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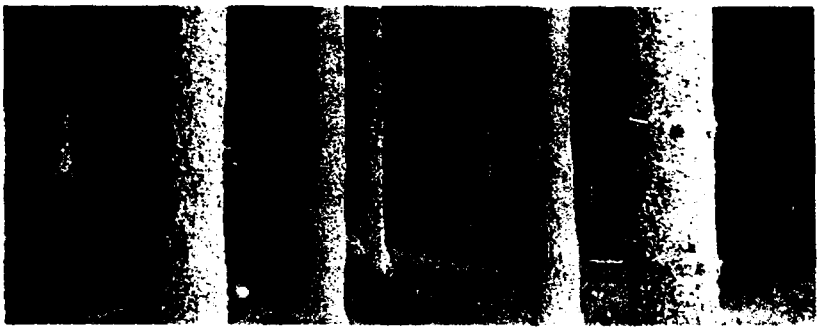
Report



Phase I Removal Action Report

Riverdale Chemical Company

February 2001

Appendix C
Risk Calculations

Prepared For

Nufarm

Prepared By

RMT

RMT, Inc. 222 South Riverside Plaza, Suite 820 • Chicago, IL 60606 • 312 575-0200 • 312 575-0300 (FAX)

Riverdale
A Nufarm Company

1333 Burr Ridge Parkway, Suite 125A
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February 15, 2001

Ms. Callie Bolattino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60604

Subject: Riverdale Chemical Company
Phase I Removal Action Report - Appendix C
Risk Calculations

Dear Callie:

Riverdale Chemical Company submitted the Phase I Removal Action (RA) Report per the requirements of the Administrative Order on Consent (Docket No. V-W-01-0-621), Section V: Order, Part 2.4: Final Report on February 2, 2001. We are providing Appendix C, Risk Calculations, with the submittal. Please contact Riverdale with any questions or comments.

Sincerely,

Dr. Peter Bibby

Attachments: Appendix C

cc: Karen L. Peaceman - without attachments
Associate Regional Counsel
77 West Jackson Boulevard (C-14)
Chicago, Illinois 60604

Matt Ohl - attachments
Remedial Project Manager
77 West Jackson Boulevard (SR-6J)
Chicago, Illinois 60604

Todd Wiener - without attachments
McDermott, Will & Emery
227 West Monroe Street

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Phase I Removal Action Report - Appendix C
Risk Calculations

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227 West Monroe Street

RMT®
Integrated Environmental Solutions

222 South Riverside Plaza
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Fax: 312-575-0300

February 15, 2001

Ms. Callie Bolattino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60604

Subject: Riverdale Chemical Company
Phase I Removal Action Report – Appendix C
Risk Calculations

Dear Callie:

Riverdale Chemical Company is submitting Appendix C (Risk Calculations) to the Phase I RA Report as required by the AOC. The following risk calculations are being provided:

- Tab 1 – Raw Materials Storage Area, Total Cancer Risk and Total Non-Cancer Hazard Quotient
- Tab 2 – Liquid Storage Area, Total Cancer Risk and Total Non-Cancer Hazard Quotient
- Tab 3 – Railroad Unloading Area, Total Cancer Risk and Total Non-Cancer Hazard Quotient
- Tab 4 – Low Lying Area, Total Cancer Risk and Total Non-Cancer Hazard Quotient
- Tab 5 – Utility Area, Total Cancer Risk and Total Non-Cancer Hazard Quotient

We look forward to meeting with you next week. Please contact me at 312-575-0200 with any questions or comments.

Sincerely,

RMT, Inc.

Rae Mindock
Project Manager

Attachments: Phase I Removal Action Report – Appendix C

cc: Dr. Peter Bibby/Riverdale
Todd Wiener/MWE

1

Total Cancer Risk
Raw Materials Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL01-4FT *	8.06E-09	4.98E-09	4.24E-10	7.33E-10	1.48E-09	1.79E-08	NA	3.36E-08
SL02-3FT #	1.81E-08	4.98E-08	2.81E-09	6.53E-09	1.48E-09	1.63E-08	NA	9.50E-08
SL02-5FT #	2.90E-09	7.82E-09	5.10E-10	7.67E-10	1.55E-09	1.87E-08	NA	3.23E-08
SL03-4.5FT #	1.81E-08	1.02E-07	3.70E-09	3.67E-09	7.42E-09	8.96E-08	2.22E-07	4.47E-07
SL04-4.5FT #	4.79E-09	8.06E-09	4.24E-10	7.33E-10	1.48E-09	1.79E-08	NA	3.34E-08
SL05-4.5FT #	7.81E-08	1.40E-07	6.55E-09	7.33E-10	1.89E-09	1.79E-08	NA	2.45E-07
SL06-3FT #	3.27E-09	6.16E-09	1.41E-09	8.67E-10	1.75E-09	2.12E-08	NA	3.47E-08
SL07-3FT #	1.18E-07	9.72E-07	2.87E-07	3.07E-07	1.89E-07	8.96E-08	NA	1.96E-06
SL07-3FT-DL #	1.39E-07	9.96E-07	2.87E-07	3.40E-07	1.48E-07	8.96E-07	NA	2.81E-06
SL07-4.5FT #	2.77E-09	5.33E-09	4.24E-10	7.33E-10	9.98E-09	1.79E-08	NA	3.72E-08
SL08-2.5FT #	7.81E-07	7.82E-07	1.23E-08	6.67E-10	3.24E-08	1.63E-08	NA	1.62E-06
SL08-2.5FT-DL #	7.81E-07	7.82E-07	1.93E-08	3.33E-08	6.74E-08	8.15E-07	NA	2.50E-06
SL08-4.5FT #	3.02E-09	1.26E-08	1.81E-09	7.67E-10	4.85E-09	1.87E-08	NA	4.18E-08
SL09-3FT #	3.02E-07	1.38E-06	1.04E-07	1.53E-07	1.62E-07	1.79E-08	6.56E-07	2.77E-06
SL09-3FT-DL #	3.27E-07	1.54E-06	1.14E-07	1.60E-07	1.62E-07	3.50E-07	NA	2.65E-06
SL33-1.2FT *	1.94E-03	2.49E-05	4.05E-06	1.60E-05	1.42E-05	6.76E-05	NA	2.07E-03
SL33-3.5FT *	9.57E-07	3.79E-07	1.27E-08	2.33E-08	7.42E-09	3.67E-08	NA	1.42E-06
SL34-1.2FT *	6.05E-05	7.82E-05	3.00E-05	1.73E-05	3.51E-06	1.63E-05	NA	2.06E-04
SL34-3.5FT *	2.77E-09	2.61E-09	4.24E-10	7.33E-10	1.48E-09	7.17E-09	NA	1.52E-08
SL35-1FT *	2.77E-06	8.06E-06	1.02E-07	3.67E-08	2.02E-07	3.42E-07	NA	1.15E-05
SL35-4.5FT *	1.11E-06	1.30E-06	2.23E-08	2.53E-08	1.55E-08	7.33E-08	NA	2.55E-06
SL36-1.2FT *	4.79E-05	5.93E-05	2.52E-05	2.33E-05	3.57E-06	1.71E-05	NA	1.76E-04
SL36-4.5FT *	1.44E-05	6.88E-06	2.79E-06	3.60E-06	3.78E-07	1.79E-06	NA	2.98E-05
SL56-5FT #	2.77E-06	1.26E-06	1.00E-07	3.33E-08	1.35E-07	1.47E-07	NA	4.44E-06
SL56-5FT-CLP #	4.79E-06	3.79E-06	2.20E-07	3.67E-08	1.35E-07	8.96E-07	NA	9.87E-06
SL57-5FT #	3.27E-07	2.84E-07	3.95E-09	3.67E-09	7.42E-09	3.67E-08	NA	6.64E-07
SL57-5FT-CLP #	1.34E-07	1.45E-07	3.37E-09	3.67E-09	9.71E-09	8.96E-08	NA	3.85E-07
SL58-5FT #	1.26E-08	7.35E-09	4.24E-10	7.33E-10	1.48E-09	7.17E-09	NA	2.98E-08
SL58-5FT-CLP #	2.77E-08	5.22E-08	4.24E-09	7.33E-09	1.48E-08	1.79E-07	NA	2.86E-07
SL59-2FT #	2.64E-09	3.32E-08	4.05E-10	7.00E-10	1.42E-09	6.85E-09	NA	4.52E-08
SL59-2FT-CLP #	4.03E-09	7.11E-08	9.82E-10	7.00E-10	2.83E-09	1.71E-08	NA	9.68E-08

Notes:
(1) Risk was calculated based on assumptions in RI baseline risk assessment.
(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).
NA - Not Analyzed
* - Indicates soil at this location was excavated during the Phase I RA.
# - Indicates soil at this location was covered with concrete during the Phase I RA.

Riverdale Chemical Company
Prepared By: David A. Yaros
Checked By: RAM

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL01-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.6E-10	4.4E-09	2.9E-15	4.9E-14			2.1E-10	3.6E-09	8.1E-09	23.98
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14			1.4E-10	2.3E-09	5.0E-09	14.81
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15			1.5E-10	1.9E-10	4.2E-10	1.26
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15			7.4E-11	3.3E-10	7.3E-10	2.18
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15			7.4E-11	6.7E-10	1.5E-09	4.41
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	53.35
DIOXIN																	
2,3,7,8-TCDD	na	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.8E-08		2.1E-13				1.5E-08	3.4E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL02-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Risk	Risk Percentage %
		Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	7.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.8E-10	9.9E-09	6.5E-15	1.1E-13			4.8E-10	8.2E-09	1.8E-08	19.08
Dieldrin	2.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-09	2.7E-08	1.9E-14	3.0E-13			1.4E-09	2.3E-08	5.0E-08	52.38
Chlordane	1.5E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-09	1.5E-09	1.3E-14	1.7E-14			9.8E-10	1.3E-09	2.8E-09	2.96
Heptachlor	9.8E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.9E-10	3.6E-09	8.9E-15	4.1E-14			6.6E-10	3.0E-09	6.5E-09	6.87
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15			7.4E-11	6.7E-10	1.5E-09	1.56
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	17.15
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									5.2E-08		5.8E-13				4.3E-08	9.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL02-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.3E-11	1.6E-09	1.0E-15	1.8E-14			7.7E-11	1.3E-09	2.9E-09	8.97
Dieldrin	3.3E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-10	4.3E-09	3.0E-15	4.8E-14			2.2E-10	3.5E-09	7.8E-09	24.23
Chlordane	2.7E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.1E-10	2.8E-10	2.4E-15	3.1E-15			1.8E-10	2.3E-10	5.1E-10	1.58
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.3E-11	4.2E-10	1.0E-15	4.8E-15			7.7E-11	3.5E-10	7.7E-10	2.37
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.3E-11	8.5E-10	1.0E-15	9.5E-15			7.7E-11	7.0E-10	1.6E-09	4.80
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.3E-09	1.0E-08	1.0E-13	1.1E-13			7.7E-09	8.5E-09	1.9E-08	58.04
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.8E-08		2.0E-13				1.5E-08	3.2E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL03-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Risk	Risk Percentage %
		Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	7.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.8E-10	9.9E-09	6.5E-15	1.1E-13			4.8E-10	8.2E-09	1.8E-08	4.06
Dieldrin	4.3E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.5E-09	5.6E-08	3.9E-14	6.2E-13			2.9E-09	4.6E-08	1.0E-07	22.82
Chlordane	1.9E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-09	2.0E-09	1.7E-14	2.3E-14			1.3E-09	1.7E-09	3.7E-09	0.83
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14			3.7E-10	1.7E-09	3.7E-09	0.82
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-10	4.1E-09	5.0E-15	4.5E-14			3.7E-10	3.4E-09	7.4E-09	1.66
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13			3.7E-08	4.1E-08	9.0E-08	20.07
DIOXIN																	
2,3,7,8-TCDD	1.0E-05	1.5E+05	1.5E+05	1.5E+05	1	0.10		8.1E-13	1.2E-07	9.1E-18	1.4E-12			6.7E-13	1.0E-07	2.2E-07	49.749
No samples collected																	
Total Cancer Risk									2.4E-07		2.7E-12				2.0E-07	2.2E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL04-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-10	2.6E-09	1.7E-15	2.9E-14			1.3E-10	2.2E-09	4.8E-09	14.32
Dieldrin	3.4E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.8E-10	4.4E-09	3.1E-15	4.9E-14			2.3E-10	3.6E-09	8.1E-09	24.12
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15			1.5E-10	1.9E-10	4.2E-10	1.27
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15			7.4E-11	3.3E-10	7.3E-10	2.19
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15			7.4E-11	6.7E-10	1.5E-09	4.44
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	53.65
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.8E-08		2.0E-13				1.5E-08	3.3E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL05-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.5E-09	4.3E-08	2.8E-14	4.8E-13			2.1E-09	3.5E-08	7.8E-08	31.86
Dieldrin	5.9E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.8E-09	7.7E-08	5.3E-14	8.5E-13			4.0E-09	6.3E-08	1.4E-07	57.08
Chlordane	3.4E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.8E-09	3.6E-09	3.1E-14	4.0E-14			2.3E-09	3.0E-09	6.5E-09	2.67
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15			7.4E-11	3.3E-10	7.3E-10	0.30
Heptachlor epoxide	1.4E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-10	1.0E-09	1.3E-15	1.2E-14			9.4E-11	8.5E-10	1.9E-09	0.77
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	7.32
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.3E-07		1.5E-12				1.1E-07	2.5E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL06-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.3E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-10	1.8E-09	1.2E-15	2.0E-14			8.7E-11	1.5E-09	3.3E-09	9.45
Dieldrin	2.6E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-10	3.4E-09	2.4E-15	3.8E-14			1.7E-10	2.8E-09	6.2E-09	17.79
Chlordane	7.3E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.9E-10	7.7E-10	6.6E-15	8.6E-15			4.9E-10	6.4E-10	1.4E-09	4.06
Heptachlor	1.3E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-10	4.7E-10	1.2E-15	5.4E-15			8.7E-11	3.9E-10	8.7E-10	2.50
Heptachlor epoxide	1.3E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-10	9.6E-10	1.2E-15	1.1E-14			8.7E-11	7.9E-10	1.8E-09	5.06
Toxaphene	1.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.1E-08	1.2E-08	1.2E-13	1.3E-13			8.7E-09	9.6E-09	2.1E-08	61.15
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.9E-08		2.1E-13				1.6E-08	3.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	4.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.8E-09	6.5E-08	4.3E-14	7.2E-13			3.2E-09	5.4E-08	1.2E-07	6.03
Dieldrin	4.1E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.3E-08	5.3E-07	3.7E-13	5.9E-12			2.8E-08	4.4E-07	9.7E-07	49.53
Chlordane	1.5E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-07	1.6E-07	1.3E-12	1.8E-12			1.0E-07	1.3E-07	2.9E-07	14.62
Heptachlor	4.6E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.7E-08	1.7E-07	4.2E-13	1.9E-12			3.1E-08	1.4E-07	3.1E-07	15.63
Heptachlor epoxide	1.4E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-08	1.0E-07	1.3E-13	1.2E-12			9.4E-09	8.5E-08	1.9E-07	9.62
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13			3.7E-08	4.1E-08	9.0E-08	4.57
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.1E-06		1.2E-11				8.9E-07	2.0E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-3FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.5E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.5E-09	7.6E-08	5.0E-14	8.5E-13			3.7E-09	6.3E-08	1.4E-07	4.94
Dieldrin	4.2E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.4E-08	5.4E-07	3.8E-13	6.1E-12			2.8E-08	4.5E-07	1.0E-06	35.48
Chlordane	1.5E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-07	1.6E-07	1.3E-12	1.8E-12			1.0E-07	1.3E-07	2.9E-07	10.23
Heptachlor	5.1E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.1E-08	1.9E-07	4.6E-13	2.1E-12			3.4E-08	1.5E-07	3.4E-07	12.12
Heptachlor epoxide	1.1E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-09	8.1E-08	1.0E-13	9.1E-13			7.4E-09	6.7E-08	1.5E-07	5.29
Toxaphene	5.5E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-07	4.9E-07	5.0E-12	5.5E-12			3.7E-07	4.1E-07	9.0E-07	31.95
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-06		1.7E-11				1.3E-06	2.8E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 1E-03	1 7E+01	1.7E+01	1.7E+01	1	0 10		8.9E-11	1.5E-09	1.0E-15	1.7E-14			7.4E-11	1.3E-09	2 8E-09	7 45
Dieldrin	2 3E-03	1 6E+01	1.6E+01	1.6E+01	1	0 10		1.8E-10	2 9E-09	2 0E-15	3.3E-14			1.5E-10	2 4E-09	5 3E-09	14 35
Chlordane	2 2E-03	1 3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2 0E-15	2.6E-15			1 5E-10	1.9E-10	4.2E-10	1.14
Heptachlor	1 1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15			7.4E-11	3.3E-10	7 3E-10	1 97
Heptachlor epoxide	7 4E-03	9 1E+00	9.1E+00	9.1E+00	1	0 10		6.0E-10	5.5E-09	6.7E-15	6.1E-14			5 0E-10	4.5E-09	1 0E-08	26 84
Toxaphene	1 1E-01	1 1E+00	1.1E+00	1 1E+00	1	0 10		8 9E-09	9 8E-09	1.0E-13	1.1E-13			7 4E-09	8.1E-09	1 8E-08	48 24
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1 5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2 0E-08		2.3E-13				1 7E-08	3 7E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-2 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.1E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.5E-08	4.3E-07	2.8E-13	4.8E-12			2.1E-08	3.5E-07	7.8E-07	48.06
Dieldrin	3.3E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-08	4.3E-07	3.0E-13	4.8E-12			2.2E-08	3.5E-07	7.8E-07	48.15
Chlordane	6.4E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.2E-09	6.7E-09	5.8E-14	7.5E-14			4.3E-09	5.6E-09	1.2E-08	0.76
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	0.04
Heptachlor epoxide	2.4E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.9E-09	1.8E-08	2.2E-14	2.0E-13			1.6E-09	1.5E-08	3.2E-08	1.99
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	1.00
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									8.9E-07		9.9E-12				7.4E-07	1.6E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-2 5FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.1E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.5E-08	4.3E-07	2.8E-13	4.8E-12			2.1E-08	3.5E-07	7.8E-07	31.26
Dieldrin	3.3E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-08	4.3E-07	3.0E-13	4.8E-12			2.2E-08	3.5E-07	7.8E-07	31.32
Chlordane	1.0E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		8.1E-09	1.1E-08	9.1E-14	1.2E-13			6.7E-09	8.7E-09	1.9E-08	0.77
Heptachlor	5.0E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.1E-09	1.8E-08	4.5E-14	2.1E-13			3.4E-09	1.5E-08	3.3E-08	1.33
Heptachlor epoxide	5.0E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.1E-09	3.7E-08	4.5E-14	4.1E-13			3.4E-09	3.1E-08	6.7E-08	2.70
Toxaphene	5.0E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.1E-07	4.5E-07	4.5E-12	5.0E-12			3.4E-07	3.7E-07	8.1E-07	32.62
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-06		1.5E-11				1.1E-06	2.5E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.7E-11	1.7E-09	1.1E-15	1.8E-14			8.1E-11	1.4E-09	3.0E-09	7.24
Dieldrin	5.3E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.3E-10	6.9E-09	4.8E-15	7.7E-14			3.6E-10	5.7E-09	1.3E-08	30.09
Chlordane	9.4E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		7.6E-10	9.9E-10	8.5E-15	1.1E-14			6.3E-10	8.2E-10	1.8E-09	4.34
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.3E-11	4.2E-10	1.0E-15	4.8E-15			7.7E-11	3.5E-10	7.7E-10	1.84
Heptachlor epoxide	3.6E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.9E-10	2.7E-09	3.3E-15	3.0E-14			2.4E-10	2.2E-09	4.9E-09	11.62
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.3E-09	1.0E-08	1.0E-13	1.1E-13			7.7E-09	8.5E-09	1.9E-08	44.88
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.3E-08		2.6E-13				1.9E-08	4.2E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL09-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.2E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.7E-09	1.7E-07	1.1E-13	1.8E-12			8.1E-09	1.4E-07	3.0E-07	10.91
Dieldrin	5.8E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.7E-08	7.5E-07	5.3E-13	8.4E-12			3.9E-08	6.2E-07	1.4E-06	49.64
Chlordane	5.4E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.4E-08	5.7E-08	4.9E-13	6.4E-13			3.6E-08	4.7E-08	1.0E-07	3.76
Heptachlor	2.3E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.9E-08	8.4E-08	2.1E-13	9.6E-13			1.5E-08	6.9E-08	1.5E-07	5.54
Heptachlor epoxide	1.2E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.7E-09	8.9E-08	1.1E-13	9.9E-13			8.1E-09	7.3E-08	1.6E-07	5.84
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	0.65
DIOXIN																	
2,3,7,8-TCDD	3.0E-05	1.5E+05	1.5E+05	1.5E+05	1	0.10		2.4E-12	3.6E-07	2.7E-17	4.0E-12			2.0E-12	3.0E-07	6.6E-07	23.669
Total Cancer Risk									1.5E-06		1.7E-11				1.3E-06	2.1E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL09-3FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.3E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-08	1.8E-07	1.2E-13	2.0E-12			8.7E-09	1.5E-07	3.3E-07	12.34
Dieldrin	6.5E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.3E-08	8.4E-07	5.9E-13	9.4E-12			4.4E-08	7.0E-07	1.5E-06	58.06
Chlordane	5.9E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.8E-08	6.2E-08	5.3E-13	6.9E-13			4.0E-08	5.1E-08	1.1E-07	4.28
Heptachlor	2.4E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.9E-08	8.8E-08	2.2E-13	1.0E-12			1.6E-08	7.2E-08	1.6E-07	6.03
Heptachlor epoxide	1.2E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.7E-09	8.9E-08	1.1E-13	9.9E-13			8.1E-09	7.3E-08	1.6E-07	6.10
Toxaphene	2.2E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.7E-07	1.9E-07	1.9E-12	2.1E-12			1.4E-07	1.6E-07	3.5E-07	13.20
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-06		1.6E-11				1.2E-06	2.7E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL33-1 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	7.7E+02	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.2E-05	1.1E-03	7.0E-10	1.2E-08	0.0E+00	0.0E+00	5.2E-05	8.8E-04	1.9E-03	93.87
Dieldrin	1.1E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.5E-07	1.4E-05	9.5E-12	1.5E-10	0.0E+00	0.0E+00	7.0E-07	1.1E-05	2.5E-05	1.20
Chlordane	2.1E+01	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-06	2.2E-06	1.9E-11	2.5E-11	0.0E+00	0.0E+00	1.4E-06	1.8E-06	4.0E-06	0.20
Heptachlor	2.4E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.9E-06	8.8E-06	2.2E-11	1.0E-10	0.0E+00	0.0E+00	1.6E-06	7.2E-06	1.6E-05	0.77
Heptachlor epoxide	1.1E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-07	7.7E-06	9.5E-12	8.7E-11	0.0E+00	0.0E+00	7.0E-07	6.4E-06	1.4E-05	0.69
Toxaphene	4.2E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.4E-05	3.7E-05	3.8E-10	4.1E-10	0.0E+00	0.0E+00	2.8E-05	3.1E-05	6.8E-05	3.27
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.1E-03		1.3E-08		0.0E+00		9.4E-04	2.1E-03	100

ASSUMPTIONS:

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL33-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.8E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.1E-08	5.2E-07	3.4E-13	5.9E-12	0.0E+00	0.0E+00	2.5E-08	4.3E-07	9.6E-07	67.57
Dieldrin	1.6E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.3E-08	2.1E-07	1.4E-13	2.3E-12	0.0E+00	0.0E+00	1.1E-08	1.7E-07	3.8E-07	26.78
Chlordane	6.6E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.4E-09	7.0E-09	6.0E-14	7.8E-14	0.0E+00	0.0E+00	4.4E-09	5.8E-09	1.3E-08	0.90
Heptachlor	3.5E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.8E-09	1.3E-08	3.2E-14	1.5E-13	0.0E+00	0.0E+00	2.3E-09	1.1E-08	2.3E-08	1.65
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-10	4.1E-09	5.0E-15	4.5E-14	0.0E+00	0.0E+00	3.7E-10	3.4E-09	7.4E-09	0.52
Toxaphene	2.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.8E-08	2.0E-08	2.0E-13	2.2E-13	0.0E+00	0.0E+00	1.5E-08	1.7E-08	3.7E-08	2.59
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.8E-07		8.7E-12		0.0E+00		6.4E-07	1.4E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL34-1 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2 4E+01	1 7E+01	1 7E+01	1 7E+01	1	0 10		1 9E-06	3 3E-05	2.2E-11	3 7E-10	0 0E+00	0.0E+00	1.6E-06	2 7E-05	6 0E-05	29 36
Dieldrin	3 3E+01	1 6E+01	1 6E+01	1 6E+01	1	0 10		2 7E-06	4 3E-05	3 0E-11	4 8E-10	0 0E+00	0 0E+00	2 2E-06	3 5E-05	7 8E-05	38.00
Chlordane	1 6E+02	1 3E+00	1 3E+00	1 3E+00	1	0 10		1.3E-05	1 6E-05	1.4E-10	1.8E-10	0 0E+00	0.0E+00	1.0E-05	1 4E-05	3 0E-05	14.60
Heptachlor	2 6E+01	4 5E+00	4 5E+00	4 6E+00	1	0 10		2 1E-06	9 5E-06	2.4E-11	1.1E-10	0 0E+00	0 0E+00	1 7E-06	7 9E-06	1.7E-05	8 42
Heptachlor epoxide	2 6E+00	9 1E+00	9 1E+00	9.1E+00	1	0.10		2 1E-07	1.9E-06	2 4E-12	2 1E-11	0 0E+00	0 0E+00	1 7E-07	1 6E-06	3 5E-06	1.70
Toxaphene	1 0E+02	1 1E+00	1.1E+00	1 1E+00	1	0 10		8 1E-06	8 9E-06	9 1E-11	1 0E-10	0 0E+00	0 0E+00	6 7E-06	7 4E-06	1 6E-05	7.92
DIOXIN																	
2,3,7,8-TCDD	NA	1 5E+05	1 5E+05	1 5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.1E-04		1.3E-09		0.0E+00		9 3E-05	2 1E-04	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL34-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-11	1.5E-09	1.0E-15	1.7E-14	0.0E+00	0.0E+00	7.4E-11	1.3E-09	2.8E-09	18.24
Dieldrin	1.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.9E-11	1.4E-09	1.0E-15	1.6E-14	0.0E+00	0.0E+00	7.4E-11	1.2E-09	2.6E-09	17.17
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15	0.0E+00	0.0E+00	1.5E-10	1.9E-10	4.2E-10	2.79
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15	0.0E+00	0.0E+00	7.4E-11	3.3E-10	7.3E-10	4.83
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15	0.0E+00	0.0E+00	7.4E-11	6.7E-10	1.5E-09	9.76
Toxaphene	4.4E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.6E-09	3.9E-09	4.0E-14	4.4E-14	0.0E+00	0.0E+00	3.0E-09	3.2E-09	7.2E-09	47.21
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									8.3E-09		9.3E-14		0.0E+00		6.9E-09	1.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL35-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-08	1.5E-06	1.0E-12	1.7E-11	0.0E+00	0.0E+00	7.4E-08	1.3E-06	2.8E-06	24.06
Dieldrin	3.4E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.8E-07	4.4E-06	3.1E-12	4.9E-11	0.0E+00	0.0E+00	2.3E-07	3.6E-06	8.1E-06	70.00
Chlordane	5.3E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.3E-08	5.6E-08	4.8E-13	6.2E-13	0.0E+00	0.0E+00	3.6E-08	4.6E-08	1.0E-07	0.89
Heptachlor	5.5E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-09	2.0E-08	5.0E-14	2.3E-13	0.0E+00	0.0E+00	3.7E-09	1.7E-08	3.7E-08	0.32
Heptachlor epoxide	1.5E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.2E-08	1.1E-07	1.4E-13	1.2E-12	0.0E+00	0.0E+00	1.0E-08	9.2E-08	2.0E-07	1.76
Toxaphene	2.1E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.7E-07	1.9E-07	1.9E-12	2.1E-12	0.0E+00	0.0E+00	1.4E-07	1.5E-07	3.4E-07	2.97
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									6.3E-06		7.0E-11		0.0E+00		5.2E-06	1.2E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS \cdot MCF \cdot SA \cdot AF \cdot ABS \cdot EF \cdot EDD \cdot ET}{BW \cdot AT \cdot TCF \cdot TC}$$

$$CRD = IDD \cdot SFD$$

$$IDIS = \frac{CS \cdot IR \cdot RF \cdot CF \cdot EF \cdot EDIS}{BW \cdot AT \cdot TCF \cdot PEF}$$

$$CRI = IDI \cdot SFI$$

$$IDIV = \frac{CS \cdot (1/VF) \cdot IR \cdot FIIV \cdot EF \cdot EDIV}{BW \cdot AT \cdot TCF}$$

$$CRIV = IDIV \cdot SFI$$

$$IDIG = \frac{CS \cdot IGR \cdot FIIG \cdot MCF \cdot EF \cdot EDIG}{BW \cdot AT \cdot TCF}$$

$$CRIG = IDIG \cdot SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL35-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	4.4E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.6E-08	6.1E-07	4.0E-13	6.8E-12	0.0E+00	0.0E+00	3.0E-08	5.0E-07	1.1E-06	43.48
Dieldrin	5.5E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.5E-08	7.1E-07	5.0E-13	8.0E-12	0.0E+00	0.0E+00	3.7E-08	5.9E-07	1.3E-06	51.16
Chlordane	1.2E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		9.4E-09	1.2E-08	1.1E-13	1.4E-13	0.0E+00	0.0E+00	7.8E-09	1.0E-08	2.2E-08	0.88
Heptachlor	3.8E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.1E-09	1.4E-08	3.4E-14	1.6E-13	0.0E+00	0.0E+00	2.5E-09	1.1E-08	2.5E-08	0.99
Heptachlor epoxide	1.2E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.3E-10	8.5E-09	1.0E-14	9.5E-14	0.0E+00	0.0E+00	7.7E-10	7.0E-09	1.6E-08	0.61
Toxaphene	4.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.6E-08	4.0E-08	4.1E-13	4.5E-13	0.0E+00	0.0E+00	3.0E-08	3.3E-08	7.3E-08	2.88
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-06		1.6E-11		0.0E+00		1.2E-06	2.5E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL36-1 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 9E+01	1 7E+01	1 7E+01	1.7E+01	1	0 10		1.5E-06	2 6E-05	1.7E-11	2 9E-10	0 0E+00	0 0E+00	1 3E-06	2 2E-05	4 8E-05	27 13
Dieldrin	2 5E+01	1 6E+01	1.6E+01	1.6E+01	1	0 10		2.0E-06	3.2E-05	2 3E-11	3 6E-10	0 0E+00	0 0E+00	1 7E-06	2 7E-05	5 9E-05	33 60
Chlordane	1.3E+02	1 3E+00	1.3E+00	1.3E+00	1	0 10		1.1E-05	1 4E-05	1 2E-10	1 5E-10	0 0E+00	0 0E+00	8 8E-06	1.1E-05	2 5E-05	14.31
Heptachlor	3 5E+01	4.5E+00	4 5E+00	4 6E+00	1	0 10		2 8E-06	1.3E-05	3.2E-11	1.5E-10	0.0E+00	0.0E+00	2.3E-06	1.1E-05	2 3E-05	13 23
Heptachlor epoxide	2 7E+00	9 1E+00	9 1E+00	9.1E+00	1	0 10		2.1E-07	2.0E-06	2 4E-12	2.2E-11	0 0E+00	0 0E+00	1.6E-07	1.6E-06	3 6E-06	2.03
Toxaphene	1 1E+02	1 1E+00	1.1E+00	1.1E+00	.1	0 10		8 5E-06	9 4E-06	9 5E-11	1.0E-10	0.0E+00	0 0E+00	7.0E-06	7.7E-06	1 7E-05	9 70
DIOXIN																	
2,3,7,8-TCDD	NA	1 5E+05	1 5E+05	5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									9 7E-05		1.1E-09		0 0E+00		8 0E-05	1 8E-04	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL36-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.7E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.6E-07	7.9E-06	5.2E-12	8.8E-11	0.0E+00	0.0E+00	3.8E-07	6.5E-06	1.4E-05	48.19
Dieldrin	2.9E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.4E-07	3.8E-06	2.6E-12	4.2E-11	0.0E+00	0.0E+00	1.9E-07	3.1E-06	6.9E-06	23.07
Chlordane	1.5E+01	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-06	1.5E-06	1.3E-11	1.7E-11	0.0E+00	0.0E+00	9.7E-07	1.3E-06	2.8E-06	9.37
Heptachlor	5.4E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.4E-07	2.0E-06	4.9E-12	2.2E-11	0.0E+00	0.0E+00	3.6E-07	1.6E-06	3.6E-06	12.08
Heptachlor epoxide	2.8E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.3E-08	2.1E-07	2.5E-13	2.3E-12	0.0E+00	0.0E+00	1.9E-08	1.7E-07	3.8E-07	1.27
Toxaphene	1.1E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-07	9.8E-07	1.0E-11	1.1E-11	0.0E+00	0.0E+00	7.4E-07	8.1E-07	1.8E-06	6.02
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-05		1.8E-10		0.0E+00		1.3E-05	3.0E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL56-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-08	1.5E-06	1.0E-12	1.7E-11	0.0E+00	0.0E+00	7.4E-08	1.3E-06	2.8E-06	62.37
Dieldrin	5.3E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.3E-08	6.9E-07	4.8E-13	7.7E-12	0.0E+00	0.0E+00	3.6E-08	5.7E-07	1.3E-06	28.28
Chlordane	5.2E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.2E-08	5.5E-08	4.7E-13	6.1E-13	0.0E+00	0.0E+00	3.5E-08	4.5E-08	1.0E-07	2.25
Heptachlor	5.0E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.1E-09	1.8E-08	4.5E-14	2.1E-13	0.0E+00	0.0E+00	3.4E-09	1.5E-08	3.3E-08	0.75
Heptachlor epoxide	1.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-09	7.4E-08	9.1E-14	8.2E-13	0.0E+00	0.0E+00	6.7E-09	6.1E-08	1.3E-07	3.04
Toxaphene	9.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		7.3E-08	8.0E-08	8.2E-13	9.0E-13	0.0E+00	0.0E+00	6.0E-08	6.6E-08	1.5E-07	3.30
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.4E-06		2.7E-11		0.0E+00		2.0E-06	4.4E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS \cdot MCF \cdot SA \cdot AF \cdot ABS \cdot EF \cdot EDD \cdot ET}{BW \cdot AT \cdot TCF \cdot TC}$$

$$CRD = IDD \cdot SFD$$

$$IDIS = \frac{CS \cdot IR \cdot RF \cdot CF \cdot EF \cdot EDIS}{BW \cdot AT \cdot TCF \cdot PEF}$$

$$CRI = IDI \cdot SFI$$

$$IDIV = \frac{CS \cdot (1/VF) \cdot IR \cdot FIIV \cdot EF \cdot EDIV}{BW \cdot AT \cdot TCF}$$

$$CRIV = IDIV \cdot SFI$$

$$IDIG = \frac{CS \cdot IGR \cdot FIIG \cdot MCF \cdot EF \cdot EDIG}{BW \cdot AT \cdot TCF}$$

$$CRIG = IDIG \cdot SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL56-5FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.9E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-07	2.6E-06	1.7E-12	2.9E-11	0.0E+00	0.0E+00	1.3E-07	2.2E-06	4.8E-06	48.51
Dieldrin	1.6E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.3E-07	2.1E-06	1.4E-12	2.3E-11	0.0E+00	0.0E+00	1.1E-07	1.7E-06	3.8E-06	38.44
Chlordane	1.1E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		9.2E-08	1.2E-07	1.0E-12	1.3E-12	0.0E+00	0.0E+00	7.6E-08	9.9E-08	2.2E-07	2.23
Heptachlor	5.5E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-09	2.0E-08	5.0E-14	2.3E-13	0.0E+00	0.0E+00	3.7E-09	1.7E-08	3.7E-08	0.37
Heptachlor epoxide	1.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-09	7.4E-08	9.1E-14	8.2E-13	0.0E+00	0.0E+00	6.7E-09	6.1E-08	1.3E-07	1.37
Toxaphene	5.5E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-07	4.9E-07	5.0E-12	5.5E-12	0.0E+00	0.0E+00	3.7E-07	4.1E-07	9.0E-07	9.09
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									5.4E-06		6.0E-11		0.0E+00		4.5E-06	9.9E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL57-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.3E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-08	1.8E-07	1.2E-13	2.0E-12	0.0E+00	0.0E+00	8.7E-09	1.5E-07	3.3E-07	49.34
Dieldrin	1.2E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.7E-09	1.6E-07	1.1E-13	1.7E-12	0.0E+00	0.0E+00	8.1E-09	1.3E-07	2.8E-07	42.87
Chlordane	2.1E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-09	2.2E-09	1.9E-14	2.4E-14	0.0E+00	0.0E+00	1.4E-09	1.8E-09	3.9E-09	0.60
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14	0.0E+00	0.0E+00	3.7E-10	1.7E-09	3.7E-09	0.55
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-10	4.1E-09	5.0E-15	4.5E-14	0.0E+00	0.0E+00	3.7E-10	3.4E-09	7.4E-09	1.12
Toxaphene	2.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.8E-08	2.0E-08	2.0E-13	2.2E-13	0.0E+00	0.0E+00	1.5E-08	1.7E-08	3.7E-08	5.53
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									3.6E-07		4.1E-12		0.0E+00		3.0E-07	6.6E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS \cdot MCF \cdot SA \cdot AF \cdot ABS \cdot EF \cdot EDD \cdot ET}{BW \cdot AT \cdot TCF \cdot TC}$$

$$CRD = IDD \cdot SFD$$

$$IDIS = \frac{CS \cdot IR \cdot RF \cdot CF \cdot EF \cdot EDIS}{BW \cdot AT \cdot TCF \cdot PEF}$$

$$CRI = IDI \cdot SFI$$

$$IDIV = \frac{CS \cdot (1/VF) \cdot IR \cdot FIIV \cdot EF \cdot EDIV}{BW \cdot AT \cdot TCF}$$

$$CRIV = IDIV \cdot SFI$$

$$IDIG = \frac{CS \cdot IGR \cdot FIIG \cdot MCF \cdot EF \cdot EDIG}{BW \cdot AT \cdot TCF}$$

$$CRIG = IDIG \cdot SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL57-5FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.3E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.3E-09	7.3E-08	4.8E-14	8.2E-13	0.0E+00	0.0E+00	3.6E-09	6.0E-08	1.3E-07	34.72
Dieldrin	6.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.9E-09	7.9E-08	5.5E-14	8.8E-13	0.0E+00	0.0E+00	4.1E-09	6.5E-08	1.4E-07	37.61
Chlordane	1.8E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.4E-09	1.8E-09	1.6E-14	2.1E-14	0.0E+00	0.0E+00	1.2E-09	1.5E-09	3.4E-09	0.88
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14	0.0E+00	0.0E+00	3.7E-10	1.7E-09	3.7E-09	0.95
Heptachlor epoxide	7.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.8E-10	5.3E-09	6.5E-15	5.9E-14	0.0E+00	0.0E+00	4.8E-10	4.4E-09	9.7E-09	2.52
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13	0.0E+00	0.0E+00	3.7E-08	4.1E-08	9.0E-08	23.31
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.1E-07		2.4E-12		0.0E+00		1.7E-07	3.8E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL58-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.1E-10	6.9E-09	4.5E-15	7.7E-14	0.0E+00	0.0E+00	3.4E-10	5.7E-09	1.3E-08	42.33
Dieldrin	3.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.5E-10	4.0E-09	2.8E-15	4.5E-14	0.0E+00	0.0E+00	2.1E-10	3.3E-09	7.3E-09	24.70
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15	0.0E+00	0.0E+00	1.5E-10	1.9E-10	4.2E-10	1.42
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15	0.0E+00	0.0E+00	7.4E-11	3.3E-10	7.3E-10	2.46
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15	0.0E+00	0.0E+00	7.4E-11	6.7E-10	1.5E-09	4.98
Toxaphene	4.4E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.6E-09	3.9E-09	4.0E-14	4.4E-14	0.0E+00	0.0E+00	3.0E-09	3.2E-09	7.2E-09	24.10
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-08		1.8E-13		0.0E+00		1.3E-08	3.0E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL58-5FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-10	1.5E-08	1.0E-14	1.7E-13	0.0E+00	0.0E+00	7.4E-10	1.3E-08	2.8E-08	9.70
Dieldrin	2.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-09	2.9E-08	2.0E-14	3.2E-13	0.0E+00	0.0E+00	1.5E-09	2.4E-08	5.2E-08	18.26
Chlordane	2.2E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-09	2.3E-09	2.0E-14	2.6E-14	0.0E+00	0.0E+00	1.5E-09	1.9E-09	4.2E-09	1.48
Heptachlor	1.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-10	4.0E-09	1.0E-14	4.6E-14	0.0E+00	0.0E+00	7.4E-10	3.3E-09	7.3E-09	2.57
Heptachlor epoxide	1.1E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-10	8.1E-09	1.0E-14	9.1E-14	0.0E+00	0.0E+00	7.4E-10	6.7E-09	1.5E-08	5.19
Toxaphene	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-08	9.8E-08	1.0E-12	1.1E-12	0.0E+00	0.0E+00	7.4E-08	8.1E-08	1.8E-07	62.79
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-07		1.7E-12		0.0E+00		1.3E-07	2.9E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL59-2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.5E-11	1.4E-09	9.5E-16	1.6E-14	0.0E+00	0.0E+00	7.0E-11	1.2E-09	2.6E-09	5.85
Dieldrin	1.4E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.1E-09	1.8E-08	1.3E-14	2.0E-13	0.0E+00	0.0E+00	9.4E-10	1.5E-08	3.3E-08	73.43
Chlordane	2.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-10	2.2E-10	1.9E-15	2.5E-15	0.0E+00	0.0E+00	1.4E-10	1.8E-10	4.0E-10	0.89
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15	0.0E+00	0.0E+00	7.0E-11	3.2E-10	7.0E-10	1.55
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15	0.0E+00	0.0E+00	7.0E-11	6.4E-10	1.4E-09	3.13
Toxaphene	4.2E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.4E-09	3.7E-09	3.8E-14	4.2E-14	0.0E+00	0.0E+00	2.8E-09	3.1E-09	6.8E-09	15.14
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.5E-08		2.8E-13		0.0E+00		2.0E-08	4.5E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL59-2FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.6E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.3E-10	2.2E-09	1.4E-15	2.5E-14	0.0E+00	0.0E+00	1.1E-10	1.8E-09	4.0E-09	4.16
Dieldrin	3.0E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.4E-09	3.9E-08	2.7E-14	4.3E-13	0.0E+00	0.0E+00	2.0E-09	3.2E-08	7.1E-08	73.49
Chlordane	5.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.1E-10	5.4E-10	4.6E-15	6.0E-15	0.0E+00	0.0E+00	3.4E-10	4.4E-10	9.8E-10	1.02
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15	0.0E+00	0.0E+00	7.0E-11	3.2E-10	7.0E-10	0.72
Heptachlor epoxide	2.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.7E-10	1.5E-09	1.9E-15	1.7E-14	0.0E+00	0.0E+00	1.4E-10	1.3E-09	2.8E-09	2.93
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13	0.0E+00	0.0E+00	7.0E-09	7.7E-09	1.7E-08	17.68
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									5.3E-08		5.9E-13		0.0E+00		4.4E-08	9.7E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

Total Non - Cancer Hazard Quotient
Raw Materials Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte						Total Hazard Quotient
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	
SL01-4FT *	0.001	0.000	0.000	0.000	0.001	0.000	0.003
SL02-3FT #	0.002	0.004	0.003	0.000	0.001	0.000	0.010
SL02-5FT #	0.000	0.001	0.000	0.000	0.001	0.000	0.002
SL03-4.5FT #	0.002	0.009	0.003	0.000	0.004	0.000	0.019
SL04-4.5FT #	0.001	0.001	0.000	0.000	0.001	0.000	0.003
SL05-4.5FT #	0.011	0.012	0.006	0.000	0.001	0.000	0.030
SL06-3FT #	0.000	0.001	0.001	0.000	0.001	0.000	0.003
SL07-3FT #	0.016	0.085	0.258	0.010	0.097	0.000	0.465
SL07-3FT-DL #	0.019	0.087	0.258	0.011	0.076	0.000	0.450
SL07-4.5FT #	0.000	0.000	0.000	0.000	0.005	0.000	0.006
SL08-2.5FT #	0.107	0.068	0.011	0.000	0.017	0.000	0.203
SL08-2.5FT-DL #	0.107	0.068	0.017	0.001	0.035	0.000	0.229
SL08-4.5FT #	0.000	0.001	0.002	0.000	0.002	0.000	0.006
SL09-3FT #	0.041	0.120	0.093	0.005	0.083	0.000	0.343
SL09-3FT-DL #	0.045	0.135	0.102	0.005	0.083	0.000	0.370
SL33-1.2FT *	266.210	2.178	3.630	0.498	7.260	0.000	279.776
SL33-3.5FT *	0.131	0.033	0.011	0.001	0.004	0.000	0.181
SL34-1.2FT *	8.297	6.845	26.967	0.539	1.798	0.000	44.447
SL34-3.5FT *	0.000	0.000	0.000	0.000	0.001	0.000	0.002
SL35-1FT *	0.380	0.705	0.092	0.001	0.104	0.000	1.282
SL35-4.5FT *	0.152	0.114	0.020	0.001	0.008	0.000	0.295
SL36-1.2FT *	6.569	5.186	22.645	0.726	1.832	0.000	36.958
SL36-4.5FT *	1.971	0.602	2.507	0.112	0.194	0.000	5.384
SL56-5FT #	0.380	0.110	0.090	0.001	0.069	0.000	0.650
SL56-5FT-CLP #	2.144	0.332	0.415	0.004	0.138	0.000	3.033
SL57-5FT #	0.045	0.025	0.004	0.000	0.004	0.000	0.077
SL57-5FT-CLP #	0.018	0.013	0.003	0.000	0.005	0.000	0.039
SL58-5FT #	0.002	0.001	0.000	0.000	0.001	0.000	0.004
SL58-5FT-CLP #	0.004	0.005	0.004	0.000	0.008	0.000	0.020
SL59-2FT #	0.000	0.003	0.000	0.000	0.001	0.000	0.004
SL59-2FT-CLP #	0.001	0.006	0.001	0.000	0.001	0.000	0.009

Notes:

(1) Risk was calculated based on assumptions in RI baseline risk assessment.

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

(3) Total hazard quotient at location SL56 was < 1 based on SW846 EPA Method 8081 and > 1 based on CLP data.

