in the EPA Regional Screening Level Table
- cis-1,3-Dichloropropene (10061-01-5): Uses the toxicity information for 1,3-dichloropropene (542-75-6) in the EPA Regional Screening Level Table
- Endosulfan I (959-98-8): Uses the toxicity information for Endosulfan (115-29-7) in the EPA Regional Screening Level Table
- Endosulfan II (33213-65-9): Uses the toxicity information for Endosulfan (115-29-7) in the EPA Regional Screening Level Table
- Fluoride (16984-48-8): Uses the toxicity information for Fluorine (Soluble Fluoride) (7782-41-4) in the EPA Regional Screening Level Table
- gamma-Chlordane (5566-34-7): Uses the toxicity information for chlordane (12789-03-6) in the EPA Regional Screening Level Table
- Hexavalent Chromium (18540-29-9): The oral carcinogenic potency factor provided in the EPA Regional Screening Level Table is not included in this table
- Manganese (7439-96-5): Uses the toxicity information for Manganese (Diet) (7439-96-5) in the EPA Regional Screening Level Table
- Mercury (7439-97-6): Uses the toxicity information for Mercuric Chloride (and other Mercury Salts) (7487-94-7) in the EPA Regional Screening Level Table
- Nitrate (14797-55-8): Uses derived toxicity information based on a conversion factor of 0.226 NO3-N/NO3 and the toxicity information provided for Nitrate (14797-55-8) in the form of nitrate as nitrogen in the EPA Regional Screening Level Table
- Nitrite (14797-65-0): Uses derived toxicity information based on a conversion factor of 0.304 NO2-N/NO2 and the toxcity information provided for Nitrite (14797-55-8) in the form of nitrite as nitrogen in the EPA Regional Screening Level Table
- Nitrogen in Nitrate (NO3-N): Uses toxicity information for Nitrate (14797-55-8) in the form of nitrate as nitrogen in the EPA Regional Screening Level Table
- Nitrogen in Nitrite (NO2-N): Uses toxicity information for Nitrite (14797-55-8) in the form of nitrite as nitrogen in the EPA Regional Screening Level Table
- Nitrogen in Nitrite and Nitrate (NO2+NO3-N): Uses toxicity information for Nitrate (14797-55-8) in the form of nitrate as nitrogen in the EPA Regional Screening Level Table; However no toxicity information is provided for Nitrate + Nitrite (as N) (NA) in the EPA Regional Screening Level Table
- Phosphate (14265-44-2): No toxicity information provided for non-specific phosphates
- Phosphorus (7723-14-0): Total phosphorous result; Phosphorous, White (7723-14-0) is not applicable; no toxicity information provided for non-specific phosphates
- Phosphorus in phosphate (PO4-P): No toxicity information provided for non-specific phosphates
- Thallium (7440-28-0): Does not reference the toxicity value listed in the EPA Regional Screening Level Table
- Total PCBs (1336-36-3): Uses the toxicity information for Polychlorinated Biphenyls (high risk) (1336-36-3) in the EPA Regional Screening Level Table
- Total Polychlorinated Biphenyls (TOTALPCB): Uses the toxicity information for Polychlorinated Biphenyls (high risk) (1336-36-3) in the EPA Regional Screening Level Table
- trans-1,3-Dichloropropene (10061-02-6): Uses the toxicity information for 1,3-dichloropropene (542-75-6) in the EPA Regional Screening Level Table
- trans-Chlordane (5103-74-2): Uses the toxicity information for chlordane (12789-03-6) in the EPA Regional Screening Level Table
- Uranium (7440-61-1): Uses the toxicity information for Uranium (Soluble Salts) (NA) in the EPA Regional Screening Level Table
- Zirconium (7440-67-7): Does not reference the toxicity value listed in the EPA Regional Screening Level Table

g. The following summarizes ingestion carcinogenic differences between the table above and the EPA Regional Screening Level Table (May 2016)
- 2,3,3',4,4',5,5'-Heptachlorobiphenyl (39635-31-9): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
- 2,3,3',4,4',5-Hexachlorobiphenyl (38380-08-4): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
- 2,3,3',4,4',5'-Hexachlorobiphenyl (69782-90-7): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
- 2,3,3',4,4'-Pentachlorobiphenyl (32598-14-4): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
- 2,3',4,4',5,5'-Hexachlorobiphenyl (52663-72-6): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]

Table 7. Summary of Toxicity Values used to Calculate PRGs for the Outdoor Worker Exposure Scenario

		Ingestion Toxicity Values				Inhalation Toxicity Values				Chemical-Specific Parameters			
		Carcinogen		Noncarcinogen		Carcinogen		Noncarcinogen					
CAS#	Analyte Name	Oral Cancer Slope Factor[a] ((CSF_o) $(mg/kg\text{-}day)^{-1}$)	Source[b]	Oral Reference Dose[a] ((RfD_o) (mg/kg-day)	Source[b]	Inhalation Unit Risk[a] (IUR) $((\mu g/m^3)^{-1})$	Source[b]	Inhalation Reference Concentration[a] (RfC) (mg/m^3)	Source[b]	Volatile[c]	RBA[d]	GIABS[e] (unitless)	ABS_d[e] (unitless)

2,3',4,4',5-Pentachlorobiphenyl (31508-00-6): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
2',3,4,4',5-Pentachlorobiphenyl (65510-44-3): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
2,3,4,4',5-Pentachlorobiphenyl (74472-37-0): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,3',4,4',5,5'-Hexachlorobiphenyl (32774-16-6): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.03 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,3',4,4',5-Pentachlorobiphenyl (57465-28-8): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.1 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,3',4,4'-Tetrachlorobiphenyl (32598-13-3): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.0001 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,4,4',5- Tetrachlorobiphenyl (70362-50-4): CPF is calculated using TCDD (1746-01-6) SFO multiplied by a TEF of 0.0003 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
Benzo(a)anthracene (56-55-3): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Benzo(a)pyrene (50-32-8): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Benzo(b)fluoranthene (205-99-2): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Benzo(k)fluoranthene (207-08-9): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [RSL value = 0.073]
Chrysene (218-01-9): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.01 per WAC 173-340-708(8)€ [RLS value = 0.0073]
Dibenz[a,h]anthracene (53-70-3): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.1 per WAC 173-340-708(8) [RSL value = 7.3]
Indeno(1,2,3-cd)pyrene (193-39-5): CPF is calculated using the benzo(a)pyrene CFO multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]

h. The following summarizes inhalation toxicity differences between the table above and the EPA Regional Screening Level Table (May 2010) and/or RAIS

2,3,3',4,4',5,5'-Heptachlorobiphenyl (39635-31-9): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3,3',4,4',5-Hexachlorobiphenyl (38380-08-4): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3,3',4,4',5'-Hexachlorobiphenyl (69782-90-7): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3,3',4,4'-Pentachlorobiphenyl (32598-14-4): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3',4,4',5,5'-Hexachlorobiphenyl (52663-72-6): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3',4,4',5-Pentachlorobiphenyl (31508-00-6): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2',3,4,4',5-Pentachlorobiphenyl (65510-44-3): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
2,3,4,4',5-Pentachlorobiphenyl (74472-37-0): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.00003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
3,3',4,4',5,5'-Hexachlorobiphenyl (32774-16-6): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.03 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,3',4,4',5-Pentachlorobiphenyl (57465-28-8): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.1 Per WAC 173-340-708(8)(f) [equivalent to RSL value]
3,3',4,4'-Tetrachlorobiphenyl (32598-13-3): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.0001 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
3,4,4',5- Tetrachlorobiphenyl (70362-50-4): CPF is calculated using TCDD (1746-01-6) IUR multiplied by a TEF of 0.0003 Per WAC 173-340-708(8)(f) [equivalent to RSL value with rounding]
Benzo(a)anthracene (56-55-3): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.1 per WAC 173-340-708(8) [equivalent to RSL value]
Benzo(a)pyrene (50-32-8): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Benzo(b)fluoranthene (205-99-2): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Benzo(k)fluoranthene (207-08-9): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Chrysene (218-01-9): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.01 per WAC 173-340-708(8)(e) [equivalent to RSL value]
Dibenz[a,h]anthracene (53-70-3): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.1 per WAC 173-340-708(8) [RSL value = 0.0012]
Indeno(1,2,3-cd)pyrene (193-39-5): CPF is calculated using the benzo(a)pyrene IUR multiplied by a TEF of 0.1 per WAC 173-340-708(8)(e) [equivalent to RSL value]

Table 9. Total and Final Outdoor Worker PRGs

CAS #	Analyte Name	Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
		Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
630-20-6	1,1,1,2-Tetrachloroethane	140	38,933	--	--	6.7	--	6.4	38,933	6.4
71-55-6	1,1,1-Trichloroethane	--	2.60E+06	--	--	--	38,819	--	38,246	38,246
79-34-5	1,1,2,2-Tetrachloroethane	18	25,956	--	--	2.1	--	1.9	25,956	1.9
79-00-5	1,1,2-Trichloroethane	64	5,191	--	--	4.1	4.7	3.8	4.7	3.8
75-34-3	1,1-Dichloroethane	638	259,556	--	--	15	--	15	259,556	15
75-35-4	1,1-Dichloroethene	--	64,889	--	--	--	1,091	--	1,073	1,073
96-18-4	1,2,3-Trichloropropane	0.12	5,191	--	--	--	13	0.12	13	0.12
95-94-3	1,2,4,5-Tetrachlorobenzene	--	389	--	--	--	--	--	389	389
120-82-1	1,2,4-Trichlorobenzene	125	12,978	--	--	--	152	125	150	125
96-12-8	1,2-Dibromo-3-chloropropane	4.5	260	--	--	0.043	18	0.042	17	0.042
106-93-4	1,2-Dibromoethane	1.8	11,680	--	--	0.16	301	0.14	293	0.14
95-50-1	1,2-Dichlorobenzene	--	116,800	--	--	--	5,808	--	5,533	5,533
107-06-2	1,2-Dichloroethane	40	7,787	--	--	1.9	125	1.8	123	1.8
540-59-0	1,2-Dichloroethene (Total)	--	11,680	--	--	--	--	--	11,680	11,680
78-87-5	1,2-Dichloropropane	101	116,800	--	--	3.4	49	3.3	49	3.3
541-73-1	1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--
106-46-7	1,4-Dichlorobenzene	673	90,844	--	--	8.1	25,321	8.0	19,802	8.0
123-91-1	1,4-Dioxane	36	38,933	--	--	114	6,128	28	5,295	28
71-36-3	1-Butanol	--	129,778	--	--	--	--	--	129,778	129,778
71-23-8	1-Propanol	--	--	--	--	--	--	--	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	--	1,298	--	3,066	--	--	--	912	912
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	0.93	30	1.6	50	14	7,060	0.56	19	0.56
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.93	30	1.6	50	5.9	3,026	0.53	19	0.53
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	0.93	30	1.6	50	6.3	3,220	0.54	19	0.54
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	0.93	30	1.6	50	3.4	1,746	0.50	19	0.50
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	0.93	30	1.6	50	9.0	4,599	0.55	19	0.55
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	0.93	30	1.6	50	6.0	3,052	0.53	19	0.53
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	0.93	30	1.6	50	4.2	2,130	0.51	19	0.51
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	0.93	30	1.6	50	3.4	1,714	0.50	19	0.50
58-90-2	2,3,4,6-Tetrachlorophenol	--	38,933	--	91,989	--	--	--	27,355	27,355
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	--	12,978	--	30,663	--	--	--	9,118	9,118
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	--	10,382	--	24,530	--	--	--	7,295	7,295
95-95-4	2,4,5-Trichlorophenol	--	129,778	--	306,629	--	--	--	91,185	91,185
88-06-2	2,4,6-Trichlorophenol	330	1,298	781	3,066	517	--	160	912	160
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	--	12,978	--	61,326	--	--	--	10,711	10,711
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	--	10,382	--	24,530	--	--	--	7,295	7,295

Table 9. Total and Final Outdoor Worker PRGs

		Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
CAS #	Analyte Name	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
120-83-2	2,4-Dichlorophenol	--	3,893	--	9,199	--	--	--	2,736	2,736
105-67-9	2,4-Dimethylphenol	--	25,956	--	61,326	--	--	--	18,237	18,237
51-28-5	2,4-Dinitrophenol	--	2,596	--	6,133	--	--	--	1,824	1,824
121-14-2	2,4-Dinitrotoluene	12	2,596	27	6,012	1.12E+07	--	8.2	1,813	8.2
606-20-2	2,6-Dinitrotoluene	2.4	389	5.8	920	--	--	1.7	274	1.7
53-96-3	2-Acetylaminofluorene	0.96	--	2.3	--	765,190	--	0.67	--	0.67
78-93-3	2-Butanone	--	778,667	--	--	--	302,787	--	218,012	218,012
111-76-2	2-Butoxyethanol	--	129,778	--	306,629	--	623,307	--	79,548	79,548
91-58-7	2-Chloronaphthalene	--	103,822	--	188,695	--	--	--	66,973	66,973
95-57-8	2-Chlorophenol	--	6,489	--	--	--	--	--	6,489	6,489
591-78-6	2-Hexanone	--	6,489	--	--	--	1,701	--	1,348	1,348
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	--	649	--	1,533	--	--	--	456	456
91-57-6	2-methylnaphthalene	--	5,191	--	9,435	--	--	--	3,349	3,349
95-48-7	2-Methylphenol (cresol, o-)	--	64,889	--	153,315	--	331,108	--	40,074	40,074
91-59-8	2-Naphthylamine	2.0	--	4.8	--	--	--	1.4	--	1.4
88-74-4	2-Nitroaniline	--	12,978	--	30,663	--	1.78E+07	--	9,114	9,114
88-75-5	2-Nitrophenol	--	--	--	--	--	--	--	--	--
108-10-1	2-Pentanone, 4-Methyl	--	--	--	--	--	139,198	--	139,198	139,198
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	9.32E-04	0.030	0.0016	0.050	0.0090	4.6	5.49E-04	0.019	5.49E-04
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	2.80E-04	0.0091	4.72E-04	0.015	0.0012	0.65	1.53E-04	0.0057	1.53E-04
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	0.28	9.1	0.47	15	261,775	1.42E+08	0.18	5.7	0.18
91-94-1	3,3'-Dichlorobenzidine	8.1	--	19	--	2.93E+06	--	5.7	--	5.7
119-93-7	3,3'-Dimethylbenzidine	0.33	--	0.78	--	--	--	0.23	--	0.23
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	0.093	3.0	0.16	5.0	0.29	148	0.049	1.9	0.049
65794-96-9	3+4 Methylphenol (cresol, m+p)	--	129,778	--	306,629	--	2.13E+11	--	91,185	91,185
56-49-5	3-Methylcholanthrene	0.17	--	0.39	--	157,896	--	0.12	--	0.12
99-09-2	3-Nitroaniline	173	389	409	920	--	3.55E+08	122	274	122
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	15	--	36	--	1.44E+07	--	11	--	11
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	11	--	--	--	162	--	10	--	10
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	11	649	84	5,110	1.03E+07	--	9.5	576	9.5
534-52-1	4,6-Dinitro-2-methylphenol	--	104	--	245	--	--	--	73	73
1918-02-1	4-Amino-3,5,6-trichloropicolinic acid	--	90,844	--	214,640	--	--	--	63,829	63,829
92-67-1	4-Aminobiphenyl	0.17	--	0.41	--	165,791	--	0.12	--	0.12
101-55-3	4-Bromophenylphenyl ether	--	--	--	--	--	--	--	--	--
59-50-7	4-Chloro-3-methylphenol	--	129,778	--	306,629	--	--	--	91,185	91,185
106-47-8	4-Chloroaniline	18	5,191	43	12,265	--	--	13	3,647	13
7005-72-3	4-Chlorophenylphenyl ether	--	--	--	--	--	--	--	--	--

Table 9. Total and Final Outdoor Worker PRGs

CAS #	Analyte Name	Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
		Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
106-44-5	4-Methylphenol (cresol, p-)	--	129,778	--	306,629	--	515,061	--	77,470	77,470
100-01-6	4-Nitroaniline	182	5,191	429	12,265	--	2.13E+09	128	3,647	128
100-02-7	4-Nitrophenol	--	--	--	--	--	--	--	--	--
99-55-8	5-Nitro-o-toluidine	404	25,956	954	61,326	--	--	284	18,237	284
83-32-9	Acenaphthene	--	77,867	--	141,521	--	--	--	50,230	50,230
208-96-8	Acenaphthylene	--	--	--	--	--	--	--	--	--
67-64-1	Acetone	--	1.17E+06	--	--	--	2.07E+06	--	746,158	746,158
75-05-8	Acetonitrile	--	--	--	--	--	3,848	--	3,848	3,848
98-86-2	Acetophenone	--	129,778	--	--	--	--	--	129,778	129,778
107-02-8	Acrolein	--	649	--	--	--	0.74	--	0.74	0.74
79-06-1	Acrylamide	7.3	2,596	17	6,133	20	4,226	4.1	1,274	4.1
107-13-1	Acrylonitrile	6.7	51,911	--	--	1.5	71	1.2	71	1.2
309-00-2	Aldrin	0.21	39	--	--	0.86	--	0.17	39	0.17
107-05-1	Allyl chloride	173	--	--	--	2.9	6.3	2.9	6.3	2.9
319-84-6	Alpha-BHC	0.58	10,382	1.4	24,530	552,637	--	0.41	7,295	0.41
5103-71-9	Alpha-Chlordane	10	649	61	3,833	83	2,083	8.0	438	8.0
7429-90-5	Aluminum	--	1.30E+06	--	--	--	1.78E+09	--	1.30E+06	1.30E+06
62-53-3	Aniline	638	9,084	1,506	21,464	695	397	272	374	272
120-12-7	Anthracene	--	389,333	--	707,606	--	--	--	251,148	251,148
7440-36-0	Antimony	--	519	--	--	--	--	--	519	519
140-57-8	Aramite	145	64,889	343	153,315	1.40E+08	--	102	45,592	102
12674-11-2	Aroclor-1016	52	91	88	153	335	--	30	57	30
11104-28-2	Aroclor-1221	1.8	--	3.1	--	2.2	--	0.76	--	0.76
11141-16-5	Aroclor-1232	1.8	--	3.1	--	1.2	--	0.59	--	0.59
53469-21-9	Aroclor-1242	1.8	--	3.1	--	6.5	--	0.97	--	0.97
12672-29-6	Aroclor-1248	1.8	--	3.1	--	6.9	--	0.98	--	0.98
11097-69-1	Aroclor-1254	1.8	26	3.1	44	9.3	--	1.0	16	1.0
11096-82-5	Aroclor-1260	1.8	--	3.1	--	22	--	1.1	--	1.1
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--	--	--
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--	--	--
7440-38-2	Arsenic	4.0	649	19	3,066	231,336	5.33E+06	3.3	536	3.3
103-33-3	Azobenzene	33	--	--	--	107	--	25	--	25
7440-39-3	Barium	--	259,556	--	--	--	1.78E+08	--	259,177	259,177
71-43-2	Benzene	66	5,191	--	--	3.1	260	3.0	248	3.0
56-55-3	Benzo(a)anthracene	5.0	--	9.0	--	629	--	3.2	--	3.2
50-32-8	Benzo(a)pyrene	0.50	--	0.90	--	904,315	--	0.32	--	0.32
205-99-2	Benzo(b)fluoranthene	5.0	--	9.0	--	9.04E+06	--	3.2	--	3.2

Table 9. Total and Final Outdoor Worker PRGs

		Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
CAS #	Analyte Name	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
191-24-2	Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--	--
207-08-9	Benzo(k)fluoranthene	5.0	--	9.0	--	9.04E+06	--	3.2	--	3.2
65-85-0	Benzoic acid	--	5.19E+06	--	1.23E+07	--	--	--	3.65E+06	3.65E+06
100-51-6	Benzyl alcohol	--	129,778	--	306,629	--	--	--	91,185	91,185
7440-41-7	Beryllium	--	2,596	--	--	414,478	7.11E+06	414,478	2,595	2,595
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	2.0	--	4.8	--	1.88E+06	--	1.4	--	1.4
108-60-1	Bis(2-chloro-1-methylethyl)ether	--	51,911	--	--	--	--	--	51,911	51,911
111-91-1	Bis(2-Chloroethoxy)methane	--	3,893	--	9,199	--	--	--	2,736	2,736
111-44-4	Bis(2-chloroethyl) ether	3.3	--	--	--	1.5	--	1.0	--	1.0
117-81-7	Bis(2-ethylhexyl) phthalate	260	25,956	613	61,326	4.14E+08	--	182	18,237	182
7440-69-9	Bismuth	--	--	--	--	--	--	--	--	--
7440-42-8	Boron	--	259,556	--	--	--	7.11E+09	--	259,546	259,546
24959-67-9	Bromide	--	--	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	59	25,956	--	--	1.4	--	1.4	25,956	1.4
75-25-2	Bromoform	460	25,956	--	--	119	--	95	25,956	95
74-83-9	Bromomethane	--	1,817	--	--	--	34	--	33	33
85-68-7	Butylbenzylphthalate	1,913	259,556	4,519	613,259	--	--	1,344	182,369	1,344
7440-43-9	Cadmium	--	1,298	--	7,666	552,637	3.55E+06	552,637	1,110	1,110
7440-70-2	Calcium	--	--	--	--	--	--	--	--	--
86-74-8	Carbazole	182	--	429	--	--	--	128	--	128
75-15-0	Carbon disulfide	--	129,778	--	--	--	3,249	--	3,170	3,170
56-23-5	Carbon tetrachloride	52	5,191	--	--	3.3	715	3.1	629	3.1
57-74-9	Chlordane	10	649	61	3,833	83	2,083	8.0	438	8.0
16887-00-6	Chloride	--	--	--	--	--	--	--	--	--
108-90-7	Chlorobenzene	--	25,956	--	--	--	775	--	753	753
510-15-6	Chlorobenzilate	33	25,956	78	61,326	3.21E+07	--	23	18,237	23
75-00-3	Chloroethane	--	--	--	--	--	57,414	--	57,414	57,414
67-66-3	Chloroform	117	12,978	--	--	1.3	1,062	1.3	982	1.3
74-87-3	Chloromethane	--	--	--	--	--	486	--	486	486
126-99-8	Chloroprene	--	25,956	--	--	0.045	96	0.045	96	0.045
7440-47-3	Chromium	--	1.95E+06	--	--	--	--	--	1.95E+06	1.95E+06
218-01-9	Chrysene	50	--	90	--	9.04E+07	--	32	--	32
156-59-2	cis-1,2-Dichloroethylene	--	2,596	--	--	--	--	--	2,596	2,596
10061-01-5	cis-1,3-Dichloropropene	36	38,933	--	--	4.2	119	3.8	119	3.8
7440-48-4	Cobalt	--	389	--	--	110,527	2.13E+06	110,527	389	389
PCB1242/1016	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--	--	--
7440-50-8	Copper	--	51,911	--	--	--	--	--	51,911	51,911

Table 9. Total and Final Outdoor Worker PRGs

CAS #	Analyte Name	Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
		Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
57-12-5	Cyanide	--	779	--	--	--	233	--	180	180
110-82-7	Cyclohexane	--	--	--	--	--	27,783	--	27,783	27,783
108-94-1	Cyclohexanone	--	6.49E+06	--	--	--	121,055	--	118,838	118,838
75-99-0	Dalapon	--	38,933	--	91,989	--	--	--	27,355	27,355
124-18-5	Decane	--	--	--	--	--	--	--	--	--
319-86-8	Delta-BHC	--	--	--	--	--	--	--	--	--
2303-16-4	Diallate	60	--	141	--	--	--	42	--	42
53-70-3	Dibenz[a,h]anthracene	5.0	--	9.0	--	9.04E+06	--	3.2	--	3.2
132-64-9	Dibenzofuran	--	1,298	--	10,221	--	--	--	1,152	1,152
124-48-1	Dibromochloromethane	43	25,956	--	--	--	--	43	25,956	43
74-95-3	Dibromomethane	--	--	--	--	--	91	--	91	91
1918-00-9	Dicamba	--	38,933	--	91,989	--	--	--	27,355	27,355
75-71-8	Dichlorodifluoromethane	--	259,556	--	--	--	443	--	442	442
120-36-5	Dichloroprop	--	--	--	--	--	--	--	--	--
60-57-1	Dieldrin	0.23	65	0.54	153	216,249	--	0.16	46	0.16
60-29-7	Diethyl ether	--	259,556	--	--	--	--	--	259,556	259,556
84-66-2	Diethylphthalate	--	1.04E+06	--	2.45E+06	--	--	--	729,478	729,478
60-51-5	Dimethoate	--	260	--	613	--	--	--	182	182
131-11-3	Dimethyl phthalate	--	--	--	--	--	--	--	--	--
84-74-2	Di-n-butylphthalate	--	129,778	--	306,629	--	--	--	91,185	91,185
117-84-0	Di-n-octylphthalate	--	12,978	--	30,663	--	--	--	9,118	9,118
88-85-7	Dinoseb(2-secButyl-4,6-dinitrophenol)	--	1,298	--	3,066	--	--	--	912	912
298-04-4	Disulfoton	--	52	--	123	--	--	--	36	36
959-98-8	Endosulfan I	--	7,787	--	--	--	--	--	7,787	7,787
33213-65-9	Endosulfan II	--	7,787	--	--	--	--	--	7,787	7,787
1031-07-8	Endosulfan sulfate	--	--	--	--	--	--	--	--	--
72-20-8	Endrin	--	389	--	920	--	--	--	274	274
7421-93-4	Endrin Aldehyde	--	--	--	--	--	--	--	--	--
53494-70-5	Endrin ketone	--	--	--	--	--	--	--	--	--
64-17-5	Ethanol	--	--	--	--	--	--	--	--	--
141-78-6	Ethyl acetate	--	1.17E+06	--	--	--	2,939	--	2,932	2,932
97-63-2	Ethyl methacrylate	--	--	--	--	--	7,293	--	7,293	7,293
100-41-4	Ethylbenzene	330	129,778	--	--	12	11,110	12	10,234	12
107-21-1	Ethylene glycol	--	2.60E+06	--	6.13E+06	--	251,670	--	221,151	221,151
206-44-0	Fluoranthene	--	51,911	--	94,347	--	--	--	33,486	33,486
86-73-7	Fluorene	--	51,911	--	94,347	--	--	--	33,486	33,486
16984-48-8	Fluoride	--	77,867	--	--	--	4.62E+09	--	77,865	77,865

Table 9. Total and Final Outdoor Worker PRGs

		Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
CAS #	Analyte Name	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
58-89-9	Gamma-BHC (Lindane)	3.3	389	20	2,300	3.21E+06	–	2.8	333	2.8
5566-34-7	Gamma-Chlordane	10	649	61	3,833	83	2,083	8.0	438	8.0
76-44-8	Heptachlor	0.81	649	–	–	0.58	–	0.34	649	0.34
1024-57-3	Heptachlor epoxide	0.40	17	–	–	8.5	–	0.38	17	0.38
118-74-1	Hexachlorobenzene	2.3	1,038	–	–	3.8	–	1.4	1,038	1.4
87-68-3	Hexachlorobutadiene	47	1,298	–	–	27	–	17	1,298	17
77-47-4	Hexachlorocyclopentadiene	–	7,787	–	–	–	45	–	44	44
67-72-1	Hexachloroethane	91	908	–	–	13	1,587	12	578	12
70-30-4	Hexachlorophene	–	389	–	920	–	–	–	274	274
110-54-3	Hexane	–	–	–	–	–	3,444	–	3,444	3,444
18540-29-9	Hexavalent Chromium	–	3,893	–	–	11,842	3.55E+07	11,842	3,893	3,893
302-01-2	Hydrazine	1.2	–	–	–	0.21	11	0.18	11	0.18
193-39-5	Indeno(1,2,3-cd)pyrene	5.0	–	9.0	–	9.04E+06	–	3.2	–	3.2
7439-89-6	Iron	–	908,444	–	–	–	–	–	908,444	908,444
78-83-1	Isobutyl alcohol	–	389,333	–	–	–	–	–	389,333	389,333
78-59-1	Isophorone	3,825	259,556	9,037	613,259	–	537,865	2,688	[illegible]	[illegible]
98-82-8	Isopropylbenzene	–	129,778	–	–	–	6,116	–	5,841	5,841
143-50-0	Kepone	0.36	389	0.86	920	216,249	–	0.26	274	0.26
7439-92-1	Lead	–	–	–	–	–	–	–	–	–
7439-93-2	Lithium	–	2,596	–	–	–	–	–	2,596	2,596
7439-95-4	Magnesium	–	–	–	–	–	–	–	–	–
7439-96-5	Manganese	–	181,689	–	–	–	1.78E+07	–	179,849	179,849
99-65-0	m-Dinitrobenzene	–	130	–	307	–	–	–	91	91
7439-97-6	Mercury	–	389	–	–	–	1.07E+08	–	389	389
126-98-7	Methacrylonitrile	–	130	–	–	–	891	–	113	113
67-56-1	Methanol	–	2.60E+06	–	–	–	3.10E+06	–	1.41E+06	1.41E+06
72-43-5	Methoxychlor	–	6,489	–	15,331	–	–	–	4,559	4,559
80-62-6	Methyl methacrylate	–	1.82E+06	–	–	–	20,427	–	[illegible]	20,199
66-27-3	Methyl methanesulfonate	37	–	87	–	3.55E+07	–	26	–	26
298-00-0	Methyl parathion	–	324	–	767	–	–	–	228	228
75-09-2	Methylene chloride	1,817	7,787	–	–	2,880	6,171	1,114	3,443	1,114
7439-98-7	Molybdenum	–	6,489	–	–	–	–	–	6,489	6,489
108-38-3	m-Xylene	–	259,556	–	–	–	1,132	–	1,127	1,127
91-20-3	Naphthalene	–	25,956	–	47,174	7.4	270	7.4	265	7.4
104-51-8	n-Butylbenzene	–	64,889	–	–	–	–	–	64,889	64,889
7440-02-0	Nickel	–	25,956	–	–	3.83E+06	3.20E+07	3.83E+06	25,935	25,935
14797-55-8	Nitrate	–	9.21E+06	–	–	–	–	–	9.21E+06	9.21E+06