NA - Not Analyzed

* - Indicates soil at this location was excavated during the Phase I RA

- Indicates soil at this location was covered with concrete during the Phase I RA

Riverdale Chemical Company
Prepared By: David A. Yaros
Checked By: RAM

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Last Updated: 3/13/20019 03 AM

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL01-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.2E-03	3.0E-05	3.0E-05		1	0.10		1.8E-08	6.1E-04	2.0E-13				1.5E-08	5.0E-04	1.1E-03	40.89
Dieldrin	2.1E-03	5.0E-05	5.0E-05		1	0.10		1.2E-08	2.4E-04	1.3E-13				9.9E-09	2.0E-04	4.4E-04	16.10
Chlordane	2.2E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.1E-04	1.4E-13				1.0E-08	1.7E-04	3.8E-04	14.06
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1.0E-05	2.3E-05	0.84
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.2E-09	4.2E-04	7.0E-14				5.2E-09	3.4E-04	7.6E-04	28.11
Toxaphene	1.1E-01	NI	NI		1	0.10		6.2E-07		7.0E-12				5.2E-07			
HERBICIDES																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E-03						1.2E-03	2.7E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL02-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	7.2E-03	3.0E-05	3.0E-05		1	0.10		4.1E-08	1.4E-03	4.6E-13				3.4E-08	1.1E-03	2.5E-03	24.09
Dieldrin	2.1E-02	5.0E-05	5.0E-05		1	0.10		1.2E-07	2.4E-03	1.3E-12				9.9E-08	2.0E-03	4.4E-03	42.16
Chlordane	1.5E-02	6.0E-05	6.0E-05		1	0.10		8.3E-08	1.4E-03	9.3E-13				6.9E-08	1.1E-03	2.5E-03	24.42
Heptachlor	9.8E-03	5.0E-04	5.0E-04		1	0.10		5.6E-08	1.1E-04	6.2E-13				4.6E-08	9.2E-05	2.0E-04	1.97
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.2E-09	4.2E-04	7.0E-14				5.2E-09	3.4E-04	7.6E-04	7.36
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.7E-03						4.7E-03	1.0E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL02-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.2E-03	3.0E-05	3.0E-05		1	0.10		6.5E-09	2.2E-04	7.3E-14				5.4E-09	1.8E-04	4.0E-04	16.85
Dieldrin	3.3E-03	5.0E-05	5.0E-05		1	0.10		1.9E-08	3.7E-04	2.1E-13				1.5E-08	3.1E-04	6.8E-04	29.02
Chlordane	2.7E-03	6.0E-05	6.0E-05		1	0.10		1.5E-08	2.5E-04	1.7E-13				1.2E-08	2.1E-04	4.6E-04	19.42
Heptachlor	1.2E-03	5.0E-04	5.0E-04		1	0.10		6.5E-09	1.3E-05	7.3E-14				5.4E-09	1.1E-05	2.4E-05	1.01
Heptachlor epoxide	1.2E-03	1.5E-05	1.5E-05		1	0.10		6.5E-09	4.4E-04	7.3E-14				5.4E-09	3.6E-04	8.0E-04	33.70
Toxaphene	1.2E-01	NI	NI		1	0.10		6.5E-07		7.3E-12				5.4E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-03						1.1E-03	2.4E-03	100

NI = No Information Available

ASSUMPTIONS	
Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL03-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	7 2E-03	3 0E-05	3 0E-05		1	0 10		4.1E-08	1 4E-03	4.6E-13				3 4E-08	1 1E-03	2 5E-03	13 35
Dieldrin	4 3E-02	5 0E-05	5 0E-05		1	0 10		2.4E-07	4 9E-03	2.7E-12				2 0E-07	4 0E-03	8 9E-03	47 84
Chlordane	1 9E-02	6 0E-05	6.0E-05		1	0 10		1.1E-07	1 8E-03	1.2E-12				9 0E-08	1.5E-03	3.3E-03	17 80
Heptachlor	5 5E-03	5.0E-04	5 0E-04		1	0 10		3.1E-08	6.2E-05	3 5E-13				2 6E-08	5.2E-05	1 1E-04	0 61
Heptachlor epoxide	5 5E-03	1 5E-05	1 5E-05		1	0.10		3.1E-08	2.1E-03	3.5E-13				2.6E-08	1.7E-03	3 8E-03	20 40
Toxaphene	5 5E-01	NI	NI		1	0 10		3.1E-06		3 5E-11				2 6E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.0E-02						8 4E-03	1 9E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL04-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E-03	3.0E-05	3.0E-05		1	0.10		1.1E-08	3.6E-04	1.2E-13				8.9E-09	3.0E-04	6.6E-04	26.01
Dieldrin	3.4E-03	5.0E-05	5.0E-05		1	0.10		1.9E-08	3.9E-04	2.2E-13				1.6E-08	3.2E-04	7.1E-04	27.92
Chlordane	2.2E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.1E-04	1.4E-13				1.0E-08	1.7E-04	3.8E-04	15.06
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1.0E-05	2.3E-05	0.90
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.2E-09	4.2E-04	7.0E-14				5.2E-09	3.4E-04	7.6E-04	30.11
Toxaphene	1.1E-01	NI	NI		1	0.10		6.2E-07		7.0E-12				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E-03						1.1E-03	2.5E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL05-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.1E-02	3.0E-05	3.0E-05		1	0.10		1.8E-07	5.9E-03	2.0E-12				1.5E-07	4.9E-03	1.1E-02	35.94
Dieldrin	5.9E-02	5.0E-05	5.0E-05		1	0.10		3.3E-07	6.7E-03	3.7E-12				2.8E-07	5.5E-03	1.2E-02	41.04
Chlordane	3.4E-02	6.0E-05	6.0E-05		1	0.10		1.9E-07	3.2E-03	2.2E-12				1.6E-07	2.7E-03	5.9E-03	19.71
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1.0E-05	2.3E-05	0.08
Heptachlor epoxide	1.4E-03	1.5E-05	1.5E-05		1	0.10		7.9E-09	5.3E-04	8.9E-14				6.6E-09	4.4E-04	9.7E-04	3.25
Toxaphene	1.1E-01	NI	NI		1	0.10		6.2E-07		7.0E-12				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.6E-02						1.4E-02	3.0E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL06-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.3E-03	3.0E-05	3.0E-05		1	0.10		7.4E-09	2.5E-04	8.2E-14				6.1E-09	2.0E-04	4.5E-04	14.15
Dieldrin	2.6E-03	5.0E-05	5.0E-05		1	0.10		1.5E-08	3.0E-04	1.6E-13				1.2E-08	2.4E-04	5.4E-04	16.98
Chlordane	7.3E-03	6.0E-05	6.0E-05		1	0.10		4.1E-08	6.9E-04	4.6E-13				3.4E-08	5.7E-04	1.3E-03	39.73
Heptachlor	1.3E-03	5.0E-04	5.0E-04		1	0.10		7.4E-09	1.5E-05	8.2E-14				6.1E-09	1.2E-05	2.7E-05	0.85
Heptachlor epoxide	1.3E-03	1.5E-05	1.5E-05		1	0.10		7.4E-09	4.9E-04	8.2E-14				6.1E-09	4.1E-04	9.0E-04	28.30
Toxaphene	1.3E-01	NI	NI		1	0.10		7.4E-07		8.2E-12				6.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.7E-03						1.4E-03	3.2E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	4.7E-02	3.0E-05	3.0E-05		1	0.10		2.7E-07	8.9E-03	3.0E-12				2.2E-07	7.4E-03	1.6E-02	3.49
Dieldrin	4.1E-01	5.0E-05	5.0E-05		1	0.10		2.3E-06	4.7E-02	2.6E-11				1.9E-06	3.9E-02	8.5E-02	18.28
Chlordane	1.5E+00	6.0E-05	6.0E-05		1	0.10		8.5E-06	1.4E-01	9.4E-11				7.0E-06	1.2E-01	2.6E-01	55.37
Heptachlor	4.6E-01	5.0E-04	5.0E-04		1	0.10		2.6E-06	5.2E-03	2.9E-11				2.2E-06	4.3E-03	9.5E-03	2.05
Heptachlor epoxide	1.4E-01	1.5E-05	1.5E-05		1	0.10		7.9E-07	5.3E-02	8.9E-12				6.6E-07	4.4E-02	9.7E-02	20.81
Toxaphene	5.5E-01	NI	NI		1	0.10		3.1E-06		3.5E-11				2.6E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.5E-01						2.1E-01	4.7E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-3FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5.5E-02	3.0E-05	3.0E-05		1	0.10		3.1E-07	1.0E-02	3.5E-12				2.6E-07	8.6E-03	1.9E-02	4.22
Dieldrin	4.2E-01	5.0E-05	5.0E-05		1	0.10		2.4E-06	4.8E-02	2.7E-11				2.0E-06	3.9E-02	8.7E-02	19.35
Chlordane	1.5E+00	6.0E-05	6.0E-05		1	0.10		8.5E-06	1.4E-01	9.4E-11				7.0E-06	1.2E-01	2.6E-01	57.19
Heptachlor	5.1E-01	5.0E-04	5.0E-04		1	0.10		2.9E-06	5.8E-03	3.2E-11				2.4E-06	4.8E-03	1.1E-02	2.35
Heptachlor epoxide	1.1E-01	1.5E-05	1.5E-05		1	0.10		6.2E-07	4.2E-02	7.0E-12				5.2E-07	3.4E-02	7.6E-02	16.89
Toxaphene	5.5E+00	NI	NI		1	0.10		3.1E-05		3.5E-10				2.6E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.5E-01						2.0E-01	4.5E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL07-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	3.0E-05	3.0E-05		1	0.10		6.2E-09	2.1E-04	7.0E-14				5.2E-09	1.7E-04	3.8E-04	5.97
Dieldrin	2.3E-03	5.0E-05	5.0E-05		1	0.10		1.3E-08	2.6E-04	1.4E-13				1.1E-08	2.1E-04	4.7E-04	7.33
Chlordane	2.2E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.1E-04	1.4E-13				1.0E-08	1.7E-04	3.8E-04	5.97
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1.0E-05	2.3E-05	0.36
Heptachlor epoxide	7.4E-03	1.5E-05	1.5E-05		1	0.10		4.2E-08	2.8E-03	4.7E-13				3.5E-08	2.3E-03	5.1E-03	80.36
Toxaphene	1.1E-01	NI	NI		1	0.10		6.2E-07		7.0E-12				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.5E-03						2.9E-03	6.4E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-2 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.1E-01	3.0E-05	3.0E-05		1	0.10		1.8E-06	5.9E-02	2.0E-11				1.5E-06	4.9E-02	1.1E-01	52.72
Dieldrin	3.3E-01	5.0E-05	5.0E-05		1	0.10		1.9E-06	3.7E-02	2.1E-11				1.5E-06	3.1E-02	6.8E-02	33.67
Chlordane	6.4E-02	6.0E-05	6.0E-05		1	0.10		3.6E-07	6.1E-03	4.1E-12				3.0E-07	5.0E-03	1.1E-02	5.44
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	0.01
Heptachlor epoxide	2.4E-02	1.5E-05	1.5E-05		1	0.10		1.4E-07	9.1E-03	1.5E-12				1.1E-07	7.5E-03	1.7E-02	8.16
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-01						9.2E-02	2.0E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-2 5FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.1E-01	3.0E-05	3.0E-05		1	0.10		1.8E-06	5.9E-02	2.0E-11				1.5E-06	4.9E-02	1.1E-01	46.90
Dieldrin	3.3E-01	5.0E-05	5.0E-05		1	0.10		1.9E-06	3.7E-02	2.1E-11				1.5E-06	3.1E-02	6.8E-02	29.95
Chlordane	1.0E-01	6.0E-05	6.0E-05		1	0.10		5.7E-07	9.5E-03	6.3E-12				4.7E-07	7.8E-03	1.7E-02	7.56
Heptachlor	5.0E-02	5.0E-04	5.0E-04		1	0.10		2.8E-07	5.7E-04	3.2E-12				2.3E-07	4.7E-04	1.0E-03	0.45
Heptachlor epoxide	5.0E-02	1.5E-05	1.5E-05		1	0.10		2.8E-07	1.9E-02	3.2E-12				2.3E-07	1.6E-02	3.5E-02	15.13
Toxaphene	5.0E+00	NI	NI		1	0.10		2.8E-05		3.2E-10				2.3E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-01						1.0E-01	2.3E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL08-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 2E-03	3 0E-05	3 0E-05		1	0 10		6 8E-09	2 3E-04	7.6E-14				5 6E-09	1 9E-04	4 1E-04	7 34
Dieldrin	5 3E-03	5 0E-05	5 0E-05		1	0 10		3.0E-08	6 0E-04	3 4E-13				2.5E-08	5 0E-04	1 1E-03	19 45
Chlordane	9 4E-03	6 0E-05	6.0E-05		1	0 10		5.3E-08	8.9E-04	6 0E-13				4 4E-08	7.4E-04	1.6E-03	28 75
Heptachlor	1 2E-03	5 0E-04	5 0E-04		1	0 10		6.5E-09	1.3E-05	7.3E-14				5 4E-09	1.1E-05	2 4E-05	0 42
Heptachlor epoxide	3 6E-03	1.5E-05	1 5E-05		1	0 10		2 0E-08	1.4E-03	2.3E-13				1 7E-08	1.1E-03	2 5E-03	44 04
Toxaphene	1 2E-01	NI	NI		1	0 10		6 5E-07		7.3E-12				5 4E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									3 1E-03						2.6E-03	5.7E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL09-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.2E-01	3.0E-05	3.0E-05		1	0.10		6.8E-07	2.3E-02	7.6E-12				5.6E-07	1.9E-02	4.1E-02	12.10
Dieldrin	5.8E-01	5.0E-05	5.0E-05		1	0.10		3.3E-06	6.6E-02	3.7E-11				2.7E-06	5.4E-02	1.2E-01	35.09
Chlordane	5.4E-01	6.0E-05	6.0E-05		1	0.10		3.1E-06	5.1E-02	3.4E-11				2.5E-06	4.2E-02	9.3E-02	27.22
Heptachlor	2.3E-01	5.0E-04	5.0E-04		1	0.10		1.3E-06	2.6E-03	1.5E-11				1.1E-06	2.2E-03	4.8E-03	1.39
Heptachlor epoxide	1.2E-01	1.5E-05	1.5E-05		1	0.10		6.8E-07	4.5E-02	7.6E-12				5.6E-07	3.8E-02	8.3E-02	24.20
Toxaphene	1.1E-01	NI	NI		1	0.10		6.2E-07		7.0E-12				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.9E-01						1.6E-01	3.4E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL09-3FT-DL

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.3E-01	3.0E-05	3.0E-05		1	0.10		7.4E-07	2.5E-02	8.2E-12				6.1E-07	2.0E-02	4.5E-02	12.16
Dieldrin	6.5E-01	5.0E-05	5.0E-05		1	0.10		3.7E-06	7.4E-02	4.1E-11				3.1E-06	6.1E-02	1.3E-01	36.47
Chlordane	5.9E-01	6.0E-05	6.0E-05		1	0.10		3.3E-06	5.6E-02	3.7E-11				2.8E-06	4.6E-02	1.0E-01	27.59
Heptachlor	2.4E-01	5.0E-04	5.0E-04		1	0.10		1.4E-06	2.7E-03	1.5E-11				1.1E-06	2.3E-03	5.0E-03	1.35
Heptachlor epoxide	1.2E-01	1.5E-05	1.5E-05		1	0.10		6.8E-07	4.5E-02	7.6E-12				5.6E-07	3.8E-02	8.3E-02	22.44
Toxaphene	2.2E+00	NI	NI		1	0.10		1.2E-05		1.4E-10				1.0E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.0E-01						1.7E-01	3.7E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL33-1 2 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	7.7E+02	3.0E-05	3.0E-05		1	0.10		4.4E-03	1.5E+02	4.9E-08				3.6E-03	1.2E+02	2.7E+02	95.15
Dieldrin	1.1E+01	5.0E-05	5.0E-05		1	0.10		6.0E-05	1.2E+00	6.7E-10				4.9E-05	9.9E-01	2.2E+00	0.78
Chlordane	2.1E+01	6.0E-05	6.0E-05		1	0.10		1.2E-04	2.0E+00	1.3E-09				9.9E-05	1.6E+00	3.6E+00	1.30
Heptachlor	2.4E+01	5.0E-04	5.0E-04		1	0.10		1.4E-04	2.7E-01	1.5E-09				1.1E-04	2.3E-01	5.0E-01	0.18
Heptachlor epoxide	1.1E+01	1.5E-05	1.5E-05		1	0.10		6.0E-05	4.0E+00	6.7E-10				4.9E-05	3.3E+00	7.3E+00	2.60
Toxaphene	4.2E+02	NI	NI		1	0.10		2.4E-03		2.6E-08				1.9E-03			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E+02						1.3E+02	2.8E+02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL33-3 5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3 8E-01	3 0E-05	3 0E-05		1	0 10		2.2E-06	7 2E-02	2 4E-11				1 8E-06	5 9E-02	1 3E-01	72 78
Dieldrin	1 6E-01	5 0E-05	5 0E-05		1	0.10		9.1E-07	1.8E-02	1.0E-11				7.5E-07	1.5E-02	3.3E-02	18.39
Chlordane	6 6E-02	6 0E-05	6 0E-05		1	0.10		3 7E-07	6 2E-03	4.2E-12				3.1E-07	5 2E-03	1.1E-02	6 32
Heptachlor	3 5E-02	5.0E-04	5 0E-04		1	0 10		2 0E-07	4 0E-04	2.2E-12				1 6E-07	3 3E-04	7 3E-04	0 40
Heptachlor epoxide	5 5E-03	1.5E-05	1 5E-05		1	0 10		3.1E-08	2 1E-03	3 5E-13				2 6E-08	1.7E-03	3.8E-03	2.11
Toxaphene	2 3E-01	NI	NI		1	0 10		1.3E-06		1.4E-11				1 1E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0 10											
No samples collected																	
Total Noncancer Hazard									9 9E-02						8 2E-02	1 8E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^4)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL34-1 2 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	2 4E+01	3.0E-05	3 0E-05		1	0 10		1.4E-04	4.5E+00	1.5E-09				1 1E-04	3.8E+00	8 3E+00	18 67
Dieldrin	3 3E+01	5 0E-05	5 0E-05		1	0 10		1.9E-04	3 7E+00	2 1E-09				1 5E-04	3 1E+00	6.8E+00	15.40
Chlordane	1.6E+02	6 0E-05	6.0E-05		1	0 10		8.9E-04	1.5E+01	9 9E-09				7.3E-04	1.2E+01	2.7E+01	60 67
Heptachlor	2 6E+01	5 0E-04	5.0E-04		1	0 10		1.5E-04	3.0E-01	1.6E-09				1.2E-04	2.4E-01	5.4E-01	1.21
Heptachlor epoxide	2.6E+00	1.5E-05	1 5E-05		1	0.10		1.5E-05	9 8E-01	1.6E-10				1 2E-05	8 1E-01	1.8E+00	4 04
Toxaphene	1 0E+02	NI	NI		1	0.10		5.7E-04		6.3E-09				4.7E-04			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0 10											
No samples collected																	
Total Noncancer Hazard									2 4E+01						2.0E+01	4 4E+01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL34-3 5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3 0E-05		1	0 10		6 2E-09	2 1E-04	7.0E-14				5 2E-09	1 7E-04	3 8E-04	21 46
Dieldrin	1 1E-03	5 0E-05	5 0E-05		1	0.10		6 2E-09	1.2E-04	7.0E-14				5 2E-09	1 0E-04	2.3E-04	12.88
Chlordane	2 2E-03	6 0E-05	6.0E-05		1	0 10		1 2E-08	2 1E-04	1.4E-13				1 0E-08	1 7E-04	3 8E-04	21.46
Heptachlor	1 1E-03	5 0E-04	5.0E-04		1	0 10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1 0E-05	2.3E-05	1.29
Heptachlor epoxide	1 1E-03	1 5E-05	1.5E-05		1	0 10		6.2E-09	4 2E-04	7.0E-14				5 2E-09	3 4E-04	7.6E-04	42 92
Toxaphene	4 4E-02	NI	NI		1	0.10		2.5E-07		2 8E-12				2 1E-07			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0 10											
No samples collected																	
Total Noncancer Hazard									9.7E-04						8 0E-04	1 8E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDO

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL35-1 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 1E+00	3.0E-05	3 0E-05		1	0.10		6.2E-06	2 1E-01	7.0E-11				5.2E-06	1 7E-01	3 8E-01	29 66
Dieldrin	3 4E+00	5 0E-05	5.0E-05		1	0 10		1.9E-05	3.9E-01	2 2E-10				1.6E-05	3.2E-01	7 1E-01	55 01
Chlordane	5 3E-01	6.0E-05	6.0E-05		1	0 10		3.0E-06	5 0E-02	3.4E-11				2.5E-06	4 1E-02	9.2E-02	7 15
Heptachlor	5 5E-02	5.0E-04	5 0E-04		1	0.10		3.1E-07	6 2E-04	3.5E-12				2.6E-07	5.2E-04	1.1E-03	0 09
Heptachlor epoxide	1 5E-01	1 5E-05	1.5E-05		1	0.10		8.5E-07	5.7E-02	9.5E-12				7.0E-07	4.7E-02	1.0E-01	8.09
Toxaphene	2 1E+00	NI	NI		1	0 10		1.2E-05		1.3E-10				9.9E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									7 0E-01						5.8E-01	1 3E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL35-4 5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	4 4E-01	3 0E-05	3 0E-05		1	0 10		2 5E-06	8 3E-02	2.8E-11				2.1E-06	6.9E-02	1 5E-01	51.57
Dieldrin	5 5E-01	5 0E-05	5 0E-05		1	0 10		3 1E-06	6 2E-02	3 5E-11				2 6E-06	5 2E-02	1 1E-01	38 67
Chlordane	1 2E-01	6 0E-05	6.0E-05		1	0 10		6 6E-07	1 1E-02	7.4E-12				5 4E-07	9.1E-03	2 0E-02	6 80
Heptachlor	3 8E-02	5.0E-04	5.0E-04		1	0 10		2.2E-07	4 3E-04	2.4E-12				1.8E-07	3.6E-04	7 9E-04	0.27
Heptachlor epoxide	1 2E-02	1 5E-05	1 5E-05		1	0 10		6.5E-08	4 4E-03	7.3E-13				5.4E-08	3 6E-03	8 0E-03	2.70
Toxaphene	4 5E-01	NI	NI		1	0 10		2.6E-06		2.9E-11				2.1E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0 10											
No samples collected																	
Total Noncancer Hazard									1.6E-01						1.3E-01	3 0E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL36-1 2 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E+01	3.0E-05	3.0E-05		1	0.10		1.1E-04	3.6E+00	1.2E-09				8.9E-05	3.0E+00	6.6E+00	17.77
Dieldrin	2.5E+01	5.0E-05	5.0E-05		1	0.10		1.4E-04	2.8E+00	1.6E-09				1.2E-04	2.3E+00	5.2E+00	14.03
Chlordane	1.3E+02	6.0E-05	6.0E-05		1	0.10		7.4E-04	1.2E+01	8.3E-09				6.2E-04	1.0E+01	2.3E+01	61.27
Heptachlor	3.5E+01	5.0E-04	5.0E-04		1	0.10		2.0E-04	4.0E-01	2.2E-09				1.6E-04	3.3E-01	7.3E-01	1.96
Heptachlor epoxide	2.7E+00	1.5E-05	1.5E-05		1	0.10		1.5E-05	1.0E+00	1.7E-10				1.2E-05	8.3E-01	1.8E+00	4.96
Toxaphene	1.1E+02	NI	NI		1	0.10		6.0E-04		6.7E-09				4.9E-04			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									2.0E+01						1.7E+01	3.7E+01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL36-4 5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5 7E+00	3 0E-05	3 0E-05		1	0 10		3 2E-05	1.1E+00	3 6E-10				2 7E-05	8 9E-01	2 0E+00	36 60
Dieldrin	2 9E+00	5 0E-05	5 0E-05		1	0.10		1 6E-05	3.3E-01	1.8E-10				1 4E-05	2 7E-01	6 0E-01	11.17
Chlordane	1.5E+01	6 0E-05	6 0E-05		1	0.10		8 2E-05	1.4E+00	9.2E-10				6 8E-05	1.1E+00	2.5E+00	46 55
Heptachlor	5 4E+00	5 0E-04	5 0E-04		1	0 10		3.1E-05	6 1E-02	3.4E-10				2 5E-05	5.1E-02	1.1E-01	2 08
Heptachlor epoxide	2 8E-01	1 5E-05	1.5E-05		1	0 10		1 6E-06	1.1E-01	1.8E-11				1.3E-06	8.8E-02	1.9E-01	3.60
Toxaphene	1 1E+01	NI	NI		1	0.10		6.2E-05		7.0E-10				5 2E-05			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0 10											
No samples collected																	
Total Noncancer Hazard									2 9E+00						2 4E+00	5.4E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL56-5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.1E+00	3.0E-05	3.0E-05		1	0.10		6.2E-06	2.1E-01	7.0E-11				5.2E-06	1.7E-01	3.8E-01	58.48
Dieldrin	5.3E-01	5.0E-05	5.0E-05		1	0.10		3.0E-06	6.0E-02	3.4E-11				2.5E-06	5.0E-02	1.1E-01	16.91
Chlordane	5.2E-01	6.0E-05	6.0E-05		1	0.10		3.0E-06	4.9E-02	3.3E-11				2.4E-06	4.1E-02	9.0E-02	13.82
Heptachlor	5.0E-02	5.0E-04	5.0E-04		1	0.10		2.8E-07	5.7E-04	3.2E-12				2.3E-07	4.7E-04	1.0E-03	0.16
Heptachlor epoxide	1.0E-01	1.5E-05	1.5E-05		1	0.10		5.7E-07	3.8E-02	6.3E-12				4.7E-07	3.1E-02	6.9E-02	10.63
Toxaphene	9.0E-01	NI	NI		1	0.10		5.1E-06		5.7E-11				4.2E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									3.6E-01						2.9E-01	6.5E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL56-5 FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E+00	3.0E-05	3.0E-05		1	0.10		1.1E-05	3.6E-01	1.2E-10				8.9E-06	3.0E-01	6.6E-01	52.29
Dieldrin	1.6E+00	5.0E-05	5.0E-05		1	0.10		9.1E-06	1.8E-01	1.0E-10				7.5E-06	1.5E-01	3.3E-01	26.42
Chlordane	1.1E+00	6.0E-05	6.0E-05		1	0.10		6.5E-06	1.1E-01	7.2E-11				5.4E-06	8.9E-02	2.0E-01	15.69
Heptachlor	5.5E-02	5.0E-04	5.0E-04		1	0.10		3.1E-07	6.2E-04	3.5E-12				2.6E-07	5.2E-04	1.1E-03	0.09
Heptachlor epoxide	1.0E-01	1.5E-05	1.5E-05		1	0.10		5.7E-07	3.8E-02	6.3E-12				4.7E-07	3.1E-02	6.9E-02	5.50
Toxaphene	5.5E+00	NI	NI		1	0.10		3.1E-05		3.5E-10				2.6E-05			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									6.9E-01						5.7E-01	1.3E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL57-5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.3E-01	3.0E-05	3.0E-05		1	0.10		7.4E-07	2.5E-02	8.2E-12				6.1E-07	2.0E-02	4.5E-02	58.14
Dieldrin	1.2E-01	5.0E-05	5.0E-05		1	0.10		6.8E-07	1.4E-02	7.6E-12				5.6E-07	1.1E-02	2.5E-02	32.20
Chlordane	2.1E-02	6.0E-05	6.0E-05		1	0.10		1.2E-07	1.9E-03	1.3E-12				9.6E-08	1.6E-03	3.5E-03	4.58
Heptachlor	5.5E-03	5.0E-04	5.0E-04		1	0.10		3.1E-08	6.2E-05	3.5E-13				2.6E-08	5.2E-05	1.1E-04	0.15
Heptachlor epoxide	5.5E-03	1.5E-05	1.5E-05		1	0.10		3.1E-08	2.1E-03	3.5E-13				2.6E-08	1.7E-03	3.8E-03	4.92
Toxaphene	2.3E-01	NI	NI		1	0.10		1.3E-06		1.4E-11				1.1E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									4.2E-02						3.5E-02	7.7E-02	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL57-5 FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5.3E-02	3.0E-05	3.0E-05		1	0.10		3.0E-07	1.0E-02	3.4E-12				2.5E-07	8.3E-03	1.8E-02	46.87
Dieldrin	6.1E-02	5.0E-05	5.0E-05		1	0.10		3.5E-07	6.9E-03	3.9E-12				2.9E-07	5.7E-03	1.3E-02	32.37
Chlordane	1.8E-02	6.0E-05	6.0E-05		1	0.10		9.9E-08	1.7E-03	1.1E-12				8.2E-08	1.4E-03	3.0E-03	7.74
Heptachlor	5.5E-03	5.0E-04	5.0E-04		1	0.10		3.1E-08	6.2E-05	3.5E-13				2.6E-08	5.2E-05	1.1E-04	0.29
Heptachlor epoxide	7.2E-03	1.5E-05	1.5E-05		1	0.10		4.1E-08	2.7E-03	4.6E-13				3.4E-08	2.3E-03	5.0E-03	12.73
Toxaphene	5.5E-01	NI	NI		1	0.10		3.1E-06		3.5E-11				2.6E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									2.1E-02						1.8E-02	3.9E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL58-5 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.0E-03	3.0E-05	3.0E-05		1	0.10		2.8E-08	9.5E-04	3.2E-13				2.3E-08	7.8E-04	1.7E-03	48.89
Dieldrin	3.1E-03	5.0E-05	5.0E-05		1	0.10		1.8E-08	3.5E-04	2.0E-13				1.5E-08	2.9E-04	6.4E-04	18.19
Chlordane	2.2E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.1E-04	1.4E-13				1.0E-08	1.7E-04	3.8E-04	10.76
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.2E-09	1.2E-05	7.0E-14				5.2E-09	1.0E-05	2.3E-05	0.65
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.2E-09	4.2E-04	7.0E-14				5.2E-09	3.4E-04	7.6E-04	21.51
Toxaphene	4.4E-02	NI	NI		1	0.10		2.5E-07		2.8E-12				2.1E-07			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									1.9E-03						1.6E-03	3.5E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL58-5 FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.1E-02	3.0E-05	3.0E-05		1	0.10		6.2E-08	2.1E-03	7.0E-13				5.2E-08	1.7E-03	3.8E-03	19.01
Dieldrin	2.2E-02	5.0E-05	5.0E-05		1	0.10		1.2E-07	2.5E-03	1.4E-12				1.0E-07	2.1E-03	4.6E-03	22.81
Chlordane	2.2E-02	6.0E-05	6.0E-05		1	0.10		1.2E-07	2.1E-03	1.4E-12				1.0E-07	1.7E-03	3.8E-03	19.01
Heptachlor	1.1E-02	5.0E-04	5.0E-04		1	0.10		6.2E-08	1.2E-04	7.0E-13				5.2E-08	1.0E-04	2.3E-04	1.14
Heptachlor epoxide	1.1E-02	1.5E-05	1.5E-05		1	0.10		6.2E-08	4.2E-03	7.0E-13				5.2E-08	3.4E-03	7.6E-03	38.02
Toxaphene	1.1E+00	NI	NI		1	0.10		6.2E-06		7.0E-11				5.2E-06			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-02						9.1E-03	2.0E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFD.

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL59-2 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.1E-03	3.0E-05	3.0E-05		1	0.10		6.0E-09	2.0E-04	6.7E-14				4.9E-09	1.6E-04	3.6E-04	8.29
Dieldrin	1.4E-02	5.0E-05	5.0E-05		1	0.10		7.9E-08	1.6E-03	8.9E-13				6.6E-08	1.3E-03	2.9E-03	66.33
Chlordane	2.1E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.0E-04	1.3E-13				9.9E-09	1.6E-04	3.6E-04	8.29
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.0E-09	1.2E-05	6.7E-14				4.9E-09	9.9E-06	2.2E-05	0.50
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.0E-09	4.0E-04	6.7E-14				4.9E-09	3.3E-04	7.3E-04	16.58
Toxaphene	4.2E-02	NI	NI		1	0.10		2.4E-07		2.7E-12				2.0E-07			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									2.4E-03						2.0E-03	4.4E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL59-2 FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.6E-03	3.0E-05	3.0E-05		1	0.10		9.1E-09	3.0E-04	1.0E-13				7.5E-09	2.5E-04	5.5E-04	6.06
Dieldrin	3.0E-02	5.0E-05	5.0E-05		1	0.10		1.7E-07	3.4E-03	1.9E-12				1.4E-07	2.8E-03	6.2E-03	68.15
Chlordane	5.1E-03	6.0E-05	6.0E-05		1	0.10		2.9E-08	4.8E-04	3.2E-13				2.4E-08	4.0E-04	8.8E-04	9.65
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.0E-09	1.2E-05	6.7E-14				4.9E-09	9.9E-06	2.2E-05	0.24
Heptachlor epoxide	2.1E-03	1.5E-05	1.5E-05		1	0.10		1.2E-08	7.9E-04	1.3E-13				9.9E-09	6.6E-04	1.5E-03	15.90
Toxaphene	1.1E-01	NI	NI		1	0.10		6.0E-07		6.7E-12				4.9E-07			
DIOXIN																	
2,3,7,8-TCDD	NA				1	0.10											
No samples collected																	
Total Noncancer Hazard									5.0E-03						4.1E-03	9.1E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

2

Total Cancer Risk
Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL10-3.0FT	1.39E-08	1.23E-07	4.53E-09	5.53E-09	4.05E-09	2.04E-08	NA	1.72E-07
SL10-5.0FT	8.31E-09	8.77E-08	4.64E-09	4.33E-09	2.97E-08	1.71E-08	NA	1.52E-07
SL11-3FT	2.90E-09	5.45E-09	4.43E-10	7.67E-10	1.55E-09	1.87E-08	NA	2.99E-08
SL11-4.5FT	2.77E-09	5.22E-09	4.24E-10	7.33E-10	1.48E-09	1.79E-08	NA	2.86E-08
SL12-1.0FT *	7.30E-08	4.74E-08	1.04E-08	2.83E-09	5.73E-09	6.93E-08	NA	2.09E-07
SL12-3.5FT *	4.28E-09	5.22E-09	4.72E-10	7.67E-10	1.55E-09	1.87E-08	NA	3.10E-08
SL13-1.5FT #	1.34E-07	8.53E-08	5.59E-09	3.33E-09	6.74E-09	8.15E-08	NA	3.16E-07
SL13-3.5FT #	7.05E-09	9.01E-09	7.42E-10	7.00E-10	1.42E-09	1.71E-08	NA	3.60E-08
SL14-3.0FT #	2.64E-09	4.74E-09	6.26E-10	7.00E-10	1.42E-09	1.71E-08	NA	2.72E-08
SL15-3.0FT #	1.21E-07	2.25E-08	1.93E-09	3.33E-09	6.74E-09	8.15E-08	2.89E-07	5.26E-07
SL16-1.0FT #	1.54E-07	3.08E-06	2.14E-07	3.67E-08	7.42E-08	8.96E-07	1.56E-07	4.61E-06
SL16-1.0FT-RE1 #	1.39E-06	2.37E-06	3.47E-07	3.67E-07	7.42E-07	8.96E-06	NA	1.42E-05
SL17-1.0FT *	3.78E-05	4.74E-07	4.14E-08	7.00E-08	1.42E-07	1.71E-06	1.22E-07	4.03E-05
SL17-1.0FT-RE1 *	4.79E-05	4.74E-06	4.05E-07	7.00E-07	1.42E-06	1.71E-05	NA	7.22E-05
SL17-3.0FT *	2.09E-05	3.32E-07	2.18E-08	3.67E-08	7.42E-08	8.96E-07	NA	2.23E-05
SL17-3.0FT-RE1 *	4.53E-05	2.61E-06	2.12E-07	3.67E-07	7.42E-07	8.96E-05	NA	1.39E-04
SL18-2.5FT *	1.91E-08	6.16E-08	2.70E-09	6.67E-10	1.35E-09	1.63E-08	NA	1.02E-07
SL19-1.0FT #	5.54E-09	2.16E-08	1.75E-09	8.67E-10	1.48E-09	1.79E-08	NA	4.91E-08
SL20-2.0FT #	6.80E-09	2.30E-08	8.28E-10	6.67E-10	1.35E-09	1.63E-08	NA	4.89E-08
SL20-2.0FT-DUP #	8.31E-09	2.61E-08	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	5.31E-08
SL69-8FT	7.05E-08	7.59E-08	2.33E-09	1.13E-08	1.35E-09	1.63E-08	NA	1.78E-07
SL70-8FT	2.77E-07	6.16E-08	3.97E-09	7.00E-10	1.42E-09	1.71E-08	NA	3.62E-07
SL72-8FT	9.32E-08	6.16E-08	3.45E-09	6.67E-10	2.02E-09	1.63E-08	NA	1.77E-07
SL73-8FT	2.24E-08	2.84E-08	3.16E-09	6.67E-10	1.35E-09	1.63E-08	NA	7.23E-08
SL74-8FT	2.27E-07	6.40E-08	4.82E-09	6.67E-10	1.35E-09	1.63E-08	NA	3.14E-07
SL75-8FT	1.79E-08	9.25E-09	4.53E-10	7.00E-10	1.42E-09	1.71E-08	NA	4.68E-08
SL80-5FT #	1.18E-07	2.49E-08	2.12E-09	3.67E-09	7.42E-09	8.96E-08	NA	2.46E-07
SL81-3.5FT #	8.31E-07	2.06E-08	9.05E-10	7.33E-10	1.48E-09	1.79E-08	NA	8.73E-07
SL82-9FT #	4.79E-09	4.98E-09	4.05E-10	7.00E-10	1.42E-09	1.71E-08	NA	2.94E-08
SL83-9FT #	1.11E-08	9.01E-09	8.48E-10	6.67E-10	1.35E-09	1.63E-08	NA	3.93E-08

Notes:

(1) Risk was calculated based on assumptions in RI baseline risk assessment.

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

NA - Not Analyzed

* - Indicates soil at this location was excavated during the Phase I RA.

- Indicates soil at this location wascovered with concrete during the Phase I RA.

H\data\projects\Riverdale\Risk1\LiquidStorageArea\CancerConstruct half.xls\Summary
Last Updated:2/18/2001

Riverdale Chemical Company
Prepared By Heather Seus
Checked By:RAM:

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL10-3 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5 5E-03	1 7E+01	1 7E+01	1 7E+01	1	0 10		4 5E-10	7 6E-09	5 0E-15	8 5E-14			3 7E-10	6.3E-09	1 4E-08	8 07
Dieldrin	5 2E-02	1 6E+01	1 6E+01	1.6E+01	1	0 10		4.2E-09	6.7E-08	4.7E-14	7.5E-13			3 5E-09	5 6E-08	1.2E-07	71 84
Chlordane	2 4E-02	1 3E+00	1 3E+00	1.3E+00	1	0 10		1.9E-09	2 5E-09	2.1E-14	2.8E-14			1 6E-09	2 0E-09	4 5E-09	2 64
Heptachlor	8 3E-03	4.5E+00	4 5E+00	4.6E+00	1	0 10		6.7E-10	3 0E-09	7.5E-15	3.5E-14			5 6E-10	2 5E-09	5 5E-09	3.22
Heptachlor epoxide	3 0E-03	9 1E+00	9.1E+00	9.1E+00	1	0 10		2.4E-10	2.2E-09	2.7E-15	2.5E-14			2.0E-10	1 8E-09	4 0E-09	2 36
Toxaphene	1 3E-01	1.1E+00	1 1E+00	1.1E+00	1	0.10		1.0E-08	1.1E-08	1.1E-13	1.2E-13			8.4E-09	9 2E-09	2 0E-08	11.872
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									9.4E-08		1.0E-12				7.8E-08	1.7E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL10-5.0FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.3E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.7E-10	4.5E-09	3.0E-15	5.1E-14			2.2E-10	3.8E-09	8.3E-09	5.48
Dieldrin	3.7E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.0E-09	4.8E-08	3.4E-14	5.4E-13			2.5E-09	4.0E-08	8.8E-08	57.79
Chlordane	2.4E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.0E-09	2.5E-09	2.2E-14	2.8E-14			1.6E-09	2.1E-09	4.6E-09	3.06
Heptachlor	6.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		5.3E-10	2.4E-09	5.9E-15	2.7E-14			4.4E-10	2.0E-09	4.3E-09	2.86
Heptachlor epoxide	2.2E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-09	1.6E-08	2.0E-14	1.8E-13			1.5E-09	1.3E-08	3.0E-08	19.54
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13			7.0E-09	7.7E-09	1.7E-08	11.275
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									8.3E-08		9.5E-13				6.9E-08	1.5E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL11-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.3E-11	1.6E-09	1.0E-15	1.8E-14			7.7E-11	1.3E-09	2.9E-09	9.70
Dieldrin	2.3E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.9E-10	3.0E-09	2.1E-15	3.3E-14			1.5E-10	2.5E-09	5.5E-09	18.26
Chlordane	2.3E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.9E-10	2.4E-10	2.1E-15	2.7E-15			1.5E-10	2.0E-10	4.4E-10	1.46
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.3E-11	4.2E-10	1.0E-15	4.8E-15			7.7E-11	3.5E-10	7.7E-10	2.57
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.3E-11	8.5E-10	1.0E-15	9.5E-15			7.7E-11	7.0E-10	1.6E-09	5.19
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.3E-09	1.0E-08	1.0E-13	1.1E-13			7.7E-09	8.5E-09	1.9E-08	62.79
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-08		1.8E-13				1.4E-08	3.0E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL11-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-11	1.5E-09	1.0E-15	1.7E-14			7.4E-11	1.3E-09	2.8E-09	9.70
Dieldrin	2.2E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-10	2.9E-09	2.0E-15	3.2E-14			1.5E-10	2.4E-09	5.2E-09	18.26
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15			1.5E-10	1.9E-10	4.2E-10	1.48
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15			7.4E-11	3.3E-10	7.3E-10	2.57
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15			7.4E-11	6.7E-10	1.5E-09	5.19
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	62.79
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-08		1.7E-13				1.3E-08	2.9E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL12-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.9E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.4E-09	4.0E-08	2.6E-14	4.5E-13			1.9E-09	3.3E-08	7.3E-08	35.00
Dieldrin	2.0E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-09	2.6E-08	1.8E-14	2.9E-13			1.3E-09	2.1E-08	4.7E-08	22.72
Chlordane	5.4E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.4E-09	5.7E-09	4.9E-14	6.4E-14			3.6E-09	4.7E-09	1.0E-08	4.98
Heptachlor	4.3E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.4E-10	1.6E-09	3.8E-15	1.8E-14			2.9E-10	1.3E-09	2.8E-09	1.36
Heptachlor epoxide	4.3E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.4E-10	3.1E-09	3.8E-15	3.5E-14			2.9E-10	2.6E-09	5.7E-09	2.75
Toxaphene	4.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.4E-08	3.8E-08	3.8E-13	4.2E-13			2.9E-08	3.1E-08	6.9E-08	33.19
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.1E-07		1.3E-12				9.5E-08	2.1E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL12-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-10	2.3E-09	1.5E-15	2.6E-14			1.1E-10	1.9E-09	4.3E-09	13.80
Dieldrin	2.2E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-10	2.9E-09	2.0E-15	3.2E-14			1.5E-10	2.4E-09	5.2E-09	16.81
Chlordane	2.5E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.0E-10	2.6E-10	2.2E-15	2.9E-15			1.6E-10	2.1E-10	4.7E-10	1.52
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.3E-11	4.2E-10	1.0E-15	4.8E-15			7.7E-11	3.5E-10	7.7E-10	2.47
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.3E-11	8.5E-10	1.0E-15	9.5E-15			7.7E-11	7.0E-10	1.6E-09	5.00
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.3E-09	1.0E-08	1.0E-13	1.1E-13			7.7E-09	8.5E-09	1.9E-08	60.40
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.7E-08		1.9E-13				1.4E-08	3.1E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL13 1 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5 3E-02	1 7E+01	1.7E+01	1 7E+01	1	0 10		4 3E-09	7.3E-08	4 8E-14	8.2E-13			3 6E-09	6 0E-08	1 3E-07	42 25
Dieldrin	3 6E-02	1 6E+01	1.6E+01	1.6E+01	1	0.10		2 9E-09	4.7E-08	3.3E-14	5.2E-13			2.4E-09	3 9E-08	8 5E-08	27 01
Chlordane	2.9E-02	1 3E+00	1.3E+00	1.3E+00	1	0 10		2 4E-09	3.1E-09	2.6E-14	3 4E-14			1.9E-09	2.5E-09	5 6E-09	1 77
Heptachlor	5 0E-03	4.5E+00	4.5E+00	4.6E+00	1	0 10		4.1E-10	1.8E-09	4.5E-15	2.1E-14			3 4E-10	1.5E-09	3.3E-09	1 06
Heptachlor epoxide	5.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.1E-10	3.7E-09	4.5E-15	4.1E-14			3.4E-10	3.1E-09	6.7E-09	2 13
Toxaphene	5.0E-01	1 1E+00	1 1E+00	1 1E+00	1	0 10		4 1E-08	4.5E-08	4.5E-13	5 0E-13			3.4E-08	3 7E-08	8 1E-08	25 79
DIOXIN																	
2,3,7,8-TCDD		1 5E+05	1 5E+05	1 5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1 7E-07		1.9E-12				1 4E-07	3 2E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL13-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2 8E-03	1 7E+01	1 7E+01	1 7E+01	1	0 10		2 3E-10	3 9E-09	2 5E-15	4 3E-14			1 9E-10	3 2E-09	7 1E-09	19 57
Dieldrin	3 8E-03	1 6E+01	1 6E+01	1.6E+01	1	0 10		3 1E-10	4 9E-09	3 4E-15	5 5E-14			2 5E-10	4 1E-09	9 0E-09	25 00
Chlordane	3 9E-03	1 3E+00	1 3E+00	1.3E+00	1	0 10		3 1E-10	4 1E-10	3.5E-15	4.5E-15			2 6E-10	3 4E-10	7 4E-10	2 06
Heptachlor	1 1E-03	4.5E+00	4 5E+00	4.6E+00	1	0 10		8 5E-11	3 8E-10	9.5E-16	4.4E-15			7 0E-11	3 2E-10	7.0E-10	1 94
Heptachlor epoxide	1 1E-03	9 1E+00	9 1E+00	9 1E+00	1	0 10		8 5E-11	7 7E-10	9.5E-16	8.7E-15			7.0E-11	6 4E-10	1.4E-09	3.93
Toxaphene	1 1E-01	1.1E+00	1 1E+00	1 1E+00	1	0.10		8 5E-09	9 4E-09	9 5E-14	1 0E-13			7.0E-09	7 7E-09	1.7E-08	47.49
DIOXIN																	
2,3,7,8-TCDD		1 5E+05	1 5E+05	1.5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									2 0E-08		2 2E-13				1 6E-08	3 6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL14-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.5E-11	1.4E-09	9.5E-16	1.6E-14			7.0E-11	1.2E-09	2.6E-09	9.71
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.6E-09	1.8E-15	2.9E-14			1.3E-10	2.1E-09	4.7E-09	17.41
Chlordane	3.3E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.6E-10	3.4E-10	2.9E-15	3.8E-15			2.2E-10	2.8E-10	6.3E-10	2.30
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15			7.0E-11	3.2E-10	7.0E-10	2.57
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15			7.0E-11	6.4E-10	1.4E-09	5.20
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13			7.0E-09	7.7E-09	1.7E-08	62.821
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-08		1.7E-13				1.2E-08	2.7E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL15-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	4.8E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.9E-09	6.6E-08	4.3E-14	7.4E-13			3.2E-09	5.5E-08	1.2E-07	22.99
Dieldrin	9.5E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.7E-10	1.2E-08	8.6E-15	1.4E-13			6.4E-10	1.0E-08	2.3E-08	4.28
Chlordane	1.0E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		8.1E-10	1.1E-09	9.1E-15	1.2E-14			6.7E-10	8.7E-10	1.9E-09	0.37
Heptachlor	5.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.1E-10	1.8E-09	4.5E-15	2.1E-14			3.4E-10	1.5E-09	3.3E-09	0.63
Heptachlor epoxide	5.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.1E-10	3.7E-09	4.5E-15	4.1E-14			3.4E-10	3.1E-09	6.7E-09	1.28
Toxaphene	5.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.1E-08	4.5E-08	4.5E-13	5.0E-13			3.4E-08	3.7E-08	8.1E-08	15.50
DIOXIN																	
2,3,7,8-TCDD	1.3E-05	1.5E+05	1.5E+05	1.5E+05	1	0.10		1.1E-12	1.6E-07	1.2E-17	1.8E-12			8.7E-13	1.3E-07	2.9E-07	54.945
No samples collected																	
Total Cancer Risk									2.9E-07		3.2E-12				2.4E-07	2.4E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL16-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	6 1E-02	1 7E+01	1 7E+01	1.7E+01	1	0 10		4 9E-09	8 4E-08	5 5E-14	9.4E-13			4.1E-09	7 0E-08	1.5E-07	3.33
Dieldrin	1 3E+00	1.6E+01	1.6E+01	1.6E+01	1	0 10		1 1E-07	1.7E-06	1.2E-12	1.9E-11			8 7E-08	1 4E-06	3 1E-06	66 82
Chlordane	1 1E+00	1 3E+00	1 3E+00	1.3E+00	1	0 10		9 0E-08	1.2E-07	1.0E-12	1.3E-12			7.4E-08	9 7E-08	2.1E-07	4 64
Heptachlor	5 5E-02	4 5E+00	4 5E+00	4.6E+00	1	0 10		4 5E-09	2 0E-08	5 0E-14	2.3E-13			3 7E-09	1.7E-08	3 7E-08	0 80
Heptachlor epoxide	5 5E-02	9 1E+00	9.1E+00	9 1E+00	1	0.10		4.5E-09	4 1E-08	5 0E-14	4.5E-13			3 7E-09	3 4E-08	7.4E-08	1.61
Toxaphene	5 5E+00	1 1E+00	1.1E+00	1 1E+00	1	0 10		4.5E-07	4.9E-07	5.0E-12	5.5E-12			3 7E-07	4 1E-07	9.0E-07	19 44
DIOXIN																	
2,3,7,8-TCDD	7 0E-06	1.5E+05	1 5E+05	1.5E+05	1	0 10		5.7E-13	8 5E-08	6.3E-18	9.5E-13			4 7E-13	7 0E-08	1 6E-07	3 373
No samples collected																	
Total Cancer Risk									2 5E-06		2 8E-11				2.1E-06	4 5E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL16-1FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Risk	Risk Percentage %
		Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	5.5E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.5E-08	7.6E-07	5.0E-13	8.5E-12			3.7E-08	6.3E-07	1.4E-06	9.77
Dieldrin	1.0E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.1E-08	1.3E-06	9.1E-13	1.4E-11			6.7E-08	1.1E-06	2.4E-06	16.72
Chlordane	1.8E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.5E-07	1.9E-07	1.6E-12	2.1E-12			1.2E-07	1.6E-07	3.5E-07	2.45
Heptachlor	5.5E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-08	2.0E-07	5.0E-13	2.3E-12			3.7E-08	1.7E-07	3.7E-07	2.59
Heptachlor epoxide	5.5E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-08	4.1E-07	5.0E-13	4.5E-12			3.7E-08	3.4E-07	7.4E-07	5.23
Toxaphene	5.5E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-06	4.9E-06	5.0E-11	5.5E-11			3.7E-06	4.1E-06	9.0E-06	63.24
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.8E-06		8.7E-11				6.4E-06	1.4E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-1 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 5E+01	1 7E+01	1.7E+01	1 7E+01	1	0 10		1 2E-06	2.1E-05	1.4E-11	2.3E-10			1 0E-06	1 7E-05	3 8E-05	93 65
Dieldrin	2 0E-01	1 6E+01	1.6E+01	1.6E+01	1	0 10		1 6E-08	2.6E-07	1.8E-13	2.9E-12			1.3E-08	2 1E-07	4 7E-07	1 18
Chlordane	2 2E-01	1 3E+00	1.3E+00	1.3E+00	1	0 10		1.7E-08	2.3E-08	1.9E-13	2.5E-13			1.4E-08	1 9E-08	4.1E-08	0 10
Heptachlor	1 1E-01	4 5E+00	4.5E+00	4 6E+00	1	0.10		8.5E-09	3.8E-08	9.5E-14	4 4E-13			7 0E-09	3 2E-08	7.0E-08	0.17
Heptachlor epoxide	1 1E-01	9.1E+00	9.1E+00	9 1E+00	1	0.10		8 5E-09	7.7E-08	9.5E-14	8.7E-13			7 0E-09	6 4E-08	1 4E-07	0.35
Toxaphene	1 1E+01	1 1E+00	1.1E+00	1.1E+00	1	0 10		8 5E-07	9.4E-07	9.5E-12	1.0E-11			7 0E-07	7.7E-07	1.7E-06	4 24
DIOXIN																	
2,3,7,8-TCDD	5 5E-06	1 5E+05	1.5E+05	1.5E+05	1	0 10		4 5E-13	6 7E-08	5.0E-18	7.5E-13			3 7E-13	5 5E-08	1 2E-07	0 303
No samples collected																	
Total Cancer Risk									2.2E-05		2.5E-10				1 8E-05	4.0E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17 1 0FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Risk	Risk Percentage %
		Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	1 9E+01	1 7E+01	1 7E+01	1 7E+01	1	0 10		1 5E-06	2 6E-05	1.7E-11	2 9E-10			1 3E-06	2 2E-05	4 8E-05	66 26
Dieldrin	2 0E+00	1 6E+01	1 6E+01	1 6E+01	1	0 10		1 6E-07	2.6E-06	1 8E-12	2 9E-11			1 3E-07	2 1E-06	4.7E-06	6 56
Chlordane	2 1E+00	1.3E+00	1.3E+00	1 3E+00	1	0 10		1.7E-07	2 2E-07	1.9E-12	2 5E-12			1 4E-07	1 8E-07	4 0E-07	0 56
Heptachlor	1 1E+00	4 5E+00	4 5E+00	4.6E+00	1	0 10		8 5E-08	3 8E-07	9.5E-13	4 4E-12			7 0E-08	3 2E-07	7 0E-07	0 97
Heptachlor epoxide	1 1E+00	9 1E+00	9 1E+00	9 1E+00	1	0 10		8 5E-08	7.7E-07	9 5E-13	8 7E-12			7.0E-08	6 4E-07	1 4E-06	1.96
Toxaphene	1 1E+02	1.1E+00	1 1E+00	1 1E+00	1	0 10		8 5E-06	9.4E-06	9 5E-11	1 0E-10			7 0E-06	7 7E-06	1 7E-05	23 69
HERBICIDES																	
2,3,7,8-TCDD		1 5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									4.0E-05		4 4E-10				3 3E-05	7.2E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8 3E+00	1 7E+01	1 7E+01	1 7E+01	1	0 10		6 7E-07	1 1E-05	7.5E-12	1.3E-10			5 6E-07	9 5E-06	2 1E-05	93 89
Dieldrin	1 4E-01	1 6E+01	1 6E+01	1.6E+01	1	0 10		1 1E-08	1 8E-07	1.3E-13	2 0E-12			9 4E-09	1 5E-07	3 3E-07	1 49
Chlordane	1 1E-01	1 3E+00	1 3E+00	1.3E+00	1	0 10		9 2E-09	1 2E-08	1.0E-13	1 3E-13			7 6E-09	9 9E-09	2 2E-08	0 10
Heptachlor	5 5E-02	4.5E+00	4.5E+00	4 6E+00	1	0.10		4.5E-09	2.0E-08	5.0E-14	2 3E-13			3.7E-09	1.7E-08	3 7E-08	0.16
Heptachlor epoxide	5 5E-02	9 1E+00	9.1E+00	9 1E+00	1	0 10		4.5E-09	4 1E-08	5.0E-14	4 5E-13			3.7E-09	3 4E-08	7.4E-08	0.33
Toxaphene	5 5E+00	1 1E+00	1 1E+00	1.1E+00	1	0 10		4 5E-07	4.9E-07	5 0E-12	5 5E-12			3 7E-07	4 1E-07	9.0E-07	4 03
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									1 2E-05		1.4E-10				1.0E-05	2 2E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-3FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.8E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-06	2.5E-05	1.6E-11	2.8E-10			1.2E-06	2.1E-05	4.5E-05	32.64
Dieldrin	1.1E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.9E-08	1.4E-06	1.0E-12	1.6E-11			7.4E-08	1.2E-06	2.6E-06	1.88
Chlordane	1.1E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		8.9E-08	1.2E-07	1.0E-12	1.3E-12			7.4E-08	9.6E-08	2.1E-07	0.15
Heptachlor	5.5E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-08	2.0E-07	5.0E-13	2.3E-12			3.7E-08	1.7E-07	3.7E-07	0.26
Heptachlor epoxide	5.5E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-08	4.1E-07	5.0E-13	4.5E-12			3.7E-08	3.4E-07	7.4E-07	0.53
Toxaphene	5.5E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-05	4.9E-05	5.0E-10	5.5E-10			3.7E-05	4.1E-05	9.0E-05	64.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.6E-05		8.5E-10				6.3E-05	1.4E-04	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL18-2 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	7.6E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.2E-10	1.0E-08	6.9E-15	1.2E-13			5.1E-10	8.7E-09	1.9E-08	18.81
Dieldrin	2.6E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-09	3.4E-08	2.4E-14	3.8E-13			1.7E-09	2.8E-08	6.2E-08	60.55
Chlordane	1.4E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.1E-09	1.5E-09	1.3E-14	1.6E-14			9.4E-10	1.2E-09	2.7E-09	2.65
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	0.66
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	1.32
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	16.01
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									5.6E-08		6.2E-13				4.6E-08	1.0E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL19-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-10	3.0E-09	2.0E-15	3.4E-14			1.5E-10	2.5E-09	5.5E-09	11.28
Dieldrin	9.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.4E-10	1.2E-08	8.2E-15	1.3E-13			6.1E-10	9.8E-09	2.2E-08	43.90
Chlordane	9.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		7.4E-10	9.6E-10	8.2E-15	1.1E-14			6.1E-10	7.9E-10	1.8E-09	3.57
Heptachlor	1.3E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-10	4.7E-10	1.2E-15	5.4E-15			8.7E-11	3.9E-10	8.7E-10	1.76
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15			7.4E-11	6.7E-10	1.5E-09	3.02
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-09	9.8E-09	1.0E-13	1.1E-13			7.4E-09	8.1E-09	1.8E-08	36.48
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.7E-08		3.0E-13				2.2E-08	4.9E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL20-2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.2E-10	3.7E-09	2.4E-15	4.2E-14			1.8E-10	3.1E-09	6.8E-09	13.90
Dieldrin	9.7E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.9E-10	1.3E-08	8.8E-15	1.4E-13			6.5E-10	1.0E-08	2.3E-08	46.99
Chlordane	4.3E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		3.5E-10	4.5E-10	3.9E-15	5.1E-15			2.9E-10	3.8E-10	8.3E-10	1.69
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	1.36
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	2.76
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	33.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.7E-08		3.0E-13				2.2E-08	4.9E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL20-2FT-DUP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.3E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.7E-10	4.5E-09	3.0E-15	5.1E-14			2.2E-10	3.8E-09	8.3E-09	15.66
Dieldrin	1.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.9E-10	1.4E-08	1.0E-14	1.6E-13			7.4E-10	1.2E-08	2.6E-08	49.12
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15			1.3E-10	1.7E-10	3.9E-10	0.73
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	1.26
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	2.54
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	30.70
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.9E-08		3.2E-13				2.4E-08	5.3E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL69 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2 8E-02	1.7E+01	1 7E+01	1.7E+01	1	0 10		2.3E-09	3 9E-08	2 5E-14	4 3E-13			1 9E-09	3.2E-08	7 1E-08	39 69
Dieldrin	3 2E-02	1 6E+01	1.6E+01	1.6E+01	1	0 10		2.6E-09	4.2E-08	2 9E-14	4 6E-13			2 1E-09	3 4E-08	7 6E-08	42 69
Chlordane	1 2E-02	1 3E+00	1 3E+00	1.3E+00	1	0 10		9.8E-10	1.3E-09	1.1E-14	1 4E-14			8.1E-10	1 1E-09	2 3E-09	1 31
Heptachlor	1 7E-02	4.5E+00	4.5E+00	4.6E+00	1	0 10		1.4E-09	6.2E-09	1 5E-14	7.1E-14			1.1E-09	5.1E-09	1 1E-08	6 38
Heptachlor epoxide	1 0E-03	9.1E+00	9 1E+00	9.1E+00	1	0 10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6 7E-11	6 1E-10	1 3E-09	0 76
Toxaphene	1 0E-01	1 1E+00	1 1E+00	1.1E+00	1	0 10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6 7E-09	7 4E-09	1 6E-08	9 17
DIOXIN																	
2,3,7,8-TCDD		1 5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									9 7E-08		1.1E-12				8.0E-08	1 8E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL70-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-09	1.5E-07	1.0E-13	1.7E-12			7.4E-09	1.3E-07	2.8E-07	76.56
Dieldrin	2.6E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-09	3.4E-08	2.4E-14	3.8E-13			1.7E-09	2.8E-08	6.2E-08	17.03
Chlordane	2.1E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-09	2.2E-09	1.9E-14	2.4E-14			1.4E-09	1.8E-09	4.0E-09	1.10
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15			7.0E-11	3.2E-10	7.0E-10	0.19
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15			7.0E-11	6.4E-10	1.4E-09	0.39
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13			7.0E-09	7.7E-09	1.7E-08	4.73
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.0E-07		2.2E-12				1.6E-07	3.6E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL72-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.0E-09	5.1E-08	3.4E-14	5.7E-13			2.5E-09	4.2E-08	9.3E-08	52.57
Dieldrin	2.6E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-09	3.4E-08	2.4E-14	3.8E-13			1.7E-09	2.8E-08	6.2E-08	34.77
Chlordane	1.8E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.5E-09	1.9E-09	1.6E-14	2.1E-14			1.2E-09	1.6E-09	3.4E-09	1.94
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	0.38
Heptachlor epoxide	1.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.2E-10	1.1E-09	1.4E-15	1.2E-14			1.0E-10	9.2E-10	2.0E-09	1.14
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	9.19
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									9.7E-08		1.1E-12				8.0E-08	1.8E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL73-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.2E-10	1.2E-08	8.1E-15	1.4E-13			6.0E-10	1.0E-08	2.2E-08	30.99
Dieldrin	1.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.7E-10	1.6E-08	1.1E-14	1.7E-13			8.1E-10	1.3E-08	2.8E-08	39.33
Chlordane	1.6E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.3E-09	1.7E-09	1.5E-14	1.9E-14			1.1E-09	1.4E-09	3.2E-09	4.37
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	0.92
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	1.86
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	22.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									4.0E-08		4.4E-13				3.3E-08	7.2E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL74-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	9.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.3E-09	1.2E-07	8.2E-14	1.4E-12			6.0E-09	1.0E-07	2.3E-07	72.23
Deldrin	2.7E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.2E-09	3.5E-08	2.4E-14	3.9E-13			1.8E-09	2.9E-08	6.4E-08	20.40
Chlordane	2.5E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.0E-09	2.6E-09	2.3E-14	2.9E-14			1.7E-09	2.2E-09	4.8E-09	1.53
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	0.21
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	0.43
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	5.19
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.7E-07		1.9E-12				1.4E-07	3.1E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL75 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	7.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.8E-10	9.8E-09	6.4E-15	1.1E-13			4.8E-10	8.1E-09	1.8E-08	38.20
Dieldrin	3.9E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.2E-10	5.1E-09	3.5E-15	5.7E-14			2.6E-10	4.2E-09	9.2E-09	19.75
Chlordane	2.4E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.9E-10	2.5E-10	2.1E-15	2.8E-15			1.6E-10	2.0E-10	4.5E-10	0.97
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15			7.0E-11	3.2E-10	7.0E-10	1.50
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15			7.0E-11	6.4E-10	1.4E-09	3.02
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13			7.0E-09	7.7E-09	1.7E-08	36.56
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.6E-08		2.9E-13				2.1E-08	4.7E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL80-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	4.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.8E-09	6.5E-08	4.3E-14	7.2E-13			3.2E-09	5.4E-08	1.2E-07	48.10
Dieldrin	1.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.5E-10	1.4E-08	9.5E-15	1.5E-13			7.0E-10	1.1E-08	2.5E-08	10.11
Chlordane	1.1E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		8.9E-10	1.2E-09	1.0E-14	1.3E-14			7.4E-10	9.6E-10	2.1E-09	0.86
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14			3.7E-10	1.7E-09	3.7E-09	1.49
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-10	4.1E-09	5.0E-15	4.5E-14			3.7E-10	3.4E-09	7.4E-09	3.01
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13			3.7E-08	4.1E-08	9.0E-08	36.42
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.3E-07		1.5E-12				1.1E-07	2.5E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL81-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3 3E-01	1.7E+01	1.7E+01	1.7E+01	1	0 10		2 7E-08	4.5E-07	3.0E-13	5 1E-12			2 2E-08	3 8E-07	8 3E-07	95.23
Dieldrin	8 7E-03	1 6E+01	1.6E+01	1 6E+01	1	0.10		7 1E-10	1.1E-08	7.9E-15	1 3E-13			5 8E-10	9.3E-09	2 1E-08	2 36
Chlordane	4 7E-03	1 3E+00	1.3E+00	1 3E+00	1	0.10		3 8E-10	5 0E-10	4 3E-15	5 5E-15			3 2E-10	4 1E-10	9 1E-10	0 10
Heptachlor	1 1E-03	4 5E+00	4 5E+00	4 6E+00	1	0 10		8.9E-11	4 0E-10	1.0E-15	4.6E-15			7.4E-11	3 3E-10	7 3E-10	0.08
Heptachlor epoxide	1 1E-03	9 1E+00	9 1E+00	9.1E+00	1	0 10		8.9E-11	8.1E-10	1.0E-15	9 1E-15			7.4E-11	6 7E-10	1 5E-09	0 17
Toxaphene	1 1E-01	1 1E+00	1 1E+00	1 1E+00	1	0 10		8 9E-09	9 8E-09	1.0E-13	1 1E-13			7 4E-09	8 1E-09	1 8E-08	2 05
DIOXIN																	
2,3,7,8-TCDD		1 5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									4 8E-07		5 3E-12				4 0E-07	8 7E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

CRD = IDD * SFD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

CRI = IDI * SFI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

CRIV = IDIV * SFI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

CRIG = IDIG * SFO

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL82 9FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-10	2.6E-09	1.7E-15	2.9E-14			1.3E-10	2.2E-09	4.8E-09	16.28
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14			1.4E-10	2.3E-09	5.0E-09	16.93
Chlordane	2.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-10	2.2E-10	1.9E-15	2.5E-15			1.4E-10	1.8E-10	4.0E-10	1.38
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15			7.0E-11	3.2E-10	7.0E-10	2.38
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15			7.0E-11	6.4E-10	1.4E-09	4.82
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13			7.0E-09	7.7E-09	1.7E-08	58.21
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.6E-08		1.8E-13				1.3E-08	2.9E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherance Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL83-9FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	4.4E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.6E-10	6.1E-09	4.0E-15	6.8E-14			3.0E-10	5.0E-09	1.1E-08	28.23
Dieldrin	3.8E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.1E-10	4.9E-09	3.4E-15	5.5E-14			2.5E-10	4.1E-09	9.0E-09	22.95
Chlordane	4.4E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		3.6E-10	4.6E-10	4.0E-15	5.2E-15			3.0E-10	3.8E-10	8.5E-10	2.16
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15			6.7E-11	3.0E-10	6.7E-10	1.70
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15			6.7E-11	6.1E-10	1.3E-09	3.43
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13			6.7E-09	7.4E-09	1.6E-08	41.52
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.1E-08		2.4E-13				1.8E-08	3.9E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

Total Non-Cancer Hazard Quotient
Liquid Storage Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte						Total Hazard Quotient
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	
SL10-3.0FT	0.002	0.011	0.004	0.000	0.002	0.000	0.019
SL10-5.0FT	0.001	0.008	0.004	0.000	0.015	0.000	0.028
SL11-3FT	0.000	0.000	0.000	0.000	0.001	0.000	0.002
SL11-4.5FT	0.000	0.000	0.000	0.000	0.001	0.000	0.002
SL12-1.0FT *	0.010	0.004	0.009	0.000	0.003	0.000	0.027
SL12-3.5FT *	0.001	0.000	0.000	0.000	0.001	0.000	0.002
SL13-1.5FT #	0.018	0.007	0.005	0.000	0.003	0.000	0.034
SL13-3.5FT #	0.001	0.001	0.001	0.000	0.001	0.000	0.003
SL14-3.0FT #	0.000	0.000	0.001	0.000	0.001	0.000	0.002
SL15-3.0FT #	0.017	0.002	0.002	0.000	0.003	0.000	0.024
SL16-1.0FT #	0.021	0.270	0.192	0.001	0.038	0.000	0.522
SL16-1.0FT-RE1 #	0.190	0.207	0.204	0.011	0.380	0.000	0.993
SL17-1.0FT *	5.186	0.041	0.037	0.002	0.073	0.000	5.339
SL17-1.0FT-RE1 *	6.569	0.415	0.363	0.022	0.726	0.000	8.095
SL17-3.0FT *	2.870	0.029	0.020	0.001	0.038	0.000	2.957
SL17-3.0FT-RE1 *	6.223	0.228	0.190	0.011	0.380	0.000	7.033
SL18-2.5FT *	0.003	0.005	0.002	0.000	0.001	0.000	0.011
SL19-1.0FT #	0.001	0.002	0.002	0.000	0.001	0.000	0.005
SL20-2.0FT	0.001	0.002	0.001	0.000	0.001	0.000	0.004
SL20-2.0FT-DUP #	0.001	0.002	0.000	0.000	0.001	0.000	0.004
SL69-8FT	0.010	0.007	0.002	0.000	0.001	0.000	0.019
SL70-8FT	0.038	0.005	0.004	0.000	0.001	0.000	0.048
SL72-8FT	0.013	0.005	0.003	0.000	0.001	0.000	0.022
SL73-8FT	0.003	0.002	0.003	0.000	0.001	0.000	0.009
SL74-8FT	0.031	0.006	0.004	0.000	0.001	0.000	0.042
SL75-8FT	0.002	0.001	0.000	0.000	0.001	0.000	0.004
SL80-5FT #	0.016	0.002	0.002	0.000	0.004	0.000	0.024
SL81-3.5FT #	0.114	0.002	0.001	0.000	0.001	0.000	0.117
SL82-9FT #	0.001	0.000	0.000	0.000	0.001	0.000	0.002
SL83-9FT #	0.002	0.001	0.001	0.000	0.001	0.000	0.004

Notes:

(1) Hazard Quotient was calculated based on assumptions in RI baseline risk assessment.

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

* - Indicates soil at this location was excavated during the Phase I RA.

- Indicates soil at this location was covered with concrete during the Phase I RA.