Table 9. Total and Final Outdoor Worker PRGs

CAS #	Analyte Name	Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
		Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
14797-65-0	Nitrite	--	428,267	--	--	--	--	--	428,267	428,267
98-95-3	Nitrobenzene	--	2,596	--	--	11	1,396	11	908	11
NO3-N	Nitrogen in Nitrate	--	2.08E+06	--	--	--	--	--	2.08E+06	2.08E+06
NO2-N	Nitrogen in Nitrite	--	129,778	--	--	--	--	--	129,778	129,778
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	2.08E+06	--	--	--	--	--	2.08E+06	2.08E+06
930-55-2	Nitrosopyrrolidine	1.7	--	4.1	--	4.7	--	0.97	--	0.97
55-18-5	n-Nitrosodiethylamine	0.024	--	0.057	--	0.022	--	0.0096	--	0.0096
62-75-9	n-Nitrosodimethylamine	0.071	10	--	--	0.065	13	0.034	5.8	0.034
924-16-3	n-Nitrosodi-n-butylamine	0.67	--	--	--	0.99	--	0.40	--	0.40
621-64-7	n-Nitrosodi-n-dipropylamine	0.52	--	1.2	--	497,373	--	0.36	--	0.36
86-30-6	n-Nitrosodiphenylamine	742	--	1,752	--	3.83E+08	--	521	--	521
10595-95-6	n-Nitrosomethylethylamine	0.17	--	--	--	0.19	--	0.087	--	0.087
59-89-2	n-Nitrosomorpholine	0.54	--	1.3	--	523,551	--	0.38	--	0.38
100-75-4	n-Nitrosopiperidine	0.39	--	0.91	--	368,425	--	0.27	--	0.27
95-47-6	o-Xylene	--	259,556	--	--	--	1,393	--	1,386	1,386
56-38-2	Parathion	--	7,787	--	18,398	--	--	--	5,471	5,471
60-11-7	p-Dimethylaminoazobenzene	0.79	--	1.9	--	765,190	--	0.56	--	0.56
608-93-5	Pentachlorobenzene	--	1,038	--	--	--	--	--	1,038	1,038
76-01-7	Pentachloroethane	40	--	--	--	--	--	40	--	40
82-68-8	Pentachloronitrobenzene (PCNB)	14	3,893	--	--	--	--	14	3,893	14
87-86-5	Pentachlorophenol	9.1	6,489	8.6	6,133	1.95E+08	--	4.4	3,153	4.4
62-44-2	Phenacetin	1,652	--	3,903	--	1.58E+09	--	1,161	--	1,161
85-01-8	Phenanthrene	--	--	--	--	--	--	--	--	--
108-95-2	Phenol	--	389,333	--	919,888	--	122,023	--	84,383	84,383
298-02-2	Phorate	--	260	--	613	--	--	--	182	182
14265-44-2	Phosphate	--	--	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--	--	--
7440-09-7	Potassium	--	--	--	--	--	--	--	--	--
106-50-3	p-Phenylenediamine	--	246,578	--	582,596	--	--	--	173,251	173,251
23950-58-5	Pronamide	--	97,333	--	229,972	--	--	--	68,389	68,389
129-00-0	Pyrene	--	38,933	--	70,761	--	--	--	25,115	25,115
110-86-1	Pyridine	--	1,298	--	--	--	--	--	1,298	1,298
94-59-7	Safrol	17	--	39	--	1.58E+07	--	12	--	12
7782-49-2	Selenium	--	6,489	--	--	--	7.11E+09	--	6,489	6,489
7440-21-3	Silicon	--	--	--	--	--	--	--	--	--
7440-22-4	Silver	--	6,489	--	--	--	--	--	6,489	6,489

Table 9. Total and Final Outdoor Worker PRGs

CAS #	Analyte Name	Preliminary Remediation Goals – Ingestion		Preliminary Remediation Goals – Dermal		Preliminary Remediation Goals – Inhalation		Preliminary Remediation Goals – Totals and Final		
		Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)	Final (mg/kg)
7440-23-5	Sodium	--	--	--	--	--	--	--	--	--
7440-24-6	Strontium	--	778,667	--	--	--	--	--	778,667	778,667
100-42-5	Styrene	--	259,556	--	--	--	31,003	--	27,695	27,695
14808-79-8	Sulfate	--	--	--	--	--	--	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--	--	--
99-35-4	sym-Trinitrobenzene	--	38,933	--	484,151	--	--	--	36,036	36,036
127-18-4	Tetrachloroethene	1,790	7,787	--	--	108	399	101	380	101
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	--	649	--	1,533	--	--	--	456	456
7440-28-0	Thallium	--	--	--	--	--	--	--	--	--
7440-31-5	Tin	--	778,667	--	--	--	--	--	778,667	778,667
7440-32-6	Titanium	--	--	--	--	--	--	--	--	--
108-88-3	Toluene	--	103,822	--	--	--	50,735	--	34,081	34,081
1336-36-3	Total PCBs	1.8	--	3.1	--	12	--	1.0	--	1.0
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--	--	--
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--	--	--
TPHGASOLINE	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--	--	--
TPHKEROSENE	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--	--	--
TPH/OILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	1.8	--	3.1	--	12	--	1.0	--	1.0
8001-35-2	Toxaphene	3.3	--	7.8	--	3.11E+06	--	2.3	--	2.3
156-60-5	trans-1,2-Dichloroethylene	--	25,956	--	--	--	--	--	25,956	25,956
10061-02-6	trans-1,3-Dichloropropene	36	38,933	--	--	4.2	119	3.8	119	3.8
5103-74-2	trans-Chlordane	10	649	61	3,833	83	2,083	8.0	438	8.0
126-73-8	Tributyl phosphate	404	12,978	954	30,663	--	--	284	9,118	284
79-01-6	Trichloroethene	79	649	--	--	5.7	17	5.4	16	5.4
75-69-4	Trichloromonofluoromethane	--	389,333	--	--	--	--	--	389,333	389,333
7440-61-1	Uranium	--	3,893	--	--	--	1.42E+07	--	3,892	3,892
7440-62-2	Vanadium	--	6,489	--	--	--	3.55E+07	--	6,488	6,488
108-05-4	Vinyl acetate	--	1.30E+06	--	--	--	4,279	--	4,264	4,264
75-01-4	Vinyl chloride	5.0	3,893	--	--	2.9	455	1.8	407	1.8
1330-20-7	Xylenes (total)	--	259,556	--	--	--	1,228	--	1,223	1,223
7440-66-6	Zinc	--	389,333	--	--	--	--	--	389,333	389,333
7440-67-7	Zirconium	--	--	--	--	--	--	--	--	--

Appendix A

Worksheets Used to Calculate Nonradiological PRGs for the Outdoor Worker Exposure Scenario

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Appendix A; Table A-1: Calculation of Outoor Worker PRGs for Soil Ingestion

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) (mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
630-20-6	1,1,1,2-Tetrachloroethane	0.026	I	0.030	I	1.0	140	38,933
71-55-6	1,1,1-Trichloroethane	--	--	2.0	I	1.0	--	2.60E+06
79-34-5	1,1,2,2-Tetrachloroethane	0.20	I	0.020	I	1.0	18	25,956
79-00-5	1,1,2-Trichloroethane	0.057	I	0.0040	I	1.0	64	5,191
75-34-3	1,1-Dichloroethane	0.0057	C	0.20	P	1.0	638	259,556
75-35-4	1,1-Dichloroethene	--	--	0.050	I	1.0	--	64,889
96-18-4	1,2,3-Trichloropropane	30	I	0.0040	I	1.0	0.12	5,191
95-94-3	1,2,4,5-Tetrachlorobenzene	--	--	3.00E-04	I	1.0	--	389
120-82-1	1,2,4-Trichlorobenzene	0.029	P	0.010	I	1.0	125	12,978
96-12-8	1,2-Dibromo-3-chloropropane	0.80	P	2.00E-04	P	1.0	4.5	260
106-93-4	1,2-Dibromoethane	2.0	I	0.0090	I	1.0	1.8	11,680
95-50-1	1,2-Dichlorobenzene	--	--	0.090	I	1.0	--	116,800
107-06-2	1,2-Dichloroethane	0.091	I	0.0060	X	1.0	40	7,787
540-59-0	1,2-Dichloroethene (Total)	--	--	0.0090	H	1.0	--	11,680
78-87-5	1,2-Dichloropropane	0.036	C	0.090	A	1.0	101	116,800
541-73-1	1,3-Dichlorobenzene	--	--	--	--	--	--	--
106-46-7	1,4-Dichlorobenzene	0.0054	C	0.070	A	1.0	673	90,844
123-91-1	1,4-Dioxane	0.10	I	0.030	I	1.0	36	38,933
71-36-3	1-Butanol	--	--	0.10	I	1.0	--	129,778
71-23-8	1-Propanol	--	--	--	--	--	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	--	--	0.0010	I	1.0	--	1,298
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
58-90-2	2,3,4,6-Tetrachlorophenol	--	--	0.030	I	1.0	--	38,933
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	--	--	0.010	I	1.0	--	12,978
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	--	--	0.0080	I	1.0	--	10,382
95-95-4	2,4,5-Trichlorophenol	--	--	0.10	I	1.0	--	129,778
88-06-2	2,4,6-Trichlorophenol	0.011	I	0.0010	P	1.0	330	1,298
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	--	--	0.010	I	1.0	--	12,978
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	--	--	0.0080	I	1.0	--	10,382
120-83-2	2,4-Dichlorophenol	--	--	0.0030	I	1.0	--	3,893
105-67-9	2,4-Dimethylphenol	--	--	0.020	I	1.0	--	25,956
51-28-5	2,4-Dinitrophenol	--	--	0.0020	I	1.0	--	2,596
121-14-2	2,4-Dinitrotoluene	0.31	C	0.0020	I	1.0	12	2,596
606-20-2	2,6-Dinitrotoluene	1.5	P	3.00E-04	X	1.0	2.4	389
53-96-3	2-Acetylaminofluorene	3.8	C	--	--	1.0	0.96	--
78-93-3	2-Butanone	--	--	0.60	I	1.0	--	778,667
111-76-2	2-Butoxyethanol	--	--	0.10	I	1.0	--	129,778
91-58-7	2-Chloronaphthalene	--	--	0.080	I	1.0	--	103,822
95-57-8	2-Chlorophenol	--	--	0.0050	I	1.0	--	6,489
591-78-6	2-Hexanone	--	--	0.0050	I	1.0	--	6,489
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	--	--	5.00E-04	I	1.0	--	649
91-57-6	2-methylnaphthalene	--	--	0.0040	I	1.0	--	5,191
95-48-7	2-Methylphenol (cresol, o-)	--	--	0.050	I	1.0	--	64,889
91-59-8	2-Naphthylamine	1.8	C	--	--	1.0	2.0	--
88-74-4	2-Nitroaniline	--	--	0.010	X	1.0	--	12,978
88-75-5	2-Nitrophenol	--	--	--	--	--	--	--
108-10-1	2-Pentanone, 4-Methyl	--	--	--	--	1.0	--	--
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	3.900	WAC	2.30E-08	E	1.0	9.32E-04	0.030
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	13.000	WAC	7.00E-09	E	1.0	2.80E-04	0.0091
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	13	WAC	7.00E-06	E	1.0	0.28	9.1
91-94-1	3,3'-Dichlorobenzidine	0.45	I	--	--	1.0	8.1	--
119-93-7	3,3'-Dimethylbenzidine	11	P	--	--	1.0	0.33	--
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	39	WAC	2.30E-06	E	1.0	0.093	3.0
65794-96-9	3+4 Methylphenol (cresol, m+p)	--	--	0.10	A	1.0	--	129,778

Appendix A; Table A-1: Calculation of Outoor Worker PRGs for Soil Ingestion

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) (mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
56-49-5	3-Methylcholanthrene	22	C	--	--	1.0	0.17	--
99-09-2	3-Nitroaniline	0.021	PPRTV Archive	3.00E-04	PPRTV Archive	1.0	173	389
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	0.24	I	--	--	1.0	15	--
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	0.34	I	--	--	1.0	11	--
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	0.34	I	5.00E-04	I	1.0	11	649
534-52-1	4,6-Dinitro-2-methylphenol	--	--	8.00E-05	X	1.0	--	104
1918-02-1	4-Amino-3,5,6-trichloropicolinic acid	--	--	0.070	I	1.0	--	90,844
92-67-1	4-Aminobiphenyl	21	C	--	--	1.0	0.17	--
101-55-3	4-Bromophenylphenyl ether	--	--	--	--	--	--	--
59-50-7	4-Chloro-3-methylphenol	--	--	0.10	A	1.0	--	129,778
106-47-8	4-Chloroaniline	0.20	P	0.0040	I	1.0	18	5,191
7005-72-3	4-Chlorophenylphenyl ether	--	--	--	--	--	--	--
106-44-5	4-Methylphenol (cresol, p-)	--	--	0.10	A	1.0	--	129,778
100-01-6	4-Nitroaniline	0.020	P	0.0040	P	1.0	182	5,191
100-02-7	4-Nitrophenol	--	--	--	--	--	--	--
99-55-8	5-Nitro-o-toluidine	0.0090	P	0.020	X	1.0	404	25,956
83-32-9	Acenaphthene	--	--	0.060	I	1.0	--	77,867
208-96-8	Acenaphthylene	--	--	--	--	--	--	--
67-64-1	Acetone	--	--	0.90	I	1.0	--	1.17E+06
75-05-8	Acetonitrile	--	--	--	--	1.0	--	--
98-86-2	Acetophenone	--	--	0.10	I	1.0	--	129,778
107-02-8	Acrolein	--	--	5.00E-04	I	1.0	--	649
79-06-1	Acrylamide	0.50	I	0.0020	I	1.0	7.3	2,596
107-13-1	Acrylonitrile	0.54	I	0.040	A	1.0	6.7	51,911
309-00-2	Aldrin	17	I	3.00E-05	I	1.0	0.21	39
107-05-1	Allyl chloride	0.021	C	--	--	1.0	173	--
319-84-6	Alpha-BHC	6.3	I	0.0080	A	1.0	0.58	10,382
5103-71-9	Alpha-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
7429-90-5	Aluminum	--	--	1.0	P	1.0	--	1.30E+06
62-53-3	Aniline	0.0057	I	0.0070	P	1.0	638	9,084
120-12-7	Anthracene	--	--	0.30	I	1.0	--	389,333
7440-36-0	Antimony	--	--	4.00E-04	I	1.0	--	0,519
140-57-8	Aramite	0.026	I	0.050	H	1.0	145	64,889
12674-11-2	Aroclor-1016	0.070	S	7.00E-05	I	1.0	52	91
11104-28-2	Aroclor-1221	2.0	S	--	--	1.0	1.8	--
11141-16-5	Aroclor-1232	2.0	S	--	--	1.0	1.8	--
53469-21-9	Aroclor-1242	2.0	S	--	--	1.0	1.8	--
12672-29-6	Aroclor-1248	2.0	S	--	--	1.0	1.8	--
11097-69-1	Aroclor-1254	2.0	S	2.00E-05	I	1.0	1.8	26
11096-82-5	Aroclor-1260	2.0	S	--	--	1.0	1.8	--
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--
7440-38-2	Arsenic	1.5	I	3.00E-04	I	0.6	4.0	649
103-33-3	Azobenzene	0.11	I	--	--	1.0	33	--
7440-39-3	Barium	--	--	0.20	I	1.0	--	2.60E+05
71-43-2	Benzene	0.055	I	0.0040	I	1.0	66	5,191
56-55-3	Benzo(a)anthracene	0.73	WAC	--	--	1.0	5.0	--
50-32-8	Benzo(a)pyrene	7.3	WAC	--	--	1.0	0.50	--
205-99-2	Benzo(b)fluoranthene	0.73	WAC	--	--	1.0	5.0	--
191-24-2	Benzo(g,h,i)perylene	--	--	--	--	--	--	--
207-08-9	Benzo(k)fluoranthene	0.730	WAC	--	--	1.0	5	--
65-85-0	Benzoic acid	--	--	4.0	I	1.0	--	5.19E+06
100-51-6	Benzyl alcohol	--	--	0.10	P	1.0	--	129,778
7440-41-7	Beryllium	--	--	0.0020	I	1.0	--	2,596
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	1.8	I	--	--	1.0	2.0	--
108-60-1	Bis(2-chloro-1-methylethyl)ether	--	--	0.040	I	1.0	--	51,911
111-91-1	Bis(2-Chloroethoxy)methane	--	--	0.0030	P	1.0	--	3,893
111-44-4	Bis(2-chloroethyl) ether	1.1	I	--	--	1.0	3.3	--
117-81-7	Bis(2-ethylhexyl) phthalate	0.014	I	0.020	I	1.0	260	25,956
7440-69-9	Bismuth	--	--	--	--	--	--	--
7440-42-8	Boron	--	--	0.20	I	1.0	--	259,556