Riverdale Chemical Company
Prepared By: David A. Yaros
Checked By: RAM

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL10-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.5E-03	3.0E-05	3.0E-05		1	0.10		3.1E-08	1.0E-03	3.5E-13				2.6E-08	8.6E-04	1.9E-03	10.01
Dieldrin	5.2E-02	5.0E-05	5.0E-05		1	0.10		3.0E-07	5.9E-03	3.3E-12				2.4E-07	4.9E-03	1.1E-02	56.78
Chlordane	2.4E-02	6.0E-05	6.0E-05		1	0.10		1.3E-07	2.2E-03	1.5E-12				1.1E-07	1.8E-03	4.1E-03	21.38
Heptachlor	8.3E-03	5.0E-04	5.0E-04		1	0.10		4.7E-08	9.4E-05	5.3E-13				3.9E-08	7.8E-05	1.7E-04	0.91
Heptachlor epoxide	3.0E-03	1.5E-05	1.5E-05		1	0.10		1.7E-08	1.1E-03	1.9E-13				1.4E-08	9.4E-04	2.1E-03	10.92
Toxaphene	1.3E-01	NI	NI		1	0.10		7.1E-07		7.9E-12				5.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.0E-02						8.6E-03	1.9E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL10 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.3E-03	3.0E-05	3.0E-05		1	0.10		1.9E-08	6.2E-04	2.1E-13				1.5E-08	5.2E-04	1.1E-03	4.03
Dieldrin	3.7E-02	5.0E-05	5.0E-05		1	0.10		2.1E-07	4.2E-03	2.3E-12				1.7E-07	3.5E-03	7.7E-03	27.09
Chlordane	2.4E-02	6.0E-05	6.0E-05		1	0.10		1.4E-07	2.3E-03	1.5E-12				1.1E-07	1.9E-03	4.2E-03	14.71
Heptachlor	6.5E-03	5.0E-04	5.0E-04		1	0.10		3.7E-08	7.4E-05	4.1E-13				3.1E-08	6.1E-05	1.3E-04	0.48
Heptachlor epoxide	2.2E-02	1.5E-05	1.5E-05		1	0.10		1.2E-07	8.3E-03	1.4E-12				1.0E-07	6.9E-03	1.5E-02	53.70
Toxaphene	1.1E-01	NI	NI		1	0.10		6.0E-07		6.7E-12				4.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.6E-02						1.28E-02	2.83E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^4)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL11-3FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.2E-03	3.0E-05	3.0E-05		1	0.10		6.5E-09	2.2E-04	7.3E-14				5.4E-09	1.8E-04	4.0E-04	19.01
Dieldrin	2.3E-03	5.0E-05	5.0E-05		1	0.10		1.3E-08	2.6E-04	1.5E-13				1.1E-08	2.2E-04	4.8E-04	22.81
Chlordane	2.3E-03	6.0E-05	6.0E-05		1	0.10		1.3E-08	2.2E-04	1.5E-13				1.1E-08	1.8E-04	4.0E-04	19.01
Heptachlor	1.2E-03	5.0E-04	5.0E-04		1	0.10		6.5E-09	1.3E-05	7.3E-14				5.4E-09	1.1E-05	2.4E-05	1.14
Heptachlor epoxide	1.2E-03	1.5E-05	1.5E-05		1	0.10		6.5E-09	4.4E-04	7.3E-14				5.4E-09	3.6E-04	8.0E-04	38.02
Toxaphene	1.2E-01	NI	NI		1	0.10		6.5E-07		7.3E-12				5.4E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-03						9.5E-04	2.1E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL11-4 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3 0E-05		1	0 10		6 2E-09	2 1E-04	7.0E-14				5 2E-09	1 7E-04	3 8E-04	19 01
Dieldrin	2 2E-03	5 0E-05	5 0E-05		1	0.10		1.2E-08	2 5E-04	1.4E-13				1 0E-08	2 1E-04	4 6E-04	22 81
Chlordane	2 2E-03	6 0E-05	6 0E-05		1	0.10		1.2E-08	2.1E-04	1.4E-13				1.0E-08	1 7E-04	3 8E-04	19 01
Heptachlor	1 1E-03	5 0E-04	5.0E-04		1	0 10		6 2E-09	1.2E-05	7.0E-14				5.2E-09	1 0E-05	2 3E-05	1.14
Heptachlor epoxide	1 1E-03	1.5E-05	1.5E-05		1	0 10		6 2E-09	4.2E-04	7.0E-14				5.2E-09	3 4E-04	7 6E-04	38.02
Toxaphene	1 1E-01	NI	NI		1	0 10		6 2E-07		7.0E-12				5 2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.1E-03						9 1E-04	2 0E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL12-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.9E-02	3.0E-05	3.0E-05		1	0.10		1.6E-07	5.5E-03	1.8E-12				1.4E-07	4.5E-03	1.0E-02	37.78
Dieldrin	2.0E-02	5.0E-05	5.0E-05		1	0.10		1.1E-07	2.3E-03	1.3E-12				9.4E-08	1.9E-03	4.1E-03	15.63
Chlordane	5.4E-02	6.0E-05	6.0E-05		1	0.10		3.1E-07	5.1E-03	3.4E-12				2.5E-07	4.2E-03	9.3E-03	35.18
Heptachlor	4.3E-03	5.0E-04	5.0E-04		1	0.10		2.4E-08	4.8E-05	2.7E-13				2.0E-08	4.0E-05	8.8E-05	0.33
Heptachlor epoxide	4.3E-03	1.5E-05	1.5E-05		1	0.10		2.4E-08	1.6E-03	2.7E-13				2.0E-08	1.3E-03	2.9E-03	11.07
Toxaphene	4.3E-01	NI	NI		1	0.10		2.4E-06		2.7E-11				2.0E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E-02						1.2E-02	2.7E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL12-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.7E-03	3.0E-05	3.0E-05		1	0.10		9.6E-09	3.2E-04	1.1E-13				8.0E-09	2.7E-04	5.9E-04	25.70
Dieldrin	2.2E-03	5.0E-05	5.0E-05		1	0.10		1.2E-08	2.5E-04	1.4E-13				1.0E-08	2.1E-04	4.6E-04	19.96
Chlordane	2.5E-03	6.0E-05	6.0E-05		1	0.10		1.4E-08	2.3E-04	1.6E-13				1.2E-08	1.9E-04	4.2E-04	18.52
Heptachlor	1.2E-03	5.0E-04	5.0E-04		1	0.10		6.5E-09	1.3E-05	7.3E-14				5.4E-09	1.1E-05	2.4E-05	1.04
Heptachlor epoxide	1.2E-03	1.5E-05	1.5E-05		1	0.10		6.5E-09	4.4E-04	7.3E-14				5.4E-09	3.6E-04	8.0E-04	34.77
Toxaphene	1.2E-01	NI	NI		1	0.10		6.5E-07		7.3E-12				5.4E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-03						1.0E-03	2.3E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL73-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8.9E-03	3.0E-05	3.0E-05		1	0.10		5.1E-08	1.7E-03	5.6E-13				4.2E-08	1.4E-03	3.1E-03	33.76
Dieldrin	1.2E-02	5.0E-05	5.0E-05		1	0.10		6.8E-08	1.4E-03	7.6E-13				5.6E-08	1.1E-03	2.5E-03	27.31
Chlordane	1.6E-02	6.0E-05	6.0E-05		1	0.10		9.3E-08	1.6E-03	1.0E-12				7.7E-08	1.3E-03	2.8E-03	31.11
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	0.23
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0.10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	7.59
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.0E-03						4.1E-03	9.1E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL72 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.7E-02	3.0E-05	3.0E-05		1	0.10		2.1E-07	7.0E-03	2.3E-12				1.7E-07	5.8E-03	1.3E-02	57.27
Dieldrin	2.6E-02	5.0E-05	5.0E-05		1	0.10		1.5E-07	3.0E-03	1.6E-12				1.2E-07	2.4E-03	5.4E-03	24.14
Chlordane	1.8E-02	6.0E-05	6.0E-05		1	0.10		1.0E-07	1.7E-03	1.1E-12				8.4E-08	1.4E-03	3.1E-03	13.85
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	0.09
Heptachlor epoxide	1.5E-03	1.5E-05	1.5E-05		1	0.10		8.5E-09	5.7E-04	9.5E-14				7.0E-09	4.7E-04	1.0E-03	4.64
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-02						1.0E-02	2.2E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL70-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 1E-01	3 0E-05	3 0E-05		1	0 10		6 2E-07	2 1E-02	7.0E-12				5 2E-07	1 7E-02	3 8E-02	79 67
Dieldrin	2 6E-02	5 0E-05	5 0E-05		1	0 10		1.5E-07	3 0E-03	1.6E-12				1 2E-07	2 4E-03	5 4E-03	11 30
Chlordane	2 1E-02	6 0E-05	6 0E-05		1	0 10		1 2E-07	1 9E-03	1 3E-12				9 7E-08	1 6E-03	3 6E-03	7.46
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0 10		6 0E-09	1.2E-05	6 7E-14				4 9E-09	9 9E-06	2.2E-05	0 05
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 0E-09	4.0E-04	6.7E-14				4 9E-09	3 3E-04	7.3E-04	1 52
Toxaphene	1 1E-01	NI	NI		1	0 10		6 0E-07		6 7E-12				4 9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2 6E-02						2 2E-02	4 8E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL69-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	2.8E-02	3.0E-05	3.0E-05		1	0.10		1.6E-07	5.3E-03	1.8E-12				1.3E-07	4.4E-03	9.7E-03	49.76
Dieldrin	3.2E-02	5.0E-05	5.0E-05		1	0.10		1.8E-07	3.6E-03	2.0E-12				1.5E-07	3.0E-03	6.6E-03	34.12
Chlordane	1.2E-02	6.0E-05	6.0E-05		1	0.10		6.9E-08	1.1E-03	7.7E-13				5.7E-08	9.5E-04	2.1E-03	10.75
Heptachlor	1.7E-02	5.0E-04	5.0E-04		1	0.10		9.6E-08	1.9E-04	1.1E-12				8.0E-08	1.6E-04	3.5E-04	1.81
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0.10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	3.55
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-02						8.8E-03	1.9E-02	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL20-2 0FT-DUP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3 3E-03	3 0E-05	3 0E-05		1	0 10		1 9E-08	6 2E-04	2.1E-13				1 5E-08	5 2E-04	1 1E-03	25 46
Dieldrin	1 1E-02	5 0E-05	5 0E-05		1	0 10		6 2E-08	1 2E-03	7.0E-13				5 2E-08	1 0E-03	2 3E-03	50 93
Chlordane	2 0E-03	6 0E-05	6.0E-05		1	0.10		1 1E-08	1.9E-04	1.3E-13				9 4E-09	1 6E-04	3 5E-04	7.72
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0.10		5 7E-09	1.1E-05	6.3E-14				4.7E-09	9 4E-06	2 1E-05	0 46
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	15 43
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6.3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2.5E-03						2 0E-03	4 5E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL20-2 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m³/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	2 7E-03	3 0E-05	3.0E-05		1	0 10		1 5E-08	5 1E-04	1.7E-13				1 3E-08	4 2E-04	9 3E-04	21 21
Dieldrin	9 7E-03	5 0E-05	5 0E-05		1	0'10		5 5E-08	1 1E-03	6.1E-13				4 6E-08	9 1E-04	2 0E-03	45 72
Chlordane	4 3E-03	6 0E-05	6 0E-05		1	0.10		2 4E-08	4.1E-04	2.7E-13				2.0E-08	3.4E-04	7.4E-04	16 89
Heptachlor	1 0E-03	5 0E-04	5.0E-04		1	0 10		5 7E-09	1.1E-05	6.3E-14				4 7E-09	9 4E-06	2 1E-05	0 47
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0 10		5 7E-09	3.8E-04	6.3E-14				4 7E-09	3 1E-04	6 9E-04	15 71
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6.3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2.4E-03						2 0E-03	4 4E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL19-1 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dermal (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	2 2E-03	3 0E-05	3 0E-05		1	0 10		1 2E-08	4 2E-04	1.4E-13				1 0E-08	3.4E-04	7.6E-04	15.18
Dieldrin	9 1E-03	5 0E-05	5 0E-05		1	0 10		5 2E-08	1.0E-03	5 8E-13				4 3E-08	8.5E-04	1 9E-03	37 69
Chlordane	9 1E-03	6 0E-05	6 0E-05		1	0 10		5 2E-08	8.6E-04	5.8E-13				4.3E-08	7.1E-04	1 6E-03	31.41
Heptachlor	1 3E-03	5 0E-04	5 0E-04		1	0 10		7 4E-09	1.5E-05	8.2E-14				6 1E-09	1.2E-05	2.7E-05	0.54
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 2E-09	4.2E-04	7.0E-14				5 2E-09	3.4E-04	7 6E-04	15.18
Toxaphene	1.1E-01	NI	NI		1	0 10		6 2E-07		7 0E-12				5.2E-07	-		
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2.7E-03						2.3E-03	5 0E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL18-2 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	7.6E-03	3.0E-05	3.0E-05		1	0.10		4.3E-08	1.4E-03	4.8E-13				3.6E-08	1.2E-03	2.6E-03	23.56
Dieldrin	2.6E-02	5.0E-05	5.0E-05		1	0.10		1.5E-07	3.0E-03	1.6E-12				1.2E-07	2.4E-03	5.4E-03	48.36
Chlordane	1.4E-02	6.0E-05	6.0E-05		1	0.10		7.9E-08	1.3E-03	8.9E-13				6.6E-08	1.1E-03	2.4E-03	21.70
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	0.19
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0.10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	6.20
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.1E-03						5.1E-03	1.1E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-3 0FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 8E+01	3 0E-05	3 0E-05		1	0 10		1.0E-04	3.4E+00	1.1E-09				8 5E-05	2 8E+00	6 2E+00	88 48
Dieldrin	1 1E+00	5.0E-05	5 0E-05		1	0 10		6 2E-06	1.2E-01	7 0E-11				5.2E-06	1 0E-01	2 3E-01	3 24
Chlordane	1 1E+00	6 0E-05	6 0E-05		1	0 10		6 2E-06	1.0E-01	7.0E-11				5 2E-06	8 6E-02	1 9E-01	2 70
Heptachlor	5.5E-01	5.0E-04	5 0E-04		1	0 10		3 1E-06	6.2E-03	3.5E-11				2 6E-06	5 2E-03	1 1E-02	0.16
Heptachlor epoxide	5.5E-01	1 5E-05	1 5E-05		1	0 10		3.1E-06	2.1E-01	3 5E-11				2.6E-06	1 7E-01	3 8E-01	5 41
Toxaphene	5 5E+02	NI	NI		1	0 10		3 1E-03		3 5E-08				2 6E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									3 8E+00						3 2E+00	7 0E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-3 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Reference Doses, mg/kg-d Dermal (RFDD)	Reference Doses, mg/kg-d Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Absorption factor, unitless Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Dermal Absorption Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8 3E+00	3 0E-05	3 0E-05		1	0 10		4 7E-05	1.6E+00	5.3E-10				3 9E-05	1 3E+00	2.9E+00	97 03
Dieldrin	1 4E-01	5 0E-05	5 0E-05		1	0 10		7.9E-07	1.6E-02	8.9E-12				6.6E-07	1 3E-02	2.9E-02	0 98
Chlordane	1 1E-01	6.0E-05	6 0E-05		1	0 10		6.4E-07	1.1E-02	7.2E-12				5 3E-07	8 8E-03	2 0E-02	0 66
Heptachlor	5 5E-02	5.0E-04	5 0E-04		1	0.10		3 1E-07	6.2E-04	3.5E-12				2 6E-07	5 2E-04	1 1E-03	0 04
Heptachlor epoxide	5 5E-02	1 5E-05	1.5E-05		1	0 10		3.1E-07	2.1E-02	3.5E-12				2.6E-07	1.7E-02	3 8E-02	1 29
Toxaphene	5 5E+00	NI	NI		1	0 10		3 1E-05		3.5E-10				2 6E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.6E+00						1 3E+00	3 0E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-1 0FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E+01	3.0E-05	3.0E-05		1	0.10		1.1E-04	3.6E+00	1.2E-09				8.9E-05	3.0E+00	6.6E+00	81.15
Dieldrin	2.0E+00	5.0E-05	5.0E-05		1	0.10		1.1E-05	2.3E-01	1.3E-10				9.4E-06	1.9E-01	4.1E-01	5.13
Chlordane	2.1E+00	6.0E-05	6.0E-05		1	0.10		1.2E-05	2.0E-01	1.3E-10				9.9E-06	1.6E-01	3.6E-01	4.48
Heptachlor	1.1E+00	5.0E-04	5.0E-04		1	0.10		6.0E-06	1.2E-02	6.7E-11				4.9E-06	9.9E-03	2.2E-02	0.27
Heptachlor epoxide	1.1E+00	1.5E-05	1.5E-05		1	0.10		6.0E-06	4.0E-01	6.7E-11				4.9E-06	3.3E-01	7.3E-01	8.97
Toxaphene	1.1E+02	NI	NI		1	0.10		6.0E-04		6.7E-09				4.9E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									4.4E+00						3.7E+00	8.1E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL17-1 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 5E+01	3 0E-05	3.0E-05		1	0 10		8 5E-05	2 8E+00	9.5E-10				7.0E-05	2.3E+00	5 2E+00	97 13
Dieldrin	2 0E-01	5 0E-05	5.0E-05		1	0 10		1.1E-06	2.3E-02	1.3E-11				9 4E-07	1 9E-02	4 1E-02	0 78
Chlordane	2 2E-01	6 0E-05	6 0E-05		1	0 10		1.2E-06	2 0E-02	1 4E-11				1 0E-06	1 7E-02	3 7E-02	0.70
Heptachlor	1.1E-01	5 0E-04	5 0E-04		1	0.10		6.0E-07	1.2E-03	6.7E-12				4.9E-07	9 9E-04	2 2E-03	0 04
Heptachlor epoxide	1 1E-01	1 5E-05	1.5E-05		1	0.10		6 0E-07	4.0E-02	6.7E-12				4 9E-07	3.3E-02	7.3E-02	1 36
Toxaphene	1 1E+01	NI	NI		1	0 10		6 0E-05		6.7E-10				4 9E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2 9E+00						2 4E+00	5.3E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL16-1 0FT-RE1

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5 5E-01	3 0E-05	3 0E-05		1	0 10		3 1E-06	1.0E-01	3 5E-11				2 6E-06	8 6E-02	1 9E-01	19 14
Dieldrin	1 0E+00	5 0E-05	5.0E-05		1	0 10		5.7E-06	1 1E-01	6.3E-11				4 7E-06	9 4E-02	2 1E-01	20 88
Chlordane	1 2E+00	6 0E-05	6 0E-05		1	0 10		6.7E-06	1 1E-01	7.5E-11				5 5E-06	9.2E-02	2 0E-01	20 54
Heptachlor	5 5E-01	5 0E-04	5 0E-04		1	0 10		3 1E-06	6.2E-03	3.5E-11				2 6E-06	5 2E-03	1 1E-02	1 15
Heptachlor epoxide	5 5E-01	1 5E-05	1 5E-05		1	0 10		3.1E-06	2 1E-01	3.5E-11				2 6E-06	1.7E-01	3 8E-01	38.29
Toxaphene	5 5E+01	NI	NI		1	0 10		3 1E-04		3.5E-09				2 6E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									5.4E-01						4 5E-01	9 9E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL16-1 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	6.1E-02	3 0E-05	3.0E-05		1	0 10		3 5E-07	1.2E-02	3.9E-12				2 9E-07	9.5E-03	2.1E-02	4 04
Dieldrin	1 3E+00	5 0E-05	5.0E-05		1	0 10		7 4E-06	1.5E-01	8.2E-11				6.1E-06	1 2E-01	2.7E-01	51 68
Chlordane	1 1E+00	6 0E-05	6 0E-05		1	0 10		6 3E-06	1.0E-01	7.0E-11				5 2E-06	8 7E-02	1 9E-01	36 77
Heptachlor	5 5E-02	5 0E-04	5.0E-04		1	0 10		3.1E-07	6.2E-04	3.5E-12				2.6E-07	5.2E-04	1.1E-03	0.22
Heptachlor epoxide	5 5E-02	1 5E-05	1 5E-05		1	0 10		3.1E-07	2.1E-02	3.5E-12				2.6E-07	1 7E-02	3 8E-02	7 29
Toxaphene	5 5E+00	NI	NI		1	0 10		3.1E-05		3.5E-10				2 6E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2.9E-01						2 4E-01	5 2E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL15-3 0 FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	4 8E-02	3 0E-05	3.0E-05		1	0 10		2.7E-07	9 1E-03	3.0E-12				2 3E-07	7 5E-03	1 7E-02	69 57
Dieldrin	9 5E-03	5 0E-05	5 0E-05		1	0 10		5 4E-08	1.1E-03	6 0E-13				4 5E-08	8 9E-04	2 0E-03	8 26
Chlordane	1 0E-02	6 0E-05	6 0E-05		1	0 10		5.7E-08	9 5E-04	6 3E-13				4 7E-08	7 8E-04	1.7E-03	7.25
Heptachlor	5 0E-03	5 0E-04	5.0E-04		1	0 10		2.8E-08	5.7E-05	3.2E-13				2 3E-08	4 7E-05	1 0E-04	0.43
Heptachlor epoxide	5 0E-03	1 5E-05	1 5E-05		1	0 10		2 8E-08	1.9E-03	3.2E-13				2 3E-08	1 6E-03	3.5E-03	14 49
Toxaphene	5 0E-01	NI	NI		1	0 10		2 8E-06		3 2E-11				2 3E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.3E-02						1.1E-02	2.4E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL14-3 0FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3.0E-05		1	0 10		6 0E-09	2 0E-04	6.7E-14				4 9E-09	1 6E-04	3 6E-04	17 39
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1.1E-08	2.3E-04	1.3E-13				9 4E-09	1 9E-04	4 1E-04	19 87
Chlordane	3 3E-03	6 0E-05	6 0E-05		1	0.10		1.8E-08	3 1E-04	2 1E-13				1.5E-08	2 5E-04	5 6E-04	26 91
Heptachlor	1 1E-03	5.0E-04	5 0E-04		1	0.10		6 0E-09	1.2E-05	6.7E-14				4 9E-09	9.9E-06	2.2E-05	1 04
Heptachlor epoxide	1 1E-03	1.5E-05	1 5E-05		1	0.10		6 0E-09	4 0E-04	6.7E-14				4 9E-09	3.3E-04	7.3E-04	34.78
Toxaphene	1 1E-01	NI	NI		1	0 10		6 0E-07		6.7E-12				4 9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1 1E-03						9.5E-04	2 1E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL13-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	2 8E-03	3 0E-05	3 0E-05		1	0 10		1 6E-08	5 3E-04	1.8E-13				1 3E-08	4 4E-04	9 7E-04	30 54
Dieldrin	3 8E-03	5 0E-05	5 0E-05		1	0 10		2 2E-08	4 3E-04	2.4E-13				1.8E-08	3 6E-04	7 9E-04	24 87
Chlordane	3 9E-03	6 0E-05	6 0E-05		1	0 10		2 2E-08	3 6E-04	2 4E-13				1.8E-08	3 0E-04	6 7E-04	21.00
Heptachlor	1 1E-03	5 0E-04	5.0E-04		1	0.10		6 0E-09	1.2E-05	6.7E-14				4.9E-09	9 9E-06	2 2E-05	0 69
Heptachlor epoxide	1 1E-03	1 5E-05	1.5E-05		1	0.10		6 0E-09	4.0E-04	6.7E-14				4.9E-09	3 3E-04	7 3E-04	22 91
Toxaphene	1 1E-01	NI	NI		1	0.10		6.0E-07		6.7E-12				4 9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.7E-03						1 4E-03	3 2E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL13-1 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5 3E-02	3 0E-05	3 0E-05		1	0 10		3 0E-07	1 0E-02	3.4E-12				2 5E-07	8 3E-03	1 8E-02	53 32
Dieldrin	3 6E-02	5 0E-05	5 0E-05		1	0 10		2 0E-07	4.1E-03	2.3E-12				1 7E-07	3 4E-03	7 5E-03	21 73
Chlordane	2 9E-02	6 0E-05	6 0E-05		1	0 10		1 6E-07	2 7E-03	1.8E-12				1 4E-07	2 3E-03	5 0E-03	14 59
Heptachlor	5 0E-03	5.0E-04	5 0E-04		1	0 10		2 8E-08	5.7E-05	3.2E-13				2 3E-08	4 7E-05	1 0E-04	0 30
Heptachlor epoxide	5.0E-03	1.5E-05	1.5E-05		1	0.10		2.8E-08	1.9E-03	3.2E-13				2.3E-08	1 6E-03	3 5E-03	10.06
Toxaphene	5 0E-01	NI	NI		1	0.10		2.8E-06		3.2E-11				2 3E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.9E-02						1.6E-02	3 4E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL74-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	9 0E-02	3 0E-05	3 0E-05		1	0 10		5 1E-07	1 7E-02	5 7E-12				4 2E-07	1 4E-02	3 1E-02	74 53
Dieldrin	2 7E-02	5 0E-05	5.0E-05		1	0 10		1 5E-07	3 1E-03	1 7E-12				1 3E-07	2 5E-03	5 6E-03	13 42
Chlordane	2 5E-02	6 0E-05	6.0E-05		1	0.10		1.4E-07	2 4E-03	1 6E-12				1.2E-07	2 0E-03	4 3E-03	10 35
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9 4E-06	2 1E-05	0 05
Heptachlor epoxide	1 0E-03	1.5E-05	1.5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4.7E-09	3 1E-04	6.9E-04	1 66
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6.3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2 3E-02						1 9E-02	4 2E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL75-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	7.1E-03	3.0E-05	3.0E-05		1	0.10		4.0E-08	1.3E-03	4.5E-13				3.3E-08	1.1E-03	2.5E-03	55.56
Dieldrin	3.9E-03	5.0E-05	5.0E-05		1	0.10		2.2E-08	4.4E-04	2.5E-13				1.8E-08	3.7E-04	8.1E-04	18.31
Chlordane	2.4E-03	6.0E-05	6.0E-05		1	0.10		1.3E-08	2.2E-04	1.5E-13				1.1E-08	1.8E-04	4.1E-04	9.20
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.0E-09	1.2E-05	6.7E-14				4.9E-09	9.9E-06	2.2E-05	0.49
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.0E-09	4.0E-04	6.7E-14				4.9E-09	3.3E-04	7.3E-04	16.43
Toxaphene	1.1E-01	NI	NI		1	0.10		6.0E-07		6.7E-12				4.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.4E-03						2.0E-03	4.4E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL80-5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	4 7E-02	3 0E-05	3 0E-05		1	0 10		2 7E-07	8 9E-03	3 0E-12				2.2E-07	7 4E-03	1 6E-02	67 02
Dieldrin	1 1E-02	5.0E-05	5.0E-05		1	0.10		6 0E-08	1 2E-03	6.7E-13				4.9E-08	9 9E-04	2 2E-03	8 98
Chlordane	1 1E-02	6.0E-05	6.0E-05		1	0.10		6 2E-08	1 0E-03	7.0E-13				5.2E-08	8 6E-04	1 9E-03	7.84
Heptachlor	5 5E-03	5.0E-04	5.0E-04		1	0 10		3 1E-08	6 2E-05	3 5E-13				2.6E-08	5 2E-05	1 1E-04	0 47
Heptachlor epoxide	5 5E-03	1.5E-05	1.5E-05		1	0 10		3 1E-08	2.1E-03	3.5E-13				2 6E-08	1 7E-03	3 8E-03	15 69
Toxaphene	5 5E-01	NI	NI		1	0 10		3 1E-06		3.5E-11				2 6E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.3E-02						1.1E-02	2 4E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL81-3 5FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m³/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3 3E-01	3 0E-05	3 0E-05		1	0 10		1.9E-06	6 2E-02	2 1E-11				1 5E-06,	5 2E-02	1 1E-01	97 11
Dieldrin	8 7E-03	5 0E-05	5 0E-05		1	0 10		4 9E-08	9.9E-04	5.5E-13				4 1E-08	8 2E-04	1 8E-03	1 54
Chlordane	4 7E-03	6 0E-05	6 0E-05		1	0 10		2 7E-08	4 4E-04	3.0E-13				2 2E-08	3 7E-04	8 1E-04	0 69
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0.10		6 2E-09	1 2E-05	7 0E-14				5 2E-09	1.0E-05	2 3E-05	0 02
Heptachlor epoxide	1 1E-03	1.5E-05	1.5E-05		1	0.10		6.2E-09	4 2E-04	7.0E-14				5 2E-09	3.4E-04	7.6E-04	0.65
Toxaphene	1 1E-01	NI	NI		1	0 10		6.2E-07		7.0E-12				5 2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									6 4E-02						5 3E-02	1 2E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL82-9FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E-03	3.0E-05	3.0E-05		1	0.10		1.1E-08	3.6E-04	1.2E-13				8.9E-09	3.0E-04	6.6E-04	29.81
Dieldrin	2.1E-03	5.0E-05	5.0E-05		1	0.10		1.2E-08	2.4E-04	1.3E-13				9.9E-09	2.0E-04	4.4E-04	19.77
Chlordane	2.1E-03	6.0E-05	6.0E-05		1	0.10		1.2E-08	2.0E-04	1.3E-13				9.9E-09	1.6E-04	3.6E-04	16.48
Heptachlor	1.1E-03	5.0E-04	5.0E-04		1	0.10		6.0E-09	1.2E-05	6.7E-14				4.9E-09	9.9E-06	2.2E-05	0.99
Heptachlor epoxide	1.1E-03	1.5E-05	1.5E-05		1	0.10		6.0E-09	4.0E-04	6.7E-14				4.9E-09	3.3E-04	7.3E-04	32.95
Toxaphene	1.1E-01	NI	NI		1	0.10		6.0E-07		6.7E-12				4.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-03						1.0E-03	2.2E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL83-9FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	4.4E-03	3 0E-05	3 0E-05		1	0 10		2 5E-08	8.3E-04	2.8E-13				2 1E-08	6 9E-04	1 5E-03	40 22
Dieldrin	3.8E-03	5 0E-05	5 0E-05		1	0 10		2 2E-08	4 3E-04	2.4E-13				1.8E-08	3 6E-04	7 9E-04	20 84
Chlordane	4 4E-03	6.0E-05	6.0E-05		1	0.10		2.5E-08	4.2E-04	2.8E-13				2.1E-08	3 4E-04	7 6E-04	20 11
Heptachlor	1 0E-03	5 0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9 4E-06	2.1E-05	0 55
Heptachlor epoxide	1.0E-03	1.5E-05	1 5E-05		1	0 10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6 9E-04	18.28
Toxaphene	1 0E-01	NI	NI		1	0.10		5 7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2.1E-03						1.7E-03	3 8E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