Appendix A; Table A-1: Calculation of Outoor Worker PRGs for Soil Ingestion

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) (mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
24959-67-9	Bromide	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	0.062	I	0.020	I	1.0	59	25,956
75-25-2	Bromoform	0.0079	I	0.020	I	1.0	460	25,956
74-83-9	Bromomethane	--	--	0.0014	I	1.0	--	1,817
85-68-7	Butylbenzylphthalate	0.0019	P	0.20	I	1.0	1,913	259,556
7440-43-9	Cadmium	--	--	0.0010	I	1.0	--	1,298
7440-70-2	Calcium	--	--	--	--	--	--	--
86-74-8	Carbazole	0.020	H	--	--	1.0	182	--
75-15-0	Carbon disulfide	--	--	0.10	I	1.0	--	129,778
56-23-5	Carbon tetrachloride	0.070	I	0.0040	I	1.0	52	5,191
57-74-9	Chlordane	0.35	I	5.00E-04	I	1.0	10	649
16887-00-6	Chloride	--	--	--	--	--	--	--
108-90-7	Chlorobenzene	--	--	0.020	I	1.0	--	25,956
510-15-6	Chlorobenzilate	0.11	C	0.020	I	1.0	33	25,956
75-00-3	Chloroethane	--	--	--	--	1.0	--	--
67-66-3	Chloroform	0.031	C	0.010	I	1.0	117	12,978
74-87-3	Chloromethane	--	--	--	--	1.0	--	--
126-99-8	Chloroprene	--	--	0.020	H	1.0	--	25,956
7440-47-3	Chromium	--	--	1.5	I	1.0	--	1.95E+06
218-01-9	Chrysene	0.0730	WAC	--	--	1.0	50	--
156-59-2	cis-1,2-Dichloroethylene	--	--	0.0020	I	1.0	--	2,596
10061-01-5	cis-1,3-Dichloropropene	0.10	I	0.030	I	1.0	36	38,933
7440-48-4	Cobelt	--	--	3.00E-04	P	1.0	--	389
CB1242/101	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--
7440-50-8	Copper	--	--	0.040	H	1.0	--	51,911
57-12-5	Cyanide	--	--	6.00E-04	I	1.0	--	779
110-82-7	Cyclohexane	--	--	--	--	1.0	--	--
108-94-1	Cyclohexanone	--	--	5.0	I	1.0	--	6.49E+06
75-99-0	Dalapon	--	--	0.030	I	1.0	--	38,933
124-18-5	Decane	--	--	--	--	--	--	--
319-86-8	Delta-BHC	--	--	--	--	--	--	--
2303-16-4	Diallate	0.061	H	--	--	1.0	60	--
53-70-3	Dibenz[a,h]anthracene	0.7	WAC	--	--	1.0	4.98	--
132-64-9	Dibenzofuran	--	--	0.0010	X	1.0	--	1,298
124-48-1	Dibromochloromethane	0.084	I	0.020	I	1.0	43	25,956
74-95-3	Dibromomethane	--	--	--	--	1.0	--	--
1918-00-9	Dicamba	--	--	0.030	I	1.0	--	38,933
75-71-8	Dichlorodifluoromethane	--	--	0.20	I	1.0	--	259,556
120-36-5	Dichloroprop	--	--	--	--	--	--	--
60-57-1	Dieldrin	16	I	5.00E-05	I	1.0	0.23	65
60-29-7	Diethyl ether	--	--	0.20	I	1.0	--	259,556
84-66-2	Diethylphthalate	--	--	0.80	I	1.0	--	1.04E+06
60-51-5	Dimethoate	--	--	2.00E-04	I	1.0	--	260
131-11-3	Dimethyl phthalate	--	--	--	--	--	--	--
84-74-2	Di-n-butylphthalate	--	--	0.10	I	1.0	--	129,778
117-84-0	Di-n-octylphthalate	--	--	0.010	P	1.0	--	12,978
88-85-7	Dinoseb(2-secB-utyl-4,6-dinitrophenol)	--	--	0.0010	I	1.0	--	1,298
298-04-4	Disulfoton	--	--	4.00E-05	I	1.0	--	52
959-98-8	Endosulfan I	--	--	0.0060	I	1.0	--	7,787
33213-65-9	Endosulfan II	--	--	0.0060	I	1.0	--	7,787
1031-07-8	Endosulfain sulfate	--	--	--	--	--	--	--
72-20-8	Endrin	--	--	3.00E-04	I	1.0	--	389
7421-93-4	Endrin Aldehyde	--	--	--	--	--	--	--
53494-70-5	Endrin ketone	--	--	--	--	--	--	--
64-17-5	Ethanol	--	--	--	--	--	--	--
141-78-6	Ethyl acetate	--	--	0.90	I	1.0	--	1.17E+06
97-63-2	Ethyl methacrylate	--	--	--	--	1.0	--	--
100-41-4	Ethylbenzene	0.011	C	0.10	I	1.0	330	129,778
107-21-1	Ethylene glycol	--	--	2.0	I	1.0	--	2.60E+06
206-44-0	Fluoranthene	--	--	0.040	I	1.0	--	51,911
86-73-7	Fluorene	--	--	0.040	I	1.0	--	51,911

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		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) (mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
16984-48-8	Fluoride	--	--	0.060	I	1.0	--	77,867
58-89-9	Gamma-BHC (Lindane)	1.1	C	3.00E-04	I	1.0	3.3	389
5566-34-7	Gamma-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
76-44-8	Heptachlor	4.5	I	5.00E-04	I	1.0	0.81	649
1024-57-3	Heptachlor epoxide	9.1	I	1.30E-05	I	1.0	0.40	17
118-74-1	Hexachlorobenzene	1.6	I	8.00E-04	I	1.0	2.3	1,038
87-68-3	Hexachlorobutadiene	0.078	I	0.0010	P	1.0	47	1,298
77-47-4	Hexachlorocyclopentadiene	--	--	0.0060	I	1.0	--	7,787
67-72-1	Hexachloroethane	0.040	I	7.00E-04	I	1.0	91	908
70-30-4	Hexachlorophene	--	--	3.00E-04	I	1.0	--	389
110-54-3	Hexane	--	--	--	--	1.0	--	--
18540-29-9	Hexavalent Chromium	--	--	0.0030	I	1.0	--	3,893
302-01-2	Hydrazine	3.0	I	--	--	1.0	1.2	--
193-39-5	Indeno(1,2,3-cd)pyrene	0.73	WAC	--	--	1.0	5.0	--
7439-89-6	Iron	--	--	0.70	P	1.0	--	908,444
78-83-1	Isobutyl alcohol	--	--	0.30	I	1.0	--	389,333
78-59-1	Isophorone	9.50E-04	I	0.20	I	1.0	3,825	259,556
98-82-8	Isopropylbenzene	--	--	0.10	I	1.0	--	129,778
143-50-0	Kepone	10	I	3.00E-04	I	1.0	0.36	389
7439-92-1	Lead	--	--	--	--	0.6	--	--
7439-93-2	Lithium	--	--	0.0020	P	1.0	--	2,596
7439-95-4	Magnesium	--	--	--	--	--	--	--
7439-96-5	Manganese	--	--	0.14	I	1.0	--	181,689
99-65-0	m-Dinitrobenzene	--	--	1.00E-04	I	1.0	--	130
7439-97-6	Mercury	--	--	3.00E-04	I	1.0	--	0,389
126-98-7	Methacrylonitrile	--	--	1.00E-04	I	1.0	--	130
67-56-1	Methanol	--	--	2.0	I	1.0	--	2.60E+06
72-43-5	Methoxychlor	--	--	0.0050	I	1.0	--	6,489
80-62-6	Methyl methacrylate	--	--	1.4	I	1.0	--	1.82E+06
66-27-3	Methyl methanesulfonate	0.099	C	--	--	1.0	37	--
298-00-0	Methyl parathion	--	--	2.50E-04	I	1.0	--	324
75-09-2	Methylene chloride	0.0020	I	0.0060	I	1.0	1,817	7,787
7439-98-7	Molybdenum	--	--	0.0050	I	1.0	--	6,489
108-38-3	m-Xylene	--	--	0.20	S	1.0	--	259,556
91-20-3	Naphthalene	--	--	0.020	I	1.0	--	25,956
104-51-8	n-Butylbenzene	--	--	0.050	P	1.0	--	64,889
7440-02-0	Nickel	--	--	0.020	I	1.0	--	25,956
14797-55-8	Nitrate	--	--	7.1	I	1.0	--	9.21E+06
14797-65-0	Nitrite	--	--	0.33	I	1.0	--	428,267
98-95-3	Nitrobenzene	--	--	0.0020	I	1.0	--	2,596
NO3-N	Nitrogen in Nitrate	--	--	1.6	I	1.0	--	2.08E+06
NO2-N	Nitrogen in Nitrite	--	--	0.10	I	1.0	--	129,778
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	--	1.6	I	1.0	--	2.08E+06
930-55-2	Nitrosopyrrolidine	2.1	I	--	--	1.0	1.7	--
55-18-5	n-Nitrosodiethylamine	150	I	--	--	1.0	0.024	--
62-75-9	n-Nitrosodimethylamine	51	I	8.00E-06	P	1.0	0.071	10
924-16-3	n-Nitrosodi-n-butylamine	5.4	I	--	--	1.0	0.67	--
621-64-7	n-Nitrosodi-n-dipropylamine	7.0	I	--	--	1.0	0.52	--
86-30-6	n-Nitrosodiphenylamine	0.0049	I	--	--	1.0	742	--
10595-95-6	n-Nitrosomethylethylamine	22	I	--	--	1.0	0.17	--
59-89-2	n-Nitrosomorpholine	6.7	C	--	--	1.0	0.54	--
100-75-4	n-Nitrosopiperidine	9.4	C	--	--	1.0	0.39	--
95-47-6	o-Xylene	--	--	0.20	S	1.0	--	259,556
56-38-2	Parathion	--	--	0.0060	H	1.0	--	7,787
60-11-7	p-Dimethylaminoazobenzene	4.6	C	--	--	1.0	0.79	--
608-93-5	Pentachlorobenzene	--	--	8.00E-04	I	1.0	--	1,038
76-01-7	Pentachloroethane	0.090	P	--	--	1.0	40	--
82-68-8	Pentachloronitrobenzene (PCNB)	0.26	H	0.0030	I	1.0	14	3,893
87-86-5	Pentachlorophenol	0.40	I	0.0050	I	1.0	9.1	6,489
62-44-2	Phenacetin	0.0022	C	--	--	1.0	1,652	--
85-01-8	Phenanthrene	--	--	--	--	--	--	--

Appendix A; Table A-1: Calculation of Outoor Worker PRGs for Soil Ingestion

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) ((mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
108-95-2	Phenol	--	--	0.30	I	1.0	--	389,333
298-02-2	Phorate	--	--	2.00E-04	H	1.0	--	260
14265-44-2	Phosphate	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--
7440-09-7	Potassium	--	--	--	--	--	--	--
106-50-3	p-Phenylenediamine	--	--	0.19	H	1.0	--	246,578
23950-58-5	Pronamide	--	--	0.075	I	1.0	--	97,333
129-00-0	Pyrene	--	--	0.030	I	1.0	--	38,933
110-86-1	Pyridine	--	--	0.0010	I	1.0	--	1,298
94-59-7	Safrol	0.22	C	--	--	1.0	17	--
7782-49-2	Selenium	--	--	0.0050	I	1.0	--	6,489
7440-21-3	Silicon	--	--	--	--	--	--	--
7440-22-4	Silver	--	--	0.0050	I	1.0	--	6,489
7440-23-5	Sodium	--	--	--	--	--	--	--
7440-24-6	Strontium	--	--	0.60	I	1.0	--	778,667
100-42-5	Styrene	--	--	0.20	I	1.0	--	259,556
14808-79-8	Sulfate	--	--	--	--	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--
99-35-4	sym-Trinitrobenzene	--	--	0.030	I	1.0	--	38,933
127-18-4	Tetrachloroethene	0.0021	I	0.0060	I	1.0	1,730	7,787
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	--	--	5.00E-04	I	1.0	--	649
7440-28-0	Thallium	--	--	--	--	--	--	--
7440-31-5	Tin	--	--	0.60	H	1.0	--	778,667
7440-32-6	Titanium	--	--	--	--	--	--	--
108-88-3	Toluene	--	--	0.080	I	1.0	--	103,822
1336-36-3	Total PCBs	2.0	I	--	--	1.0	1.8	--
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--
PHGASOLIN	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--
PHKEROSEN	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--
TPH/OILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	2.0	I	--	--	1.0	1.8	--
8001-35-2	Toxaphene	1.1	I	--	--	1.0	3.3	--
156-60-5	trans-1,2-Dichloroethylene	--	--	0.020	I	1.0	--	25,956
10061-02-6	trans-1,3-Dichloropropene	0.10	I	0.030	I	1.0	36	38,933
5103-74-2	trans-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
126-73-8	Tributyl phosphate	0.0090	P	0.010	P	1.0	404	12,978
79-01-6	Trichloroethene	0.046	I	5.00E-04	I	1.0	79	649
75-69-4	Trichloromonofluoromethane	--	--	0.30	I	1.0	--	389,333
7440-61-1	Uranium	--	--	0.0030	I	1.0	--	3,893
7440-62-2	Vanadium	--	--	0.0050	S	1.0	--	6,489
108-05-4	Vinyl acetate	--	--	1.0	H	1.0	--	1.30E+06
75-01-4	Vinyl chloride	0.72	I	0.0030	I	1.0	5.0	3,893
1330-20-7	Xylenes (total)	--	--	0.20	I	1.0	--	259,556
7440-66-6	Zinc	--	--	0.30	I	1.0	--	389,333
7440-67-7	Zirconium	--	--	--	--	--	--	--

Appendix A; Table A-2: Calculation of Outoor Worker PRGs for Dermal Contact with Soil

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) ([mg/kg-day]-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
630-20-6	1,1,1,2-Tetrachloroethane	0.026	I	0.030	I	1.0	140	38,933
71-55-6	1,1,1-Trichloroethane	--	--	2.0	I	1.0	--	2.60E+06
79-34-5	1,1,2,2-Tetrachloroethane	0.20	I	0.020	I	1.0	18	25,956
79-00-5	1,1,2-Trichloroethane	0.057	I	0.0040	I	1.0	64	5,191
75-34-3	1,1-Dichloroethane	0.0057	C	0.20	P	1.0	638	259,556
75-35-4	1,1-Dichloroethene	--	--	0.050	I	1.0	--	64,889
96-18-4	1,2,3-Trichloropropane	30	I	0.0040	I	1.0	0.12	5,191
95-94-3	1,2,4,5-Tetrachlorobenzene	--	--	3.00E-04	I	1.0	--	389
120-82-1	1,2,4-Trichlorobenzene	0.029	P	0.010	I	1.0	125	12,978
96-12-8	1,2-Dibromo-3-chloropropane	0.80	P	2.00E-04	P	1.0	4.5	260
106-93-4	1,2-Dibromoethane	2.0	I	0.0090	I	1.0	1.8	11,680
95-50-1	1,2-Dichlorobenzene	--	--	0.090	I	1.0	--	116,800
107-06-2	1,2-Dichloroethane	0.091	I	0.0060	X	1.0	40	7,787
540-59-0	1,2-Dichloroethene (Total)	--	--	0.0090	H	1.0	--	11,680
78-87-5	1,2-Dichloropropane	0.036	C	0.090	A	1.0	101	116,800
541-73-1	1,3-Dichlorobenzene	--	--	--	--	--	--	--
106-46-7	1,4-Dichlorobenzene	0.0054	C	0.070	A	1.0	673	90,844
123-91-1	1,4-Dioxane	0.10	I	0.030	I	1.0	36	38,933
71-36-3	1-Butanol	--	--	0.10	I	1.0	--	129,778
71-23-8	1-Propanol	--	--	--	--	--	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	--	--	0.0010	I	1.0	--	1,298
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	3.9	WAC	2.30E-05	E	1.0	0.93	30
58-90-2	2,3,4,6-Tetrachlorophenol	--	--	0.030	I	1.0	--	38,933
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	--	--	0.010	I	1.0	--	12,978
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	--	--	0.0080	I	1.0	--	10,382
95-95-4	2,4,5-Trichlorophenol	--	--	0.10	I	1.0	--	129,778
88-06-2	2,4,6-Trichlorophenol	0.011	I	0.0010	P	1.0	330	1,298
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	--	--	0.010	I	1.0	--	12,978
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	--	--	0.0080	I	1.0	--	10,382
120-83-2	2,4-Dichlorophenol	--	--	0.0030	I	1.0	--	3,893
105-67-9	2,4-Dimethylphenol	--	--	0.020	I	1.0	--	25,956
51-28-5	2,4-Dinitrophenol	--	--	0.0020	I	1.0	--	2,596
121-14-2	2,4-Dinitrotoluene	0.31	C	0.0020	I	1.0	12	2,596
606-20-2	2,6-Dinitrotoluene	1.5	P	3.00E-04	X	1.0	2.4	389
53-96-3	2-Acetylaminofluorene	3.8	C	--	--	1.0	0.96	--
78-93-3	2-Butanone	--	--	0.60	I	1.0	--	778,667
111-76-2	2-Butoxyethanol	--	--	0.10	I	1.0	--	129,778
91-58-7	2-Chloronaphthalene	--	--	0.080	I	1.0	--	103,822
95-57-8	2-Chlorophenol	--	--	0.0050	I	1.0	--	6,489
591-78-6	2-Hexanone	--	--	0.0050	I	1.0	--	6,489
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	--	--	5.00E-04	I	1.0	--	649
91-57-6	2-methylnephthalene	--	--	0.0040	I	1.0	--	5,191
95-48-7	2-Methylphenol (cresol, o-)	--	--	0.050	I	1.0	--	64,889
91-59-8	2-Nephthylamine	1.8	C	--	--	1.0	2.0	--
88-74-4	2-Nitroaniline	--	--	0.010	X	1.0	--	12,978
88-75-5	2-Nitrophenol	--	--	--	--	--	--	--
108-10-1	2-Pentanone, 4-Methyl	--	--	--	--	1.0	--	--
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	3,900	WAC	2.30E-08	E	1.0	9.32E-04	0.030
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	13,000	WAC	7.00E-09	E	1.0	2.80E-04	0.0091
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	13	WAC	7.00E-06	E	1.0	0.28	9.1
91-94-1	3,3'-Dichlorobenzidine	0.45	I	--	--	1.0	8.1	--
119-93-7	3,3'-Dimethylbenzidine	11	P	--	--	1.0	0.33	--
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	39	WAC	2.30E-06	E	1.0	0.093	3.0
65794-96-9	3+4 Methylphenol (cresol, m+p)	--	--	0.10	A	1.0	--	129,778

Appendix A; Table A-2: Calculation of Outoor Worker PRGs for Dermal Contact with Soil

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) ((mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
56-49-5	3-Methylcholanthrene	22	C	--	--	1.0	0.17	--
99-09-2	3-Nitroaniline	0.021	PPRTV Archive	3.00E-04	PPRTV Archive	1.0	173	389
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	0.24	I	--	--	1.0	15	--
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	0.34	I	--	--	1.0	11	--
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	0.34	I	5.00E-04	I	1.0	11	649
534-52-1	4,6-Dinitro-2-methylphenol	--	--	8.00E-05	X	1.0	--	104
1918-02-1	4-Amino-3,5,6-trichloropicolinic acid	--	--	0.070	I	1.0	--	90,844
92-67-1	4-Aminobiphenyl	21	C	--	--	1.0	0.17	--
101-55-3	4-Bromophenylphenyl ether	--	--	--	--	--	--	--
59-50-7	4-Chloro-3-methylphenol	--	--	0.10	A	1.0	--	129,778
106-47-8	4-Chloroaniline	0.20	P	0.0040	I	1.0	18	5,191
7005-72-3	4-Chlorophenylphenyl ether	--	--	--	--	--	--	--
106-44-5	4-Methylphenol (cresol, p-)	--	--	0.10	A	1.0	--	129,778
100-01-6	4-Nitroaniline	0.020	P	0.0040	P	1.0	182	5,191
100-02-7	4-Nitrophenol	--	--	--	--	--	--	--
99-55-8	5-Nitro-o-toluidine	0.0090	P	0.020	X	1.0	404	25,956
83-32-9	Acenaphthene	--	--	0.060	I	1.0	--	77,867
208-96-8	Acenaphthylene	--	--	--	--	--	--	--
67-64-1	Acetone	--	--	0.90	I	1.0	--	1.17E+06
75-05-8	Acetonitrile	--	--	--	--	1.0	--	--
98-86-2	Acetophenone	--	--	0.10	I	1.0	--	129,778
107-02-8	Acrolein	--	--	5.00E-04	I	1.0	--	649
79-06-1	Acrylamide	0.50	I	0.0020	I	1.0	7.3	2,596
107-13-1	Acrylonitrile	0.54	I	0.040	A	1.0	6.7	51,911
309-00-2	Aldrin	17	I	3.00E-05	I	1.0	0.21	39
107-05-1	Allyl chloride	0.021	C	--	--	1.0	173	--
319-84-6	Alpha-BHC	6.3	I	0.0080	A	1.0	0.58	10,382
5103-71-9	Alpha-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
7429-90-5	Aluminum	--	--	1.0	P	1.0	--	1.30E+06
62-53-3	Aniline	0.0057	I	0.0070	P	1.0	638	9,084
120-12-7	Anthracene	--	--	0.30	I	1.0	--	389,333
7440-36-0	Antimony	--	--	4.00E-04	I	1.0	--	0,519
140-57-8	Aramite	0.026	I	0.050	H	1.0	145	64,889
12674-11-2	Aroclor-1016	0.070	S	7.00E-05	I	1.0	52	91
11104-28-2	Aroclor-1221	2.0	S	--	--	1.0	1.8	--
11141-16-5	Aroclor-1232	2.0	S	--	--	1.0	1.8	--
53469-21-9	Aroclor-1242	2.0	S	--	--	1.0	1.8	--
12672-29-6	Aroclor-1248	2.0	S	--	--	1.0	1.8	--
11097-69-1	Aroclor-1254	2.0	S	2.00E-05	I	1.0	1.8	26
11096-82-5	Aroclor-1260	2.0	S	--	--	1.0	1.8	--
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--
7440-38-2	Arsenic	1.5	I	3.00E-04	I	0.6	4.0	649
103-33-3	Azobenzene	0.11	I	--	--	1.0	33	--
7440-39-3	Barium	--	--	0.20	I	1.0	--	2.60E+05
71-43-2	Benzene	0.055	I	0.0040	I	1.0	66	5,191
56-55-3	Benzo(a)anthracene	0.73	WAC	--	--	1.0	5.0	--
50-32-8	Benzo(a)pyrene	7.3	WAC	--	--	1.0	0.50	--
205-99-2	Benzo(b)fluoranthene	0.73	WAC	--	--	1.0	5.0	--
191-24-2	Benzo(g,h,i)perylene	--	--	--	--	--	--	--
207-08-9	Benzo(k)fluoranthene	0.730	WAC	--	--	1.0	5	--
65-85-0	Benzoic acid	--	--	4.0	I	1.0	--	5.19E+06
100-51-6	Benzyl alcohol	--	--	0.10	P	1.0	--	129,778
7440-41-7	Beryllium	--	--	0.0020	I	1.0	--	2,596
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	1.8	I	--	--	1.0	2.0	--
108-60-1	Bis(2-chloro-1-methylethyl)ether	--	--	0.040	I	1.0	--	51,911
111-91-1	Bis(2-Chloroethoxy)methane	--	--	0.0030	P	1.0	--	3,893
111-44-4	Bis(2-chloroethyl) ether	1.1	I	--	--	1.0	3.3	--
117-81-7	Bis(2-ethylhexyl) phthalate	0.014	I	0.020	I	1.0	260	25,956
7440-69-9	Bismuth	--	--	--	--	--	--	--
7440-42-8	Boron	--	--	0.20	I	1.0	--	259,556

Appendix A; Table A-2: Calculation of Outoor Worker PRGs for Dermal Contact with Soil

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) ([mg/kg-day]-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
24959-67-9	Bromide	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	0.062	I	0.020	I	1.0	59	25,956
75-25-2	Bromoform	0.0079	I	0.020	I	1.0	460	25,956
74-83-9	Bromomethane	--	--	0.0014	I	1.0	--	1,817
85-68-7	Butylbenzylphthalate	0.0019	P	0.20	I	1.0	1,913	259,556
7440-43-9	Cadmium	--	--	0.0010	I	1.0	--	1,298
7440-70-2	Calcium	--	--	--	--	--	--	--
86-74-8	Carbazole	0.020	H	--	--	1.0	182	--
75-15-0	Carbon disulfide	--	--	0.10	I	1.0	--	129,778
56-23-5	Carbon tetrachloride	0.070	I	0.0040	I	1.0	52	5,191
57-74-9	Chlordane	0.35	I	5.00E-04	I	1.0	10	649
16887-00-6	Chloride	--	--	--	--	--	--	--
108-90-7	Chlorobenzene	--	--	0.020	I	1.0	--	25,956
510-15-6	Chlorobenzilate	0.11	C	0.020	I	1.0	33	25,956
75-00-3	Chloroethane	--	--	--	--	1.0	--	--
67-66-3	Chloroform	0.031	C	0.010	I	1.0	117	12,978
74-87-3	Chloromethane	--	--	--	--	1.0	--	--
126-99-8	Chloroprene	--	--	0.020	H	1.0	--	25,956
7440-47-3	Chromium	--	--	1.5	I	1.0	--	1.95E+06
218-01-9	Chrysene	0.0730	WAC	--	--	1.0	50	--
156-59-2	cis-1,2-Dichloroethylene	--	--	0.0020	I	1.0	--	2,596
10061-01-5	cis-1,3-Dichloropropene	0.10	I	0.030	I	1.0	36	38,933
7440-48-4	Cobalt	--	--	3.00E-04	P	1.0	--	389
CB1242/101	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--
7440-50-8	Copper	--	--	0.040	H	1.0	--	51,911
57-12-5	Cyanide	--	--	6.00E-04	I	1.0	--	779
110-82-7	Cyclohexane	--	--	--	--	1.0	--	--
108-94-1	Cyclohexanone	--	--	5.0	I	1.0	--	6.49E+06
75-99-0	Dalapon	--	--	0.030	I	1.0	--	38,933
124-18-5	Decane	--	--	--	--	--	--	--
319-86-8	Delta-BHC	--	--	--	--	--	--	--
2303-16-4	Diallate	0.061	H	--	--	1.0	60	--
53-70-3	Dibenz[a,h]anthracene	0.7	WAC	--	--	1.0	4.98	--
132-64-9	Dibenzofuran	--	--	0.0010	X	1.0	--	1,298
124-48-1	Dibromochloromethane	0.084	I	0.020	I	1.0	43	25,956
74-95-3	Dibromomethane	--	--	--	--	1.0	--	--
1918-00-9	Dicamba	--	--	0.030	I	1.0	--	38,933
75-71-8	Dichlorodifluoromethane	--	--	0.20	I	1.0	--	259,556
120-36-5	Dichloroprop	--	--	--	--	--	--	--
60-57-1	Dieldrin	16	I	5.00E-05	I	1.0	0.23	65
60-29-7	Diethyl ether	--	--	0.20	I	1.0	--	259,556
84-66-2	Diethylphthalate	--	--	0.80	I	1.0	--	1.04E+06
60-51-5	Dimethoate	--	--	2.00E-04	I	1.0	--	260
131-11-3	Dimethyl phthalate	--	--	--	--	--	--	--
84-74-2	Di-n-butylphthalate	--	--	0.10	I	1.0	--	129,778
117-84-0	Di-n-octylphthalate	--	--	0.010	P	1.0	--	12,978
88-85-7	Dinoseb(2-secButyl-4,6-dinitrophenol)	--	--	0.0010	I	1.0	--	1,298
298-04-4	Disulfoton	--	--	4.00E-05	I	1.0	--	52
959-98-8	Endosulfan I	--	--	0.0060	I	1.0	--	7,787
33213-65-9	Endosulfan II	--	--	0.0060	I	1.0	--	7,787
1031-07-8	Endosulfan sulfate	--	--	--	--	--	--	--
72-20-8	Endrin	--	--	3.00E-04	I	1.0	--	389
7421-93-4	Endrin Aldehyde	--	--	--	--	--	--	--
53494-70-5	Endrin ketone	--	--	--	--	--	--	--
64-17-5	Ethanol	--	--	--	--	--	--	--
141-78-6	Ethyl acetate	--	--	0.90	I	1.0	--	1.17E+06
97-63-2	Ethyl methacrylate	--	--	--	--	1.0	--	--
100-41-4	Ethylbenzene	0.011	C	0.10	I	1.0	330	129,778
107-21-1	Ethylene glycol	--	--	2.0	I	1.0	--	2.60E+06
206-44-0	Fluoranthene	--	--	0.040	I	1.0	--	51,911
86-73-7	Fluorene	--	--	0.040	I	1.0	--	51,911

Appendix A; Table A-2: Calculation of Outoor Worker PRGs for Dermal Contact with Soil

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals – Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) [(mg/kg-day)-1]	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
16984-48-8	Fluoride	--	--	0.060	I	1.0	--	77,867
58-89-9	Gamma-BHC (Lindane)	1.1	C	3.00E-04	I	1.0	3.3	389
5566-34-7	Gamma-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
76-44-8	Heptachlor	4.5	I	5.00E-04	I	1.0	0.81	649
1024-57-3	Heptachlor epoxide	9.1	I	1.30E-05	I	1.0	0.40	17
118-74-1	Hexachlorobenzene	1.6	I	8.00E-04	I	1.0	2.3	1,038
87-68-3	Hexachlorobutadiene	0.078	I	0.0010	P	1.0	47	1,298
77-47-4	Hexachlorocyclopentadiene	--	--	0.0060	I	1.0	--	7,787
67-72-1	Hexachloroethane	0.040	I	7.00E-04	I	1.0	91	908
70-30-4	Hexachlorophene	--	--	3.00E-04	I	1.0	--	389
110-54-3	Hexane	--	--	--	--	1.0	--	--
18540-29-9	Hexavalent Chromium	--	--	0.0030	I	1.0	--	3,893
302-01-2	Hydrazine	3.0	I	--	--	1.0	1.2	--
193-39-5	Indeno(1,2,3-cd)pyrene	0.73	WAC	--	--	1.0	5.0	--
7439-89-6	Iron	--	--	0.70	P	1.0	--	908,444
78-83-1	Isobutyl alcohol	--	--	0.30	I	1.0	--	389,333
78-59-1	Isophorone	9.50E-04	I	0.20	I	1.0	3,825	259,556
98-82-8	Isopropylbenzene	--	--	0.10	I	1.0	--	129,778
143-50-0	Kepone	10	I	3.00E-04	I	1.0	0.36	389
7439-92-1	Lead	--	--	--	--	0.6	--	--
7439-93-2	Lithium	--	--	0.0020	P	1.0	--	2,596
7439-95-4	Magnesium	--	--	--	--	--	--	--
7439-96-5	Manganese	--	--	0.14	I	1.0	--	181,689
99-65-0	m-Dinitrobenzene	--	--	1.00E-04	I	1.0	--	130
7439-97-6	Mercury	--	--	3.00E-04	I	1.0	--	0,389
126-98-7	Methacrylonitrile	--	--	1.00E-04	I	1.0	--	130
67-56-1	Methanol	--	--	2.0	I	1.0	--	2.60E+06
72-43-5	Methoxychlor	--	--	0.0050	I	1.0	--	6,489
80-62-6	Methyl methacrylate	--	--	1.4	I	1.0	--	1.82E+06
66-27-3	Methyl methanesulfonate	0.099	C	--	--	1.0	37	--
298-00-0	Methyl parathion	--	--	2.50E-04	I	1.0	--	324
75-09-2	Methylene chloride	0.0020	I	0.0060	I	1.0	1,817	7,787
7439-98-7	Molybdenum	--	--	0.0050	I	1.0	--	6,489
108-38-3	m-Xylene	--	--	0.20	S	1.0	--	259,556
91-20-3	Naphthalene	--	--	0.020	I	1.0	--	25,956
104-51-8	n-Butylbenzene	--	--	0.050	P	1.0	--	64,889
7440-02-0	Nickel	--	--	0.020	I	1.0	--	25,956
14797-55-8	Nitrate	--	--	7.1	I	1.0	--	9.21E+06
14797-65-0	Nitrite	--	--	0.33	I	1.0	--	428,267
98-95-3	Nitrobenzene	--	--	0.0020	I	1.0	--	2,596
NO3-N	Nitrogen in Nitrate	--	--	1.6	I	1.0	--	2.08E+06
NO2-N	Nitrogen in Nitrite	--	--	0.10	I	1.0	--	129,778
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	--	1.6	I	1.0	--	2.08E+06
930-55-2	Nitrosopyrrolidine	2.1	I	--	--	1.0	1.7	--
55-18-5	n-Nitrosodiethylamine	150	I	--	--	1.0	0.024	--
62-75-9	n-Nitrosodimethylamine	51	I	8.00E-06	P	1.0	0.071	10
924-16-3	n-Nitrosodi-n-butylamine	5.4	I	--	--	1.0	0.67	--
621-64-7	n-Nitrosodi-n-dipropylamine	7.0	I	--	--	1.0	0.52	--
86-30-6	n-Nitrosodiphenylamine	0.0049	I	--	--	1.0	742	--
10595-95-6	n-Nitrosomethylethylamine	22	I	--	--	1.0	0.17	--
59-89-2	n-Nitrosomorpholine	6.7	C	--	--	1.0	0.54	--
100-75-4	n-Nitrosopiperidine	9.4	C	--	--	1.0	0.39	--
95-47-6	o-Xylene	--	--	0.20	S	1.0	--	259,556
56-38-2	Parathion	--	--	0.0060	H	1.0	--	7,787
60-11-7	p-Dimethylaminoazobenzene	4.6	C	--	--	1.0	0.79	--
608-93-5	Pentachlorobenzene	--	--	8.00E-04	I	1.0	--	1,038
76-01-7	Pentachloroethane	0.090	P	--	--	1.0	40	--
82-68-8	Pentachloronitrobenzene (PCNB)	0.26	H	0.0030	I	1.0	14	3,893
87-86-5	Pentachlorophenol	0.40	I	0.0050	I	1.0	9.1	6,489
62-44-2	Phenacetin	0.0022	C	--	--	1.0	1,652	--
85-01-8	Phenanthrene	--	--	--	--	--	--	--

Appendix A; Table A-2: Calculation of Outoor Worker PRGs for Dermal Contact with Soil

		Carcinogen		Noncarcinogen			Preliminary Remediation Goals - Ingestion	
CAS #	Analyte Name	Oral Cancer Slope Factor (CSFo) (mg/kg-day)-1)	Reference	Oral Reference Dose (RfDo) (mg/kg-day)	Reference	RBA	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
108-95-2	Phenol	--	--	0.30	I	1.0	--	389,333
298-02-2	Phorate	--	--	2.00E-04	H	1.0	--	260
14265-44-2	Phosphate	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--
7440-09-7	Potassium	--	--	--	--	--	--	--
106-50-3	p-Phenylenediamine	--	--	0.19	H	1.0	--	246,578
23950-58-5	Pronamide	--	--	0.075	I	1.0	--	97,333
129-00-0	Pyrene	--	--	0.030	I	1.0	--	38,933
110-86-1	Pyridine	--	--	0.0010	I	1.0	--	1,298
94-59-7	Safrol	0.22	C	--	--	1.0	17	--
7782-49-2	Selenium	--	--	0.0050	I	1.0	--	6,489
7440-21-3	Silicon	--	--	--	--	--	--	--
7440-22-4	Silver	--	--	0.0050	I	1.0	--	6,489
7440-23-5	Sodium	--	--	--	--	--	--	--
7440-24-6	Strontium	--	--	0.60	I	1.0	--	778,667
100-42-5	Styrene	--	--	0.20	I	1.0	--	259,556
14808-79-8	Sulfate	--	--	--	--	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--
99-35-4	sym-Trinitrobenzene	--	--	0.030	I	1.0	--	38,933
127-18-4	Tetrachloroethene	0.0021	I	0.0060	I	1.0	1,730	7,787
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	--	--	5.00E-04	I	1.0	--	649
7440-28-0	Thallium	--	--	--	--	--	--	--
7440-31-5	Tin	--	--	0.60	H	1.0	--	778,667
7440-32-6	Titanium	--	--	--	--	--	--	--
108-88-3	Toluene	--	--	0.080	I	1.0	--	103,822
1336-36-3	Total PCBs	2.0	I	--	--	1.0	1.8	--
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--
PHGASOLIN	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--
PHKEROSEN	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--
TPHOILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	2.0	I	--	--	1.0	1.8	--
8001-35-2	Toxaphene	1.1	I	--	--	1.0	3.3	--
156-60-5	trans-1,2-Dichloroethylene	--	--	0.020	I	1.0	--	25,956
10061-02-6	trans-1,3-Dichloropropene	0.10	I	0.030	I	1.0	36	38,933
5103-74-2	trans-Chlordane	0.35	I	5.00E-04	I	1.0	10	649
126-73-8	Tributyl phosphate	0.0090	P	0.010	P	1.0	404	12,978
79-01-6	Trichloroethene	0.046	I	5.00E-04	I	1.0	79	649
75-69-4	Trichloromonofluoromethane	--	--	0.30	I	1.0	--	389,333
7440-61-1	Uranium	--	--	0.0030	I	1.0	--	3,893
7440-62-2	Vanadium	--	--	0.0050	S	1.0	--	6,489
108-05-4	Vinyl acetate	--	--	1.0	H	1.0	--	1.30E+06
75-01-4	Vinyl chloride	0.72	I	0.0030	I	1.0	5.0	3,893
1330-20-7	Xylenes (total)	--	--	0.20	I	1.0	--	259,556
7440-66-6	Zinc	--	--	0.30	I	1.0	--	389,333
7440-67-7	Zirconium	--	--	--	--	--	--	--

Appendix A; Table A-3: Calculation of Outoor Worker PRGs for Inhalation of Dust and Vapors

		Carcinogen		Noncarcinogen				Preliminary Remediation Goals – Inhalation	
CAS #	Analyte Name	Inhalation Unit Risk Factor (IUR) ((µg/m3)-1)	Reference	Inhalation Reference Concentration (RfC) (mg/m3)	Reference	Volatile	VFs (m3/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
630-20-6	1,1,1,2-Tetrachloroethane	7.40E-06	I	--	--	V	3.63E+03	6.68E+00	--
71-55-6	1,1,1-Trichloroethane	--	--	5.0	I	V	1.60E+03	--	3.88E+04
79-34-5	1,1,2,2-Tetrachloroethane	5.80E-05	C	--	--	V	9.11E+03	2.14E+00	--
79-00-5	1,1,2-Trichloroethane	1.60E-05	I	2.00E-04	X	V	4.79E+03	4.08E+00	4.66E+00
75-34-3	1,1-Dichloroethane	1.60E-06	C	--	--	V	1.80E+03	1.53E+01	--
75-35-4	1,1-Dichloroethene	--	--	0.20	I	V	1.12E+03	--	1.09E+03
96-18-4	1,2,3-Trichloropropane	--	--	3.00E-04	I	V	9.24E+03	--	1.35E+01
95-94-3	1,2,4,5-Tetrachlorobenzene	--	--	--	--	V	2.37E+04	--	--
120-82-1	1,2,4-Trichlorobenzene	--	--	0.0020	P	V	1.56E+04	--	1.52E+02
96-12-8	1,2-Dibromo-3-chloropropane	0.0060	P	2.00E-04	I	V	1.88E+04	4.26E-02	1.83E+01
106-93-4	1,2-Dibromoethane	6.00E-04	I	0.0090	I	V	6.87E+03	1.56E-01	3.01E+02
95-50-1	1,2-Dichlorobenzene	--	--	0.20	H	V	5.97E+03	--	5.81E+03
107-06-2	1,2-Dichloroethane	2.60E-05	I	0.0070	P	V	3.66E+03	1.92E+00	1.25E+02
540-59-0	1,2-Dichloroethene (Total)	--	--	--	--	V	1.91E+03	--	--
78-87-5	1,2-Dichloropropane	1.00E-05	C	0.0040	I	V	2.51E+03	3.42E+00	4.89E+01
541-73-1	1,3-Dichlorobenzene	--	--	--	--	V	5.09E+03	--	--
106-46-7	1,4-Dichlorobenzene	1.10E-05	C	0.80	I	V	6.50E+03	8.06E+00	2.53E+04
123-91-1	1,4-Dioxane	5.00E-06	I	0.030	I	V	4.20E+04	1.14E+02	6.13E+03
71-36-3	1-Butanol	--	--	--	--	V	3.17E+04	--	--
71-23-8	1-Propanol	--	--	--	--	--	--	--	--
93-65-2	2-(2-methyl-4-chlorophenoxy) propionic acid	--	--	--	--	--	--	--	--
39635-31-9	2,3,3',4,4',5,5'-Heptachlorobiphenyl	0.0011	WAC	0.0013	E	V	1.12E+06	1.38E+01	7.06E+03
69782-90-7	2,3,3',4,4',5'-Hexachlorobiphenyl	0.0011	WAC	0.0013	E	V	4.78E+05	5.92E+00	3.03E+03
38380-08-4	2,3,3',4,4',5-Hexachlorobiphenyl	0.0011	WAC	0.0013	E	V	5.09E+05	6.30E+00	3.22E+03
32598-14-4	2,3,3',4,4'-Pentachlorobiphenyl	0.0011	WAC	0.0013	E	V	2.76E+05	3.42E+00	1.75E+03
52663-72-6	2,3',4,4',5,5'-Hexachlorobiphenyl	0.0011	WAC	0.0013	E	V	7.27E+05	9.00E+00	4.60E+03
74472-37-0	2,3,4,4',5-Pentachlorobiphenyl	0.0011	WAC	0.0013	E	V	4.82E+05	5.98E+00	3.05E+03
65510-44-3	2',3,4,4',5-Pentachlorobiphenyl	0.0011	WAC	0.0013	E	V	3.37E+05	4.17E+00	2.13E+03
31508-00-6	2,3',4,4',5-Pentachlorobiphenyl	0.0011	WAC	0.0013	E	V	2.71E+05	3.36E+00	1.71E+03
58-90-2	2,3,4,6-Tetrachlorophenol	--	--	--	--	--	--	--	--
93-76-5	2,4,5-T(2,4,5-Trichlorophenoxyacetic acid)	--	--	--	--	--	--	--	--
93-72-1	2,4,5-TP(2-(2,4,5-Trichlorophenoxy)propionic acid)Silvex	--	--	--	--	--	--	--	--
95-95-4	2,4,5-Trichlorophenol	--	--	--	--	V	2.86E+05	--	--
88-06-2	2,4,6-Trichlorophenol	3.10E-06	I	--	--	V	1.18E+05	5.17E+02	--
94-75-7	2,4-D(2,4-Dichlorophenoxyacetic acid)	--	--	--	--	--	--	--	--
94-82-6	2,4-DB(4-(2,4-Dichlorophenoxy)butanoic acid)	--	--	--	--	--	--	--	--
120-83-2	2,4-Dichlorophenol	--	--	--	--	V	1.03E+05	--	--
105-67-9	2,4-Dimethylphenol	--	--	--	--	V	1.27E+05	--	--
51-28-5	2,4-Dinitrophenol	--	--	--	--	--	--	--	--
121-14-2	2,4-Dinitrotoluene	8.90E-05	C	--	--	--	--	1.12E+07	--
606-20-2	2,6-Dinitrotoluene	--	--	--	--	--	--	--	--
53-96-3	2-Acetylaminofluorene	0.0013	C	--	--	--	--	7.65E+05	--
78-93-3	2-Butanone	--	--	5.0	I	V	1.24E+04	--	3.03E+05
111-76-2	2-Butoxyethanol	--	--	1.6	I	V	8.00E+04	--	6.23E+05
91-58-7	2-Chloronaphthalene	--	--	--	--	V	3.73E+04	--	--
95-57-8	2-Chlorophenol	--	--	--	--	V	1.21E+04	--	--
591-78-6	2-Hexanone	--	--	0.030	I	V	1.16E+04	--	1.70E+03
94-74-6	2-Methyl-4 chlorophenoxyacetic acid	--	--	--	--	--	--	--	--
91-57-6	2-methylnaphthalene	--	--	--	--	V	2.71E+04	--	--
95-48-7	2-Methylphenol (cresol, o-)	--	--	0.60	C	V	1.13E+05	--	3.31E+05
91-59-8	2-Naphthylamine	--	C	--	--	--	--	--	--
88-74-4	2-Nitroaniline	--	--	5.00E-05	X	--	--	--	1.78E+07
88-75-5	2-Nitrophenol	--	--	--	--	--	--	--	--
108-10-1	2-Pentanone, 4-Methyl	--	--	3.0	I	V	9.53E+03	--	1.39E+05
32774-16-6	3,3',4,4',5,5'-Hexachlorobiphenyl	1.1	WAC	1.30E-06	E	V	7.27E+05	9.00E-03	4.60E+00
57465-28-8	3,3',4,4',5-Pentachlorobiphenyl	3.8	WAC	4.00E-07	E	V	3.33E+05	1.20E-03	6.49E-01
32598-13-3	3,3',4,4'-Tetrachlorobiphenyl	0.0038	WAC	4.00E-04	E	--	--	2.62E+05	1.42E+08
91-94-1	3,3'-Dichlorobenzidine	3.40E-04	C	--	--	--	--	2.93E+06	--
119-93-7	3,3'-Dimethylbenzidine	--	--	--	--	--	--	--	--
70362-50-4	3,4,4',5- Tetrachlorobiphenyl	0.011	WAC	1.30E-04	E	V	2.34E+05	2.90E-01	1.48E+02
65794-96-9	3+4 Methylphenol (cresol, m+p)	--	--	0.60	C	--	--	--	2.13E+11

Appendix A; Table A-3: Calculation of Outoor Worker PRGs for Inhalation of Dust and Vapors

		Carcinogen		Noncarcinogen				Preliminary Remediation Goals – Inhalation	
CAS #	Analyte Name	Inhalation Unit Risk Factor (IUR) ((µg/m3)-1)	Reference	Inhalation Reference Concentration (RfC) (mg/m3)	Reference	Volatile	VFs (m3/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
56-49-5	3-Methylcholanthrene	0.0063	C	--	--	--	--	1.58E+05	--
99-09-2	3-Nitroaniline	--	--	0.0010	PPRTV Archive	--	--	--	3.55E+08
72-54-8	4,4'-DDD (Dichlorodiphenyldichloroethane)	6.90E-05	C	--	--	--	--	1.44E+07	--
72-55-9	4,4'-DDE (Dichlorodiphenyldichloroethylene)	9.70E-05	C	--	--	V	1.15E+06	1.62E+02	--
50-29-3	4,4'-DDT (Dichlorodiphenyltrichloroethane)	9.70E-05	I	--	--	--	--	1.03E+07	--
534-52-1	4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--
1918-02-1	4-Amino-3,5,6-trichloropicolinic acid	--	--	--	--	--	--	--	--
92-67-1	4-Aminobiphenyl	0.0060	C	--	--	--	--	1.66E+05	--
101-55-3	4-Bromophenylphenyl ether	--	--	--	--	--	--	--	--
59-50-7	4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--
106-47-8	4-Chloroaniline	--	--	--	--	V	1.55E+05	--	--
7005-72-3	4-Chlorophenylphenyl ether	--	--	--	--	--	--	--	--
106-44-5	4-Methylphenol (cresol, p-)	--	--	0.60	C	V	1.76E+05	--	5.15E+05
100-01-6	4-Nitroaniline	--	--	0.0060	P	--	--	--	2.13E+09
100-02-7	4-Nitrophenol	--	--	--	--	--	--	--	--
99-55-8	5-Nitro-o-toluidine	--	--	--	--	--	--	--	--
83-32-9	Acenaphthene	--	--	--	--	V	6.99E+04	--	--
208-96-8	Acenaphthylene	--	--	--	--	--	--	--	--
67-64-1	Acetone	--	--	31	A	V	1.37E+04	--	2.07E+06
75-05-8	Acetonitrile	--	--	0.060	I	V	1.32E+04	--	3.85E+03
98-86-2	Acetophenone	--	--	--	--	V	4.08E+04	--	--
107-02-8	Acrolein	--	--	2.00E-05	I	V	7.59E+03	--	7.39E-01
79-06-1	Acrylamide	1.00E-04	I	0.0060	I	V	1.45E+05	1.97E+01	4.23E+03
107-13-1	Acrylonitrile	6.80E-05	I	0.0020	I	V	7.33E+03	1.47E+00	7.14E+01
309-00-2	Aldrin	0.0049	I	--	--	V	3.11E+05	8.64E-01	--
107-05-1	Allyl chloride	6.00E-06	C	0.0010	I	V	1.30E+03	2.95E+00	6.32E+00
319-84-6	Alpha-BHC	0.0018	I	--	--	--	--	5.53E+05	--
5103-71-9	Alpha-Chlordane	1.00E-04	I	7.00E-04	I	V	6.11E+05	8.33E+01	2.08E+03
7429-90-5	Aluminum	--	--	0.0050	P	--	--	--	1.78E+09
62-53-3	Aniline	1.60E-06	C	0.0010	I	V	8.16E+04	6.95E+02	3.97E+02
120-12-7	Anthracene	--	--	--	--	V	2.66E+05	--	--
7440-36-0	Antimony	--	--	--	--	--	--	--	--
140-57-8	Aramite	7.10E-06	I	--	--	--	--	1.40E+08	--
12674-11-2	Aroclor-1016	2.00E-05	S	--	--	V	4.92E+05	3.35E+02	--
11104-28-2	Aroclor-1221	5.70E-04	S	--	--	V	9.40E+04	2.25E+00	--
11141-16-5	Aroclor-1232	5.70E-04	S	--	--	V	5.16E+04	1.23E+00	--
53469-21-9	Aroclor-1242	5.70E-04	S	--	--	V	2.71E+05	6.49E+00	--
12672-29-6	Aroclor-1248	5.70E-04	S	--	--	V	2.87E+05	6.87E+00	--
11097-69-1	Aroclor-1254	5.70E-04	S	--	--	V	3.87E+05	9.25E+00	--
11096-82-5	Aroclor-1260	5.70E-04	S	--	--	V	9.25E+05	2.21E+01	--
37324-23-5	Aroclor-1262	--	--	--	--	--	--	--	--
11100-14-4	Aroclor-1268	--	--	--	--	--	--	--	--
7440-38-2	Arsenic	0.0043	I	1.50E-05	C	--	--	2.31E+05	5.33E+06
103-33-3	Azobenzene	3.10E-05	I	--	--	V	2.43E+05	1.07E+02	--
7440-39-3	Barium	--	--	5.00E-04	H	--	--	--	1.78E+08
71-43-2	Benzene	7.80E-06	I	0.030	I	V	1.78E+03	3.11E+00	2.60E+02
56-55-3	Benzo(a)anthracene	1.10E-04	WAC	--	--	V	5.08E+06	6.29E+02	--
50-32-8	Benzo(a)pyrene	0.0011	WAC	--	--	--	--	9.04E+05	--
205-99-2	Benzo(b)fluoranthene	1.10E-04	WAC	--	--	--	--	9.04E+06	--
191-24-2	Benzo(g,h,i)perylene	--	--	--	--	--	--	--	--
207-08-9	Benzo(k)fluoranthene	1.10E-04	WAC	--	--	--	--	9.04E+06	--
65-85-0	Benzoic acid	--	--	--	--	--	--	--	--
100-51-6	Benzyl alcohol	--	--	--	--	V	1.34E+05	--	--
7440-41-7	Beryllium	0.0024	I	2.00E-05	I	--	--	4.14E+05	7.11E+06
319-85-7	beta-1,2,3,4,5,6-Hexachlorocyclohexane (beta-BHC)	5.30E-04	I	--	--	--	--	1.88E+06	--
108-60-1	Bis(2-chloro-1-methylethyl)ether	--	--	--	--	V	2.18E+04	--	--
111-91-1	Bis(2-Chloroethoxy)methane	--	--	--	--	--	--	--	--
111-44-4	Bis(2-chloroethyl) ether	3.30E-04	I	--	--	V	3.60E+04	1.49E+00	--
117-81-7	Bis(2-ethylhexyl) phthalate	2.40E-06	C	--	--	--	--	4.14E+08	--
7440-69-9	Bismuth	--	--	--	--	--	--	--	--
7440-42-8	Boron	--	--	0.020	H	--	--	--	7.11E+09

Appendix A; Table A-3: Calculation of Outoor Worker PRGs for Inhalation of Dust and Vapors

		Carcinogen		Noncarcinogen				Preliminary Remediation Goals – Inhalation	
CAS #	Analyte Name	Inhalation Unit Risk Factor (IUR) (1/µg/m3)-1)	Reference	Inhalation Reference Concentration (RfC) (mg/m3)	Reference	Volatile	VFs (m3/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
24959-67-9	Bromide	--	--	--	--	--	--	--	--
75-27-4	Bromodichloromethane	3.70E-05	C	--	--	V	3.78E+03	1.39E+00	--
75-25-2	Bromoform	1.10E-06	I	--	--	V	9.63E+03	1.19E+02	--
74-83-9	Bromomethane	--	--	0.0050	I	V	1.39E+03	--	3.38E+01
85-68-7	Butylbenzylphthalate	--	--	--	--	--	--	--	--
7440-43-9	Cadmium	0.0018	I	1.00E-05	A	--	--	5.53E+05	3.55E+06
7440-70-2	Calcium	--	--	--	--	--	--	--	--
86-74-8	Carbazole	--	--	--	--	--	--	--	--
75-15-0	Carbon disulfide	--	--	0.70	I	V	9.54E+02	--	3.25E+03
56-23-5	Carbon tetrachloride	6.00E-06	I	0.10	I	V	1.47E+03	3.34E+00	7.15E+02
57-74-9	Chlordane	1.00E-04	I	7.00E-04	I	V	6.11E+05	8.33E+01	2.08E+03
16887-00-6	Chloride	--	--	--	--	--	--	--	--
108-90-7	Chlorobenzene	--	--	0.050	P	V	3.19E+03	--	7.75E+02
510-15-6	Chlorobenzilate	3.10E-05	C	--	--	--	--	3.21E+07	--
75-00-3	Chloroethane	--	--	10	I	V	1.18E+03	--	5.74E+04
67-66-3	Chloroform	2.30E-05	I	0.098	A	V	2.23E+03	1.32E+00	1.06E+03
74-87-3	Chloromethane	--	--	0.090	I	V	1.11E+03	--	4.86E+02
126-99-8	Chloroprene	3.00E-04	I	0.020	I	V	9.86E+02	4.48E-02	9.60E+01
7440-47-3	Chromium	--	--	--	--	--	--	--	--
218-01-9	Chrysene	1.10E-05	WAC	--	--	--	--	9.04E+07	--
156-59-2	cis-1,2-Dichloroethylene	--	--	--	--	V	1.89E+03	--	--
10061-01-5	cis-1,3-Dichloropropene	4.00E-06	I	0.020	I	V	1.23E+03	4.18E+00	1.19E+02
7440-48-4	Cobalt	0.0090	P	6.00E-06	P	--	--	1.11E+05	2.13E+06
PCB1242/1016	Co-elution of Aroclor 1242 and Aroclor 1016	--	--	--	--	--	--	--	--
7440-50-8	Copper	--	--	--	--	--	--	--	--
57-12-5	Cyanide	--	--	8.00E-04	S	V	5.99E+04	--	2.33E+02
110-82-7	Cyclohexane	--	--	6.0	I	V	9.51E+02	--	2.78E+04
108-94-1	Cyclohexanone	--	--	0.70	P	V	3.55E+04	--	1.21E+05
75-99-0	Dalapon	--	--	--	--	V	1.61E+05	--	--
124-18-5	Decane	--	--	--	--	--	--	--	--
319-86-8	Delta-BHC	--	--	--	--	--	--	--	--
2303-16-4	Diallate	--	--	--	--	--	--	--	--
53-70-3	Dibenz[a,h]anthracene	0.0001	WAC	--	--	--	--	9.04E+06	--
132-64-9	Dibenzofuran	--	--	--	--	V	7.18E+04	--	--
124-48-1	Dibromochloromethane	--	--	--	--	V	6.73E+03	--	--
74-95-3	Dibromomethane	--	--	0.0040	X	V	4.67E+03	--	9.09E+01
1918-00-9	Dicamba	--	--	--	--	--	--	--	--
75-71-8	Dichlorodifluoromethane	--	--	0.10	X	V	9.10E+02	--	4.43E+02
120-36-5	Dichloroprop	--	--	--	--	--	--	--	--
60-57-1	Dieldrin	0.0046	I	--	--	--	--	2.16E+05	--
60-29-7	Diethyl ether	--	--	--	--	V	2.96E+03	--	--
84-66-2	Diethylphthalate	--	--	--	--	--	--	--	--
60-51-5	Dimethoate	--	--	--	--	--	--	--	--
131-11-3	Dimethyl phthalate	--	--	--	--	--	--	--	--
84-74-2	Di-n-butylphthalate	--	--	--	--	--	--	--	--
117-84-0	Di-n-octylphthalate	--	--	--	--	--	--	--	--
88-85-7	Dinoseb(2-secButyl-4,6-dinitrophenol)	--	--	--	--	--	--	--	--
298-04-4	Disulfoton	--	--	--	--	--	--	--	--
959-98-8	Endosulfan I	--	--	--	--	V	2.48E+05	--	--
33213-65-9	Endosulfan II	--	--	--	--	V	2.48E+05	--	--
1031-07-8	Endosulfan sulfate	--	--	--	--	--	--	--	--
72-20-8	Endrin	--	--	--	--	--	--	--	--
7421-93-4	Endrin Aldehyde	--	--	--	--	--	--	--	--
53494-70-5	Endrin ketone	--	--	--	--	--	--	--	--
64-17-5	Ethanol	--	--	--	--	--	--	--	--
141-78-6	Ethyl acetate	--	--	0.070	P	V	8.63E+03	--	2.94E+03
97-63-2	Ethyl methacrylate	--	--	0.30	P	V	5.00E+03	--	7.29E+03
100-41-4	Ethylbenzene	2.50E-06	C	1.0	I	V	2.28E+03	1.24E+01	1.11E+04
107-21-1	Ethylene glycol	--	--	0.40	C	V	1.29E+05	--	2.52E+05
206-44-0	Fluoranthene	--	--	--	--	--	--	--	--
86-73-7	Fluorene	--	--	--	--	V	1.46E+05	--	--

Appendix A; Table A-3: Calculation of Outoor Worker PRGs for Inhalation of Dust and Vapors

		Carcinogen		Noncarcinogen				Preliminary Remediation Goals – Inhalation	
CAS #	Analyte Name	Inhalation Unit Risk Factor (IUR) ((µg/m3)-1)	Reference	Inhalation Reference Concentration (RfC) (mg/m3)	Reference	Volatile	VFs (m3/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
16984-48-8	Fluoride	--	--	0.013	C	--	--	--	4.62E+09
58-89-9	Gamma-BHC (Lindane)	3.10E-04	C	--	--	--	--	3.21E+06	--
5566-34-7	Gamma-Chlordane	1.00E-04	I	7.00E-04	I	V	6.11E+05	8.33E+01	2.08E+03
76-44-8	Heptachlor	0.0013	I	--	--	V	5.52E+04	5.78E-01	--
1024-57-3	Heptachlor epoxide	0.0026	I	--	--	V	1.61E+06	8.45E+00	--
118-74-1	Hexachlorobenzene	4.60E-04	I	--	--	V	1.27E+05	3.76E+00	--
87-68-3	Hexachlorobutadiene	2.20E-05	I	--	--	V	4.36E+04	2.70E+01	--
77-47-4	Hexachlorocyclopentadiene	--	--	2.00E-04	I	V	4.57E+04	--	4.45E+01
67-72-1	Hexachloroethane	1.10E-05	C	0.030	I	V	1.09E+04	1.35E+01	1.59E+03
70-30-4	Hexachlorophene	--	--	--	--	--	--	--	--
110-54-3	Hexane	--	--	0.70	I	V	1.01E+03	--	3.44E+03
18540-29-9	Hexavalent Chromium	0.084	S	1.00E-04	I	--	--	1.18E+04	3.55E+07
302-01-2	Hydrazine	0.0049	I	3.00E-05	P	V	7.40E+04	2.06E-01	1.08E+01
193-39-5	Indeno(1,2,3-cd)pyrene	1.10E-04	WAC	--	--	--	--	9.04E+06	--
7439-89-6	Iron	--	--	--	--	--	--	--	--
78-83-1	Isobutyl alcohol	--	--	--	--	V	2.96E+04	--	--
78-59-1	Isophorone	--	--	2.0	C	V	5.53E+04	--	5.38E+05
98-82-8	Isopropylbenzene	--	--	0.40	I	V	3.14E+03	--	6.12E+03
143-50-0	Kepone	0.0046	C	--	--	--	--	2.16E+05	--
7439-92-1	Lead	--	--	--	--	--	--	--	--
7439-93-2	Lithium	--	--	--	--	--	--	--	--
7439-95-4	Magnesium	--	--	--	--	--	--	--	--
7439-96-5	Manganese	--	--	5.00E-05	I	--	--	--	1.78E+07
99-65-0	m-Dinitrobenzene	--	--	--	--	--	--	--	--
7439-97-6	Mercury	--	--	3.00E-04	S	--	--	--	1.07E+08
126-98-7	Methacrylonitrile	--	--	0.030	P	V	6.10E+03	--	8.91E+02
67-56-1	Methanol	--	--	20	I	V	3.19E+04	--	3.10E+06
72-43-5	Methoxychlor	--	--	--	--	--	--	--	--
80-62-6	Methyl methacrylate	--	--	0.70	I	V	6.00E+03	--	2.04E+04
66-27-3	Methyl methanesulfonate	2.80E-05	C	--	--	--	--	3.55E+07	--
298-00-0	Methyl parathion	--	--	--	--	--	--	--	--
75-09-2	Methylene chloride	1.00E-08	I	0.60	I	V	2.11E+03	2.88E+03	6.17E+03
7439-98-7	Molybdenum	--	--	--	--	--	--	--	--
108-38-3	m-Xylene	--	--	0.10	S	V	2.33E+03	--	1.13E+03
91-20-3	Naphthalene	3.40E-05	C	0.0030	I	V	1.85E+04	7.40E+00	2.70E+02
104-51-8	n-Butylbenzene	--	--	--	--	V	3.96E+03	--	--
7440-02-0	Nickel	2.60E-04	C	9.00E-05	A	--	--	3.83E+06	3.20E+07
14797-55-8	Nitrate	--	--	--	--	--	--	--	--
14797-65-0	Nitrite	--	--	--	--	--	--	--	--
98-95-3	Nitrobenzene	4.00E-05	I	0.0090	I	V	3.19E+04	1.09E+01	1.40E+03
NO3-N	Nitrogen in Nitrate	--	--	--	--	--	--	--	--
NO2-N	Nitrogen in Nitrite	--	--	--	--	--	--	--	--
NO2+NO3-N	Nitrogen in Nitrite and Nitrate	--	--	--	--	--	--	--	--
930-55-2	Nitrosopyrrolidine	6.10E-04	I	--	--	V	2.11E+05	4.71E+00	--
55-18-5	n-Nitrosodiethylamine	0.043	I	--	--	V	6.92E+04	2.19E-02	--
62-75-9	n-Nitrosodimethylamine	0.014	I	4.00E-05	X	V	6.67E+04	6.49E-02	1.30E+01
924-16-3	n-Nitrosodi-n-butylamine	0.0016	I	--	--	V	1.17E+05	9.93E-01	--
621-64-7	n-Nitrosodi-n-dipropylamine	0.0020	C	--	--	--	--	4.97E+05	--
86-30-6	n-Nitrosodiphenylamine	2.60E-06	C	--	--	--	--	3.83E+08	--
10595-95-6	n-Nitrosomethylethylamine	0.0063	C	--	--	V	8.59E+04	1.86E-01	--
59-89-2	n-Nitrosomorpholine	0.0019	C	--	--	--	--	5.24E+05	--
100-75-4	n-Nitrosopiperidine	0.0027	C	--	--	--	--	3.68E+05	--
95-47-6	o-Xylene	--	--	0.10	S	V	2.86E+03	--	1.39E+03
56-38-2	Parathion	--	--	--	--	--	--	--	--
60-11-7	p-Dimethylaminoazobenzene	0.0013	C	--	--	--	--	7.65E+05	--
608-93-5	Pentachlorobenzene	--	--	--	--	V	1.10E+05	--	--
76-01-7	Pentachloroethane	--	--	--	--	V	5.63E+03	--	--
82-68-8	Pentachloronitrobenzene (PCNB)	--	--	--	--	V	2.00E+05	--	--
87-86-5	Pentachlorophenol	5.10E-06	C	--	--	--	--	1.95E+08	--
62-44-2	Phenacetin	6.30E-07	C	--	--	--	--	1.58E+09	--
85-01-8	Phenanthrene	--	--	--	--	--	--	--	--

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		Carcinogen		Noncarcinogen				Preliminary Remediation Goals – Inhalation	
CAS #	Analyte Name	Inhalation Unit Risk Factor (IURF) ([µg/m3]-1)	Reference	Inhalation Reference Concentration (RfC) (mg/m3)	Reference	Volatile	VFs (m3/kg)	Carcinogen (mg/kg)	Noncarcinogen (mg/kg)
108-95-2	Phenol	--	--	0.20	C	V	1.25E+05	--	1.22E+05
298-02-2	Phorate	--	--	--	--	--	--	--	--
14265-44-2	Phosphate	--	--	--	--	--	--	--	--
7723-14-0	Phosphorus	--	--	--	--	--	--	--	--
PO4-P	Phosphorus in phosphate	--	--	--	--	--	--	--	--
7440-09-7	Potassium	--	--	--	--	--	--	--	--
106-50-3	p-Phenylenediamine	--	--	--	--	--	--	--	--
23950-58-5	Pronamide	--	--	--	--	--	--	--	--
129-00-0	Pyrene	--	--	--	--	V	1.27E+06	--	--
110-86-1	Pyridine	--	--	--	--	V	3.54E+04	--	--
94-59-7	Safrol	6.30E-06	C	--	--	--	--	1.58E+07	--
7782-49-2	Selenium	--	--	0.020	C	--	--	--	7.11E+09
7440-21-3	Silicon	--	--	--	--	--	--	--	--
7440-22-4	Silver	--	--	--	--	--	--	--	--
7440-23-5	Sodium	--	--	--	--	--	--	--	--
7440-24-6	Strontium	--	--	--	--	--	--	--	--
100-42-5	Styrene	--	--	1.0	I	V	6.37E+03	--	3.10E+04
14808-79-8	Sulfate	--	--	--	--	--	--	--	--
18496-25-8	Sulfide	--	--	--	--	--	--	--	--
99-35-4	sym-Trinitrobenzene	--	--	--	--	--	--	--	--
127-18-4	Tetrachloroethene	2.60E-07	I	0.040	I	V	2.05E+03	1.08E+02	3.99E+02
3689-24-5	Tetraethyl dithiopyrophosphate (Sulfotepp)	--	--	--	--	--	--	--	--
7440-28-0	Thallium	--	--	--	--	--	--	--	--
7440-31-5	Tin	--	--	--	--	--	--	--	--
7440-32-6	Titanium	--	--	--	--	--	--	--	--
108-88-3	Toluene	--	--	5.0	I	V	2.08E+03	--	5.07E+04
1336-36-3	Total PCBs	5.70E-04	I	--	--	V	4.86E+05	1.16E+01	--
TPH	Total petroleum hydrocarbons	--	--	--	--	--	--	--	--
TPHDIESEL	Total petroleum hydrocarbons - diesel range	--	--	--	--	--	--	--	--
TPHGASOLINE	Total petroleum hydrocarbons - gasoline range	--	--	--	--	--	--	--	--
TPHKEROSENE	Total petroleum hydrocarbons - kerosene range	--	--	--	--	--	--	--	--
TPH/OILH	Total petroleum hydrocarbons - motor oil (high boiling)	--	--	--	--	--	--	--	--
TOTALPCB	Total Polychlorinated Biphenyls	5.70E-04	I	--	--	V	4.86E+05	1.16E+01	--
8001-35-2	Toxaphene	3.20E-04	I	--	--	--	--	3.11E+06	--
156-60-5	trans-1,2-Dichloroethylene	--	--	--	--	V	1.40E+03	--	--
10061-02-6	trans-1,3-Dichloropropene	4.00E-06	I	0.020	I	V	1.23E+03	4.18E+00	1.19E+02
5103-74-2	trans-Chlordane	1.00E-04	I	7.00E-04	I	V	6.11E+05	8.33E+01	2.08E+03
126-73-8	Tributyl phosphate	--	--	--	--	--	--	--	--
79-01-6	Trichloroethene	4.10E-06	I	0.0020	I	V	1.73E+03	5.74E+00	1.68E+01
75-69-4	Trichloromonofluoromethane	--	--	--	--	V	1.04E+03	--	--
7440-61-1	Uranium	--	--	4.00E-05	A	--	--	--	1.42E+07
7440-62-2	Vanadium	--	--	1.00E-04	A	--	--	--	3.55E+07
108-05-4	Vinyl acetate	--	--	0.20	I	V	4.40E+03	--	4.28E+03
75-01-4	Vinyl chloride	4.40E-06	I	0.10	I	V	9.34E+02	2.89E+00	4.55E+02
1330-20-7	Xylenes (total)	--	--	0.10	I	V	2.52E+03	--	1.23E+03
7440-66-6	Zinc	--	--	--	--	--	--	--	--
7440-67-7	Zirconium	--	--	--	--	--	--	--	--

Appendix B

Hand Calculations

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Soil ingestion - cancer

$$PRG_{ing-c} = \frac{TR \times AT \times BW}{EF \times ED \times CSF \times RBA \times IR \times UCF} \quad (1)$$

630-20-6 1,1,1,2-Tetrachloroethane

$$PRG = \frac{1\times10^{-6} \times 25{,}550\ d \times 80\ kg}{225\ d/yr \times 25\ yr \times 0.026\ (mg/kg\text{-}d)^{-1} \times 1.0 \times 100\ mg/d \times 10^{-6}\ kg/mg}$$

$$= 139.8\ mg/kg \checkmark$$

Soil ingestion - noncancer

$$PRG_{ing-nc} = \frac{THQ \times AT \times BW}{EF \times ED \times RBA/RfDo \times IR \times UCF} \quad (2)$$

630-20-6 1,1,1,2-Tetrachloroethane

$$PRG = \frac{1.0 \times 9125\ d \times 80\ kg}{225\ d/yr \times 25\ yr \times 1.0/0.03\ mg/kg\text{-}d \times 100\ mg/d \times 10^{-6}\ kg/mg}$$

$$= 38{,}933.3 \checkmark$$

Dermal contact - cancer

$$PRG_{derm-c} = \frac{TR \times AT \times BW}{EF \times ED \times CSF/GIABS \times SA \times AF \times ABS_d \times UCF} \quad (3)$$

88-06-2 2,4,6-Trichlorophenol

$$PRG = \frac{1\times10^{-6} \times 25{,}550\ d \times 80\ kg}{225\ d/yr \times 25\ yr \times 0.011\ (mg/kg\text{-}d)^{-1}/1.0 \times 3527\ cm^2/d \times 0.12\ mg/cm^2 \times 0.1\times10^{-6}\ kg/mg}$$

$$= 780.5\ mg/kg \checkmark$$

Dermal contact - noncancer

$$PRG_{derm-nc} = \frac{THQ \times AT \times BW}{EF \times ED \times (1/RfDO \times GIABS) \times SA \times AF \times ABS \times UCF} \quad (4)$$

88-06-2 2,4,6-Trichlorophenol

$$PRG = \frac{1.0 \times 9125\ d \times 80\ kg}{225\ d/yr \times 25\ yr \times (1/0.001\ mg/kg\text{-}d \times 1.0) \times 3527\ \frac{cm^2}{d} \times 0.12\ \frac{mg}{cm^2} \times 0.1 \times 10^{-6}\ kg/mg}$$

$$= 3{,}066.3\ mg/kg \checkmark$$

Inhalation – cancer

$$PRG_{inh-c} = \frac{TR \times AT}{EF \times ED \times ET \times UCF_1 \times IUR \times UCF_2 \times (1/VF + 1/PEF)} \quad (5)$$

630-20-6 1,1,1,2-Tetrachloroethane (VOC)

$$PRG = \frac{1 \times 10^{-6} \times 25{,}550\ d}{225\ \frac{d}{yr} \times 25\ yr \times 8\ \frac{hr}{d} \times 0.04167\ \frac{d}{hr} \times 7.40 \times 10^{-6} \times 1000\ \frac{ug}{mg} \times (1/3.63 \times 10^{3}\ \frac{m^3}{kg} + 1/7.3 \times 10^{10}\ \frac{m^3}{kg})}$$

$$= 6.68\ mg/kg \checkmark$$

Inhalation – noncancer

$$PRG_{inh-nc} = \frac{THQ \times AT}{EF \times ED \times ET \times UCF \times 1/RfC \times (1/VF + 1/PEF)} \quad (6)$$

88-74-4 2-Nitroaniline (non-VOC)

$$PRG = \frac{1.0 \times 9125\ d}{225\ \frac{d}{yr} \times 25\ yr \times 8\ hr/d \times 0.04167\ \frac{d}{hr} \times 1/5 \times 10^{-5}\ mg/m^3 \times 1/7.3 \times 10^{10}\ m^3/kg}$$

$$= 1.78 \times 10^{7}\ mg/kg \checkmark$$

Volatilization factor

$$VF = \frac{Q/C \times (3.14 \times D_A \times T)^{1/2} \times 10^{-4}\ \frac{m^2}{cm^2}}{2 \times \rho_b \times D_A} \quad (7)$$

$$Q/C = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right] \quad (8)$$

$$D_A = \frac{(\theta_a^{10/3} \times D_i \times H' + \theta_w^{10/3} \times D_w)/n^2}{\rho_b \times K_d + \theta_w + \theta_a \times H'} \quad (9)$$

630-20-6 1,1,1,2-Tetrachloroethane (VOC)

$$Q/C = 11.316 \times \exp\left[\frac{(\ln 0.5_{ac} - 19.6437)^2}{224.8172}\right]$$

$$= 71.2275 \checkmark \text{ (rounding)}$$

$$D_A = \frac{(0.284^{10/3} \times 9.82 \times 10^{-2}\ \frac{cm^2}{s} \times 0.102 + 0.15^{10/3} \times 9.10 \times 10^{-6}\ \frac{cm^2}{s})/0.434^2}{1.5\ kg/L \times 8.60 \times 10^{-2}\ cm^3/g + 0.15 + 0.284 \times 0.102}$$

$$= 1.28 \times 10^{-3}\ cm^2/s \checkmark$$

Volatilization factor (contd.)

$$VF = \frac{71.22808\ g/m^2\text{-s per } \frac{kg}{m^3} \times \left(3.14 \times 1.28\times10^{-3}\ \frac{cm^2}{s} \times 9.5\times10^{8}\ s\right)^{1/2} \times 10^{-4}\ \frac{m^2}{cm^2}}{2 \times 1.5\ kg/L \times 1.28\times10^{-3}\ cm^2/s}$$

$$= 3.62 \times 10^{3}\ m^3/kg \ \checkmark \ \text{(rounding)}$$

Total PRG – cancer

$$PRG_{tot-c} = \frac{1}{1/PRG_{ing-c} + 1/PRG_{derm-c} + 1/PRG_{inh-c}} \quad (13)$$

630-20-6 1,1,1,2-Tetrachloroethane

$$PRG = \frac{1}{1/140\ mg/kg + 0 + 1/6.7\ mg/kg}$$

$$= 6.39\ mg/kg$$

Total PRG – noncancer

$$PRG_{tot-nc} = \frac{1}{1/PRG_{ing-nc} + 1/PRG_{derm-nc} + 1/PRG_{inh-nc}} \quad (14)$$

630-20-6 1,1,1,2-Tetrachloroethane

$$PRG = \frac{1}{1/38{,}933\ mg/kg + 0 + 0}$$

$$= 38{,}933\ mg/kg \ \checkmark$$