3

Total Cancer Risk
Railroad Unloading Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL37-6.2FT #	2.77E-09	2.61E-09	4.24E-10	7.33E-10	1.48E-09	7.01E-09	NA	1.50E-08
SL37-6.2FT-CLP #	1.31E-08	4.98E-09	1.17E-09	7.00E-10	1.42E-09	1.71E-08	NA	3.85E-08
SL38-6.2FT #	2.52E-09	2.37E-09	3.85E-10	6.67E-10	1.35E-09	6.44E-09	NA	1.37E-08
SL38-6.2FT-CLP #	4.28E-09	4.62E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.76E-08
SL39-6.2FT #	2.52E-09	2.37E-09	3.85E-10	6.67E-10	1.35E-09	6.44E-09	NA	1.37E-08
SL39-6.2FT-CLP #	4.28E-09	4.62E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.76E-08
SL60-8FT #	4.79E-05	9.36E-07	7.51E-08	1.30E-07	2.63E-07	6.36E-06	NA	5.56E-05
SL61-8FT #	1.46E-05	3.79E-07	2.87E-08	3.67E-08	7.42E-08	8.96E-07	NA	1.60E-05

Notes:

(1) Risk was calculated based on assumptions in RI baseline risk assessment.

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

(3) Samples SL60 and SL61 were collected at a depth of 8 ft bgs to document level of residual contamination per agreement with the USEPA

CLP - CLP is noted if sample was analyzed using SW846 Method 8081 and CLP.

NA - Not Analyzed

- Indicates soil at this location was covered with concrete during the Phase I RA.

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL37 6 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABSO)	Dermal (ABSD)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.9E-11	1.5E-09	1.0E-15	1.7E-14	0.0E+00	0.0E+00	7.4E-11	1.3E-09	2.8E-09	18.44
Dieldrin	1.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.9E-11	1.4E-09	1.0E-15	1.6E-14	0.0E+00	0.0E+00	7.4E-11	1.2E-09	2.6E-09	17.35
Chlordane	2.2E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.8E-10	2.3E-10	2.0E-15	2.6E-15	0.0E+00	0.0E+00	1.5E-10	1.9E-10	4.2E-10	2.82
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.9E-11	4.0E-10	1.0E-15	4.6E-15	0.0E+00	0.0E+00	7.4E-11	3.3E-10	7.3E-10	4.88
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.9E-11	8.1E-10	1.0E-15	9.1E-15	0.0E+00	0.0E+00	7.4E-11	6.7E-10	1.5E-09	9.87
Toxaphene	4.3E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.5E-09	3.8E-09	3.9E-14	4.3E-14	0.0E+00	0.0E+00	2.9E-09	3.2E-09	7.0E-09	46.64
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									8.2E-09		9.2E-14		0.0E+00		6.8E-09	1.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL37/6.2f TCLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Injestion Amount Injested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.2E-10	7.2E-09	4.7E-15	8.0E-14	0.0E+00	0.0E+00	3.5E-10	5.9E-09	1.3E-08	34.04
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14	0.0E+00	0.0E+00	1.4E-10	2.3E-09	5.0E-09	12.94
Chlordane	6.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.9E-10	6.4E-10	5.5E-15	7.2E-15	0.0E+00	0.0E+00	4.1E-10	5.3E-10	1.2E-09	3.05
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15	0.0E+00	0.0E+00	7.0E-11	3.2E-10	7.0E-10	1.82
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15	0.0E+00	0.0E+00	7.0E-11	6.4E-10	1.4E-09	3.68
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13	0.0E+00	0.0E+00	7.0E-09	7.7E-09	1.7E-08	44.47
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									2.1E-08		2.4E-13		0.0E+00		1.7E-08	3.8E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Injestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Injested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Injestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL38 6.2FT

Chemical Name	Concentration in soil (CS) mg/kg	Cancer Potency Factors 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	18.35
Dieldrin	1.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.1E-11	1.3E-09	9.1E-16	1.4E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.4E-09	17.27
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	2.81
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	4.86
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	9.82
Toxaphene	4.0E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.2E-09	3.5E-09	3.6E-14	3.9E-14	0.0E+00	0.0E+00	2.7E-09	2.9E-09	6.4E-09	46.90
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.5E-09		8.4E-14		0.0E+00		6.2E-09	1.4E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminated Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Bioavailability Fraction, BF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * BF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SE38 6 2F TCLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Derm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-10	2.3E-09	1.5E-15	2.6E-14	0.0E+00	0.0E+00	1.1E-10	1.9E-09	4.3E-09	15.51
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	16.75
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.40
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.42
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	4.88
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	59.04
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-08		1.7E-13		0.0E+00		1.2E-08	2.8E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL39 6-2FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABSO)	Derm (ABSD)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	18.35
Dieldrin	1.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.1E-11	1.3E-09	9.1E-16	1.4E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.4E-09	17.27
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	2.81
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	4.86
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	9.82
Toxaphene	4.0E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.2E-09	3.5E-09	3.6E-14	3.9E-14	0.0E+00	0.0E+00	2.7E-09	2.9E-09	6.4E-09	46.90
DIOXIN																	
2,3,7,8-TCDD No samples collected	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									7.5E-09		8.4E-14		0.0E+00		6.2E-09	1.4E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL39 6 2FT CLP

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-10	2.3E-09	1.5E-15	2.6E-14	0.0E+00	0.0E+00	1.1E-10	1.9E-09	4.3E-09	15.51
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	16.75
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.40
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.42
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	4.88
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	59.04
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-08		1.7E-13		0.0E+00		1.2E-08	2.8E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

HMI ADULT CONSTRUCTION WORKER CANCER RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL60 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF) m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.9E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-06	2.6E-05	1.7E-11	2.9E-10	0.0E+00	0.0E+00	1.3E-06	2.2E-05	4.8E-05	86.05
Dieldrin	4.0E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.2E-08	5.1E-07	3.6E-13	5.7E-12	0.0E+00	0.0E+00	2.7E-08	4.2E-07	9.4E-07	1.68
Chlordane	3.9E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		3.2E-08	4.1E-08	3.5E-13	4.6E-13	0.0E+00	0.0E+00	2.6E-08	3.4E-08	7.5E-08	0.14
Heptachlor	2.0E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.6E-08	7.1E-08	1.8E-13	8.1E-13	0.0E+00	0.0E+00	1.3E-08	5.9E-08	1.3E-07	0.23
Heptachlor epoxide	2.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.6E-08	1.4E-07	1.8E-13	1.6E-12	0.0E+00	0.0E+00	1.3E-08	1.2E-07	2.6E-07	0.47
Toxaphene	3.9E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.2E-06	3.5E-06	3.5E-11	3.9E-11	0.0E+00	0.0E+00	2.6E-06	2.9E-06	6.4E-06	11.43
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									3.0E-05		3.4E-10		0.0E+00		2.5E-05	5.6E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL61 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABSO)	Dermal (ABSD)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.8E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.7E-07	8.0E-06	5.3E-12	8.9E-11	0.0E+00	0.0E+00	3.9E-07	6.6E-06	1.5E-05	91.17
Dieldrin	1.6E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.3E-08	2.1E-07	1.4E-13	2.3E-12	0.0E+00	0.0E+00	1.1E-08	1.7E-07	3.8E-07	2.37
Chlordane	1.5E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-08	1.6E-08	1.3E-13	1.8E-13	0.0E+00	0.0E+00	1.0E-08	1.3E-08	2.9E-08	0.18
Heptachlor	5.5E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-09	2.0E-08	5.0E-14	2.3E-13	0.0E+00	0.0E+00	3.7E-09	1.7E-08	3.7E-08	0.23
Heptachlor epoxide	5.5E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-09	4.1E-08	5.0E-14	4.5E-13	0.0E+00	0.0E+00	3.7E-09	3.4E-08	7.4E-08	0.46
Toxaphene	5.5E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-07	4.9E-07	5.0E-12	5.5E-12	0.0E+00	0.0E+00	3.7E-07	4.1E-07	9.0E-07	5.59
DIOXIN																	
2,3,7,8 TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									8.8E-06		9.8E-11		0.0E+00		7.3E-06	1.6E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

Total Non-Cancer Hazard Quotient
Railroad Unloading Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Non-Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL37-6.2FT #	3.80E-04	2.28E-04	3.80E-04	2.28E-05	7.61E-04	0.00E+00	NA	1.77E-03
SL37-6.2FT-CLP #	1.80E-03	4.36E-04	1.05E-03	2.18E-05	7.26E-04	0.00E+00	NA	4.04E-03
SL38-6.2FT #	3.46E-04	2.07E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.61E-03
SL38-6.2FT-CLP #	5.88E-04	4.05E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	2.05E-03
SL39-6.2FT #	3.46E-04	2.07E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.61E-03
SL39-6.2FT-CLP #	5.88E-04	4.05E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	2.05E-03
SL60-8FT #	6.57E+00	8.19E-02	6.74E-02	4.05E-03	1.35E-01	0.00E+00	NA	6.86E+00
SL61-8FT #	2.01E+00	3.32E-02	2.58E-02	1.14E-03	3.80E-02	0.00E+00	NA	2.10E+00

Notes

(1) Risk was calculated based on assumptions in RI baseline risk assessment

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

(3) Samples SL60 and SL61 were collected at a depth of 8 ft bgs to document level of residual contamination per agreement with the USEPA.

CLP - CLP is noted if sample was analyzed using SW846 Method 8081and CLP.

NA - Not Analyzed

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL37-6 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3 0E-05		1	0 10		6 2E-09	2 1E-04	7 0E-14				5 2E-09	1 7E-04	3 8E-04	21 46
Dieldrin	1 1E-03	5 0E-05	5 0E-05		1	0 10		6 2E-09	1 2E-04	7 0E-14				5 2E-09	1 0E-04	2 3E-04	12 88
Chlordane	2 2E-03	6 0E-05	6 0E-05		1	0 10		1 2E-08	2 1E-04	1 4E-13				1 0E-08	1 7E-04	3 8E-04	21 46
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0 10		6 2E-09	1 2E-05	7 0E-14				5 2E-09	1 0E-05	2 3E-05	1 29
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 2E-09	4 2E-04	7 0E-14				5 2E-09	3 4E-04	7 6E-04	42 92
Toxaphene	4 3E-02	NI	NI		1	0 10		2 4E-07		2 7E-12				2 0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									9 7E-04						8 0E-04	1 8E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL37 6 2FT CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5 2E-03	3 0E-05	3 0E-05		1	0 10		3 0E-08	9 8E-04	3 3E-13				2 4E-08	8 1E-04	1 8E-03	44 55
Dieldrin	2 1E-03	5 0E-05	5 0E-05		1	0 10		1 2E-08	2 4E-04	1 3E-13				9 9E-09	2 0E-04	4 4E-04	10 79
Chlordane	6 1E-03	6 0E-05	6 0E-05		1	0 10		3 5E-08	5 8E-04	3 9E-13				2 9E-08	4 8E-04	1.1E-03	26 13
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0 10		6 0E-09	1 2E-05	6 7E-14				4 9E-09	9 9E-06	2 2E-05	0 54
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 0E-09	4 0E-04	6 7E-14				4 9E-09	3 3E-04	7 3E-04	17 99
Toxaphene	1 1E-01	NI	NI		1	0 10		6 0E-07		6 7E-12				4 9E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									2 2E-03						1 8E-03	4 0E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL38-6 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dirm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	21 46
Dieldrin	1 0E-03	5 0E-05	5 0E-05		1	0 10		5 7E-09	1 1E-04	6 3E-14				4 7E-09	9 4E-05	2 1E-04	12 88
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1 1E-08	1 9E-04	1 3E-13				9 4E-09	1 6E-04	3 5E-04	21 46
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1 29
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	42 92
Toxaphene	4 0E-02	NI	NI		1	0 10		2 2E-07		2 5E-12				1 9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									8 8E-04						7 3E-04	1 6E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	46300000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL38 6 2FT-CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 7E-03	3 0E-05	3 0E-05		1	0 10		9 6E-09	3 2E-04	1 1E-13				8 0E-09	2 7E-04	5 9E-04	28 67
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2 2E-04	1 2E-13				9 2E-09	1 8E-04	4 0E-04	19 73
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1 1E-08	1 9E-04	1 3E-13				9 4E-09	1 6E-04	3 5E-04	16 86
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1.1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1 01
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	33 73
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6 3E-12				4 7E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 1E-03						9 3E-04	2 1E-03	100

NI – No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	46300000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL39 6 2FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	21 46
Dieldrin	1 0E-03	5 0E-05	5 0E-05		1	0 10		5 7E-09	1.1E-04	6 3E-14				4 7E-09	9 4E-05	2 1E-04	12 88
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1 1E-08	1 9E-04	1.3E-13				9 4E-09	1 6E-04	3 5E-04	21 46
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1 29
Heptachlor epoxide	1 0E-03	1 5E-05	1.5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	42 92
Toxaphene	4 0E-02	NI	NI		1	0 10		2 2E-07		2.5E-12				1 9E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									8 8E-04						7 3E-04	1 6E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL39 6 2FT CLP

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 7E-03	3 0E-05	3 0E-05		1	0 10		9 6E-09	3 2E-04	1.1E-13				8 0E-09	2 7E-04	5 9E-04	28 67
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2 2E-04	1 2E-13				9 2E-09	1 8E-04	4 0E-04	19 73
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1.1E-08	1.9E-04	1 3E-13				9 4E-09	1.6E-04	3 5E-04	16 86
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5.7E-09	1 1E-05	6.3E-14				4 7E-09	9 4E-06	2 1E-05	1 01
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	33 73
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6 3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1.1E-03						9 3E-04	2 1E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	*4630000000*
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL60 8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.9E+01	3.0E-05	3.0E-05		1	0.10		1.1E-04	3.6E+00	1.2E-09				8.9E-05	3.0E+00	6.6E+00	95.80
Dieldrin	4.0E-01	5.0E-05	5.0E-05		1	0.10		2.2E-06	4.5E-02	2.5E-11				1.9E-06	3.7E-02	8.2E-02	1.19
Chlordane	3.9E-01	6.0E-05	6.0E-05		1	0.10		2.2E-06	3.7E-02	2.5E-11				1.8E-06	3.1E-02	6.7E-02	0.98
Heptachlor	2.0E-01	5.0E-04	5.0E-04		1	0.10		1.1E-06	2.2E-03	1.2E-11				9.2E-07	1.8E-03	4.0E-03	0.06
Heptachlor epoxide	2.0E-01	1.5E-05	1.5E-05		1	0.10		1.1E-06	7.4E-02	1.2E-11				9.2E-07	6.1E-02	1.3E-01	1.97
Toxaphene	3.9E+01	NI	NI		1	0.10		2.2E-04		2.5E-09				1.8E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.8E+00						3.1E+00	6.9E+00	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL61-8FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5.8E+00	3.0E-05	3.0E-05		1	0.10		3.3E-05	1.1E+00	3.7E-10				2.7E-05	9.1E-01	2.0E+00	95.34
Dieldrin	1.6E-01	5.0E-05	5.0E-05		1	0.10		9.1E-07	1.8E-02	1.0E-11				7.5E-07	1.5E-02	3.3E-02	1.58
Chlordane	1.5E-01	6.0E-05	6.0E-05		1	0.10		8.5E-07	1.4E-02	9.4E-12				7.0E-07	1.2E-02	2.6E-02	1.22
Heptachlor	5.5E-02	5.0E-04	5.0E-04		1	0.10		3.1E-07	6.2E-04	3.5E-12				2.6E-07	5.2E-04	1.1E-03	0.05
Heptachlor epoxide	5.5E-02	1.5E-05	1.5E-05		1	0.10		3.1E-07	2.1E-02	3.5E-12				2.6E-07	1.7E-02	3.8E-02	1.81
Toxaphene	5.5E+00	NI	NI		1	0.10		3.1E-05		3.5E-10				2.6E-05			
DIOXIN																	
2,3,7,8 TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E+00						9.5E-01	2.1E+00	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

4

Total Cancer Risk
Low Lying Area
Riverdale Chemical Company - Riverdale Chemical Company

Sampling Location	Analyte							Total Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL50-6IN	3.78E-05	4.50E-06	1.25E-06	6.47E-07	1.62E-07	1.79E-06	NA	4.61E-05
SL50-4FT	1.36E-07	2.49E-08	2.12E-09	3.67E-09	7.42E-09	8.96E-08	NA	2.64E-07
SL51-6IN	5.29E-07	5.22E-07	2.74E-07	5.07E-08	5.87E-09	7.09E-08	NA	1.45E-06
SL51-4FT	1.71E-08	2.84E-08	5.20E-09	4.27E-09	1.62E-09	1.87E-08	NA	7.54E-08
SL52-6IN	4.28E-07	3.79E-07	4.37E-08	5.60E-08	7.01E-09	2.04E-08	NA	9.35E-07
SL52-4FT	2.64E-08	4.98E-08	4.05E-09	7.00E-09	1.42E-08	1.71E-07	NA	2.73E-07
SL53-6IN	4.03E-07	7.11E-07	5.72E-08	1.27E-08	3.64E-08	1.96E-07	NA	1.42E-06
SL54-6IN	2.07E-07	2.61E-07	1.27E-07	3.67E-09	2.02E-08	8.96E-08	NA	7.08E-07
SL55-6IN	4.91E-08	1.28E-07	1.18E-08	1.30E-08	2.63E-08	3.18E-07	NA	5.46E-07

Notes:

(1) Risk was calculated based on assumptions in RI baseline risk assessment

(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

NA - Not Analyzed

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL50 GIN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.5E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.2E-06	2.1E-05	1.4E-11	2.3E-10	0.0E+00	0.0E+00	1.0E-06	1.7E-05	3.8E-05	81.89
Dieldrin	1.9E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.5E-07	2.5E-06	1.7E-12	2.8E-11	0.0E+00	0.0E+00	1.3E-07	2.0E-06	4.5E-06	9.76
Chlordane	6.5E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.3E-07	6.9E-07	5.9E-12	7.7E-12	0.0E+00	0.0E+00	4.4E-07	5.7E-07	1.3E-06	2.71
Heptachlor	9.7E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.9E-08	3.5E-07	8.8E-13	4.0E-12	0.0E+00	0.0E+00	6.5E-08	2.9E-07	6.5E-07	1.40
Heptachlor epoxide	1.2E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.7E-09	8.9E-08	1.1E-13	9.9E-13	0.0E+00	0.0E+00	8.1E-09	7.3E-08	1.6E-07	0.35
Toxaphene	1.1E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.9E-07	9.8E-07	1.0E-11	1.1E-11	0.0E+00	0.0E+00	7.4E-07	8.1E-07	1.8E-06	3.89
HERBICIDES																	
2,3,7,8-TCDD (No samples collected)	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									2.5E-05		2.8E-10		0.0E+00		2.1E-05	4.6E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

TABLE ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL50-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	5.4E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.4E-09	7.4E-08	4.9E-14	8.3E-13	0.0E+00	0.0E+00	3.6E-09	6.2E-08	1.4E-07	51.57
Dieldrin	1.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.5E-10	1.4E-08	9.5E-15	1.5E-13	0.0E+00	0.0E+00	7.0E-10	1.1E-08	2.5E-08	9.44
Chlordane	1.1E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		8.9E-10	1.2E-09	1.0E-14	1.3E-14	0.0E+00	0.0E+00	7.4E-10	9.6E-10	2.1E-09	0.80
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14	0.0E+00	0.0E+00	3.7E-10	1.7E-09	3.7E-09	1.39
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.5E-10	4.1E-09	5.0E-15	4.5E-14	0.0E+00	0.0E+00	3.7E-10	3.4E-09	7.4E-09	2.81
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13	0.0E+00	0.0E+00	3.7E-08	4.1E-08	9.0E-08	33.99
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-07		1.6E-12		0.0E+00		1.2E-07	2.6E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface Area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL51-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Injestion Amount Injested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.1E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.7E-08	2.9E-07	1.9E-13	3.2E-12	0.0E+00	0.0E+00	1.4E-08	2.4E-07	5.3E-07	36.44
Dieldrin	2.2E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-08	2.9E-07	2.0E-13	3.2E-12	0.0E+00	0.0E+00	1.5E-08	2.4E-07	5.2E-07	35.93
Chlordane	1.4E+00	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.2E-07	1.5E-07	1.3E-12	1.7E-12	0.0E+00	0.0E+00	9.5E-08	1.2E-07	2.7E-07	18.84
Heptachlor	7.6E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.2E-09	2.8E-08	6.9E-14	3.2E-13	0.0E+00	0.0E+00	5.1E-09	2.3E-08	5.1E-08	3.49
Heptachlor epoxide	4.4E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.5E-10	3.2E-09	3.9E-15	3.6E-14	0.0E+00	0.0E+00	2.9E-10	2.7E-09	5.9E-09	0.40
Toxaphene	4.4E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.5E-08	3.9E-08	3.9E-13	4.3E-13	0.0E+00	0.0E+00	2.9E-08	3.2E-08	7.1E-08	4.88
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.9E-07		8.9E-12		0.0E+00		6.6E-07	1.5E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Injestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Injested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Injestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL51-4F1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	6.8E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.5E-10	9.4E-09	6.2E-15	1.0E-13	0.0E+00	0.0E+00	4.6E-10	7.8E-09	1.7E-08	22.71
Dieldrin	1.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.7E-10	1.6E-08	1.1E-14	1.7E-13	0.0E+00	0.0E+00	8.1E-10	1.3E-08	2.8E-08	37.73
Chlordane	2.7E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.2E-09	2.8E-09	2.4E-14	3.2E-14	0.0E+00	0.0E+00	1.8E-09	2.4E-09	5.2E-09	6.90
Heptachlor	6.4E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		5.2E-10	2.3E-09	5.8E-15	2.7E-14	0.0E+00	0.0E+00	4.3E-10	1.9E-09	4.3E-09	5.66
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.7E-11	8.9E-10	1.1E-15	9.9E-15	0.0E+00	0.0E+00	8.1E-11	7.3E-10	1.6E-09	2.15
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.3E-09	1.0E-08	1.0E-13	1.1E-13	0.0E+00	0.0E+00	7.7E-09	8.5E-09	1.9E-08	24.86
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									4.1E-08		4.6E-13		0.0E+00		3.4E-08	7.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL52-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 7E-01	1 7E+01	1 7E+01	1 7E+01	1	0 10		1 4E-08	2 3E-07	1 5E-13	2 6E-12	0 0E+00	0 0E+00	1 1E-08	1 9E-07	4 3E-07	45 82
Dieldrin	1 6E-01	1 6E+01	1 6E+01	1 6E+01	1	0 10		1 3E-08	2 1E-07	1 4E-13	2 3E-12	0 0E+00	0 0E+00	1 1E-08	1 7E-07	3 8E-07	40 58
Chlordane	2 3E-01	1 3E+00	1 3E+00	1 3E+00	1	0 10		1 8E-08	2 4E-08	2 1E-13	2 7E-13	0 0E+00	0 0E+00	1 5E-08	2 0E-08	4 4E-08	4 68
Heptachlor	8 4E-02	4 5E+00	4 5E+00	4 6E+00	1	0 10		6 8E-09	3 1E-08	7 6E-14	3 5E-13	0 0E+00	0 0E+00	5 6E-09	2 5E-08	5 6E-08	5 99
Heptachlor epoxide	5 2E-03	9 1E+00	9 1E+00	9 1E+00	1	0 10		4 2E-10	3 8E-09	4 7E-15	4 3E-14	0 0E+00	0 0E+00	3 5E-10	3 2E-09	7 0E-09	0 75
Toxaphene	1 3E-01	1 1E+00	1 1E+00	1 1E+00	1	0 10		1 0E-08	1 1E-08	1 1E-13	1 2E-13	0 0E+00	0 0E+00	8 4E-09	9 2E-09	2 0E-08	2 18
HERBICIDES																	
2,3,7,8-TCDD	NA	1 5E+05	1 5E+05	1 5E+05	1	0 10											
No samples collected																	
Total Cancer Risk									5 1E-07		5 7E-12		0 0E+00		4 2E-07	9 3E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL52-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.5E-10	1.4E-08	9.5E-15	1.6E-13	0.0E+00	0.0E+00	7.0E-10	1.2E-08	2.6E-08	9.70
Dieldrin	2.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-09	2.7E-08	1.9E-14	3.0E-13	0.0E+00	0.0E+00	1.4E-09	2.3E-08	5.0E-08	18.26
Chlordane	2.1E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-09	2.2E-09	1.9E-14	2.5E-14	0.0E+00	0.0E+00	1.4E-09	1.8E-09	4.0E-09	1.48
Heptachlor	1.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-10	3.8E-09	9.5E-15	4.4E-14	0.0E+00	0.0E+00	7.0E-10	3.2E-09	7.0E-09	2.57
Heptachlor epoxide	1.1E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-10	7.7E-09	9.5E-15	8.7E-14	0.0E+00	0.0E+00	7.0E-10	6.4E-09	1.4E-08	5.19
Toxaphene	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-08	9.4E-08	9.5E-13	1.0E-12	0.0E+00	0.0E+00	7.0E-08	7.7E-08	1.7E-07	62.79
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-07		1.7E-12		0.0E+00		1.2E-07	2.7E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Bioavailable Fraction, fd (unitless)	1
Skin Surface Area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * FT}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL53-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.6E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.3E-08	2.2E-07	1.4E-13	2.5E-12	0.0E+00	0.0E+00	1.1E-08	1.8E-07	4.0E-07	28.46
Dieldrin	3.0E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.4E-08	3.9E-07	2.7E-13	4.3E-12	0.0E+00	0.0E+00	2.0E-08	3.2E-07	7.1E-07	50.22
Chlordane	3.0E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.4E-08	3.1E-08	2.7E-13	3.5E-13	0.0E+00	0.0E+00	2.0E-08	2.6E-08	5.7E-08	4.04
Heptachlor	1.9E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.5E-09	6.9E-09	1.7E-14	7.9E-14	0.0E+00	0.0E+00	1.3E-09	5.7E-09	1.3E-08	0.89
Heptachlor epoxide	2.7E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.2E-09	2.0E-08	2.4E-14	2.2E-13	0.0E+00	0.0E+00	1.8E-09	1.6E-08	3.6E-08	2.57
Toxaphene	1.2E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.7E-08	1.1E-07	1.1E-12	1.2E-12	0.0E+00	0.0E+00	8.1E-08	8.9E-08	2.0E-07	13.81
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									7.7E-07		8.7E-12		0.0E+00		6.4E-07	1.4E-06	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL54-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8.2E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.6E-09	1.1E-07	7.4E-14	1.3E-12	0.0E+00	0.0E+00	5.5E-09	9.4E-08	2.1E-07	29.17
Dieldrin	1.1E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.9E-09	1.4E-07	1.0E-13	1.6E-12	0.0E+00	0.0E+00	7.4E-09	1.2E-07	2.6E-07	36.83
Chlordane	6.6E-01	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.4E-08	7.0E-08	6.0E-13	7.8E-13	0.0E+00	0.0E+00	4.4E-08	5.8E-08	1.3E-07	17.96
Heptachlor	5.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-10	2.0E-09	5.0E-15	2.3E-14	0.0E+00	0.0E+00	3.7E-10	1.7E-09	3.7E-09	0.52
Heptachlor epoxide	1.5E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.2E-09	1.1E-08	1.4E-14	1.2E-13	0.0E+00	0.0E+00	1.0E-09	9.2E-09	2.0E-08	2.86
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	4.9E-08	5.0E-13	5.5E-13	0.0E+00	0.0E+00	3.7E-08	4.1E-08	9.0E-08	12.66
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									3.9E-07		4.3E-12		0.0E+00		3.2E-07	7.1E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherance Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PLF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL55-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.6E-09	2.7E-08	1.8E-14	3.0E-13	0.0E+00	0.0E+00	1.3E-09	2.2E-08	4.9E-08	8.99
Dieldrin	5.4E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.4E-09	7.0E-08	4.9E-14	7.8E-13	0.0E+00	0.0E+00	3.6E-09	5.8E-08	1.3E-07	23.44
Chlordane	6.2E-02	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.0E-09	6.5E-09	5.6E-14	7.2E-14	0.0E+00	0.0E+00	4.1E-09	5.4E-09	1.2E-08	2.17
Heptachlor	2.0E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.6E-09	7.1E-09	1.8E-14	8.1E-14	0.0E+00	0.0E+00	1.3E-09	5.9E-09	1.3E-08	2.38
Heptachlor epoxide	2.0E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.6E-09	1.4E-08	1.8E-14	1.6E-13	0.0E+00	0.0E+00	1.3E-09	1.2E-08	2.6E-08	4.81
Toxaphene	2.0E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.6E-07	1.7E-07	1.8E-12	1.9E-12	0.0E+00	0.0E+00	1.3E-07	1.4E-07	3.2E-07	58.20
HERBICIDES																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									3.0E-07		3.3E-12		0.0E+00		2.5E-07	5.5E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	46300000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

Total Non-Cancer Hazard Quotient
Low Lying Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Non-Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL50-6IN	5.19E+00	3.94E-01	1.12E+00	2.01E-02	8.30E-02	0.00E+00	NA	6.81E+00
SL50-4FT	1.87E-02	2.18E-03	1.90E-03	1.14E-04	3.80E-03	0.00E+00	NA	2.67E-02
SL51-6IN	7.26E-02	4.56E-02	2.45E-01	1.58E-03	3.01E-03	0.00E+00	NA	3.68E-01
SL51-4FT	2.35E-03	2.49E-03	4.67E-03	1.33E-04	8.30E-04	0.00E+00	NA	1.05E-02
SL52-6IN	5.88E-02	3.32E-02	3.92E-02	1.74E-03	3.60E-03	0.00E+00	NA	1.37E-01
SL52-4FT	3.63E-03	4.36E-03	3.63E-03	2.18E-04	7.26E-03	0.00E+00	NA	1.91E-02
SL53-6IN	5.53E-02	6.22E-02	5.13E-02	3.94E-04	1.87E-02	0.00E+00	NA	1.88E-01
SL54-6IN	2.83E-02	2.28E-02	1.14E-01	1.14E-04	1.04E-02	0.00E+00	NA	1.76E-01
SL55-6IN	6.74E-03	1.12E-02	1.06E-02	4.05E-04	1.35E-02	0.00E+00	NA	4.25E-02

Notes
(1) Risk was calculated based on assumptions in RI baseline risk assessment.
(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).
NA - Not Analyzed

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL50 6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 5E+01	3 0E-05	3 0E-05		1	0 10		8 5E-05	2 8E+00	9 5E-10				7 0E-05	2 3E+00	5 2E+00	76 19
Dieldrin	1 9E+00	5 0E-05	5 0E-05		1	0 10		1 1E-05	2 2E-01	1 2E-10				8 9E-06	1 8E-01	3 9E-01	5 79
Chlordane	6 5E+00	6 0E-05	6 0E-05		1	0 10		3 7E-05	6 1E-01	4 1E-10				3 1E-05	5 1E-01	1 1E+00	16 51
Heptachlor	9 7E-01	5 0E-04	5 0E-04		1	0 10		5 5E-06	1.1E-02	6 1E-11				4 6E-06	9 1E-03	2 0E-02	0 30
Heptachlor epoxide	1 2E-01	1 5E-05	1 5E-05		1	0 10		6 8E-07	4 5E-02	7.6E-12				5 6E-07	3 8E-02	8 3E-02	1 22
Toxaphene	1 1E+01	NI	NI		1	0 10		6 2E-05		7.0E-10				5 2E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									3.7E+00						3 1E+00	6 8E+00	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL50-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m³/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dirm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	5.4E-02	3.0E-05	3.0E-05		1	0.10		3.1E-07	1.0E-02	3.4E-12				2.5E-07	8.5E-03	1.9E-02	70.01
Dieldrin	1.1E-02	5.0E-05	5.0E-05		1	0.10		6.0E-08	1.2E-03	6.7E-13				4.9E-08	9.9E-04	2.2E-03	8.17
Chlordane	1.1E-02	6.0E-05	6.0E-05		1	0.10		6.2E-08	1.0E-03	7.0E-13				5.2E-08	8.6E-04	1.9E-03	7.13
Heptachlor	5.5E-03	5.0E-04	5.0E-04		1	0.10		3.1E-08	6.2E-05	3.5E-13				2.6E-08	5.2E-05	1.1E-04	0.43
Heptachlor epoxide	5.5E-03	1.5E-05	1.5E-05		1	0.10		3.1E-08	2.1E-03	3.5E-13				2.6E-08	1.7E-03	3.8E-03	14.26
Toxaphene	5.5E-01	NI	NI		1	0.10		3.1E-06		3.5E-11				2.6E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E-02						1.2E-02	2.7E-02	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL51-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.1E-01	3.0E-05	3.0E-05		1	0.10		1.2E-06	4.0E-02	1.3E-11				9.9E-07	3.3E-02	7.3E-02	19.71
Dieldrin	2.2E-01	5.0E-05	5.0E-05		1	0.10		1.2E-06	2.5E-02	1.4E-11				1.0E-06	2.1E-02	4.6E-02	12.39
Chlordane	1.4E+00	6.0E-05	6.0E-05		1	0.10		8.1E-06	1.3E-01	9.0E-11				6.7E-06	1.1E-01	2.5E-01	66.65
Heptachlor	7.6E-02	5.0E-04	5.0E-04		1	0.10		4.3E-07	8.6E-04	4.8E-12				3.6E-07	7.1E-04	1.6E-03	0.43
Heptachlor epoxide	4.4E-03	1.5E-05	1.5E-05		1	0.10		2.5E-08	1.6E-03	2.8E-13				2.0E-08	1.4E-03	3.0E-03	0.82
Toxaphene	4.4E-01	NI	NI		1	0.10		2.5E-06		2.8E-11				2.0E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.0E-01						1.7E-01	3.7E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL51-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	6.8E-03	3.0E-05	3.0E-05		1	0.10		3.9E-08	1.3E-03	4.3E-13				3.2E-08	1.1E-03	2.4E-03	22.45
Dieldrin	1.2E-02	5.0E-05	5.0E-05		1	0.10		6.8E-08	1.4E-03	7.6E-13				5.6E-08	1.1E-03	2.5E-03	23.77
Chlordane	2.7E-02	6.0E-05	6.0E-05		1	0.10		1.5E-07	2.6E-03	1.7E-12				1.3E-07	2.1E-03	4.7E-03	44.58
Heptachlor	6.4E-03	5.0E-04	5.0E-04		1	0.10		3.6E-08	7.3E-05	4.1E-13				3.0E-08	6.0E-05	1.3E-04	1.27
Heptachlor epoxide	1.2E-03	1.5E-05	1.5E-05		1	0.10		6.8E-09	4.5E-04	7.6E-14				5.6E-09	3.8E-04	8.3E-04	7.92
Toxaphene	1.2E-01	NI	NI		1	0.10		6.5E-07		7.3E-12				5.4E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.7E-03						4.7E-03	1.0E-02	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL52-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.7E-01	3.0E-05	3.0E-05		1	0.10		9.6E-07	3.2E-02	1.1E-11				8.0E-07	2.7E-02	5.9E-02	43.04
Dieldrin	1.6E-01	5.0E-05	5.0E-05		1	0.10		9.1E-07	1.8E-02	1.0E-11				7.5E-07	1.5E-02	3.3E-02	24.31
Chlordane	2.3E-01	6.0E-05	6.0E-05		1	0.10		1.3E-06	2.1E-02	1.4E-11				1.1E-06	1.8E-02	3.9E-02	28.74
Heptachlor	8.4E-02	5.0E-04	5.0E-04		1	0.10		4.8E-07	9.5E-04	5.3E-12				3.9E-07	7.9E-04	1.7E-03	1.28
Heptachlor epoxide	5.2E-03	1.5E-05	1.5E-05		1	0.10		3.0E-08	2.0E-03	3.3E-13				2.4E-08	1.6E-03	3.6E-03	2.63
Toxaphene	1.3E-01	NI	NI		1	0.10		7.1E-07		7.9E-12				5.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									7.5E-02						6.2E-02	1.4E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL52-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg·d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg·d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg·d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg·d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg·d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 1E-02	3 0E-05	3 0E-05		1	0 10		6 0E-08	2 0E-03	6 7E-13				4 9E-08	1 6E-03	3 6E-03	19 01
Dieldrin	2 1E-02	5 0E-05	5 0E-05		1	0 10		1 2E-07	2 4E-03	1.3E-12				9 9E-08	2 0E-03	4 4E-03	22 81
Chlordane	2 1E-02	6 0E-05	6 0E-05		1	0 10		1 2E-07	2 0E-03	1 3E-12				9 9E-08	1 6E-03	3 6E-03	19 01
Heptachlor	1 1E-02	5 0E-04	5 0E-04		1	0 10		6 0E-08	1 2E-04	6 7E-13				4.9E-08	9 9E-05	2 2E-04	1 14
Heptachlor epoxide	1 1E-02	1 5E-05	1 5E-05		1	0 10		6 0E-08	4 0E-03	6 7E-13				4 9E-08	3 3E-03	7 3E-03	38 02
Toxaphene	1 1E+00	NI	NI		1	0 10		6 0E-06		6 7E-11				4 9E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 0E-02						8 6E-03	1 9E-02	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL53-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Dermal (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.6E-01	3.0E-05	3.0E-05		1	0.10		9.1E-07	3.0E-02	1.0E-11				7.5E-07	2.5E-02	5.5E-02	29.43
Dieldrin	3.0E-01	5.0E-05	5.0E-05		1	0.10		1.7E-06	3.4E-02	1.9E-11				1.4E-06	2.8E-02	6.2E-02	33.11
Chlordane	3.0E-01	6.0E-05	6.0E-05		1	0.10		1.7E-06	2.8E-02	1.9E-11				1.4E-06	2.3E-02	5.1E-02	27.32
Heptachlor	1.9E-02	5.0E-04	5.0E-04		1	0.10		1.1E-07	2.2E-04	1.2E-12				8.9E-08	1.8E-04	3.9E-04	0.21
Heptachlor epoxide	2.7E-02	1.5E-05	1.5E-05		1	0.10		1.5E-07	1.0E-02	1.7E-12				1.3E-07	8.5E-03	1.9E-02	9.93
Toxaphene	1.2E+00	NI	NI		1	0.10		6.8E-06		7.6E-11				5.6E-06			
DIOXIN																	
2,3,7,8 TCDD					1	0.10											
See Dioxin TEQ																	
Total Noncancer Hazard									1.0E-01						8.5E-02	1.9E-01	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION St 54-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8 2E-02	3 0E-05	3 0E-05		1	0 10		4 7E-07	1 6E-02	5 2E-12				3 9E-07	1 3E-02	2 8E-02	16 13
Dieldrin	1 1E-01	5 0E-05	5 0E-05		1	0 10		6 2E-07	1 2E-02	7 0E-12				5 2E-07	1 0E-02	2 3E-02	12 98
Chlordane	6 6E-01	6 0E-05	6 0E-05		1	0 10		3 7E-06	6 2E-02	4 2E-11				3 1E-06	5 2E-02	1 1E-01	64 92
Heptachlor	5 5E-03	5 0E-04	5 0E-04		1	0 10		3 1E-08	6 2E-05	3 5E-13				2 6E-08	5 2E-05	1 1E-04	0 06
Heptachlor epoxide	1 5E-02	1 5E-05	1 5E-05		1	0 10		8 5E-08	5 7E-03	9 5E-13				7 0E-08	4 7E-03	1 0E-02	5 90
Toxaphene	5 5E-01	NI	NI		1	0 10		3 1E-06		3 5E-11				2 6E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
See Dioxin TEQ																	
Total Noncancer Hazard									9 6E-02						8 0E-02	1 8E-01	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL55-6IN

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDD)	Reference Doses, mg/kg-d: Inhalation (RFDI)	Absorption factor, unitless: Oral (ABO)	Absorption factor, unitless: Drm (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption: Amount Absorbed (IDD), mg/kg-d	Dermal Absorption: Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HQIV), unitless	Ingestion: Amount Ingested (IDIG) (mg/kg-d)	Ingestion: Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.0E-02	3.0E-05	3.0E-05		1	0.10		1.1E-07	3.7E-03	1.2E-12				9.2E-08	3.1E-03	6.7E-03	15.88
Dieldrin	5.4E-02	5.0E-05	5.0E-05		1	0.10		3.1E-07	6.1E-03	3.4E-12				2.5E-07	5.1E-03	1.1E-02	26.38
Chlordane	6.2E-02	6.0E-05	6.0E-05		1	0.10		3.5E-07	5.8E-03	3.9E-12				2.9E-07	4.8E-03	1.1E-02	25.04
Heptachlor	2.0E-02	5.0E-04	5.0E-04		1	0.10		1.1E-07	2.2E-04	1.2E-12				9.2E-08	1.8E-04	4.0E-04	0.95
Heptachlor epoxide	2.0E-02	1.5E-05	1.5E-05		1	0.10		1.1E-07	7.4E-03	1.2E-12				9.2E-08	6.1E-03	1.3E-02	31.75
Toxaphene	2.0E+00	NI	NI		1	0.10		1.1E-05		1.2E-10				9.2E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.3E-02						1.9E-02	4.2E-02	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

Total Cancer Risk
Utility Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL62-1FT	2.52E-09	4.86E-09	4.62E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.62E-08
SL62-4FT	2.52E-09	4.62E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.58E-08
SL63-1FT	2.52E-09	4.74E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.60E-08
SL63-4FT	2.39E-09	4.62E-09	3.66E-10	6.33E-10	1.28E-09	1.55E-08	NA	2.48E-08
SL64-1FT	2.52E-09	4.62E-09	6.74E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.61E-08
SL64-4FT	2.39E-09	4.62E-09	1.15E-09	6.33E-10	1.28E-09	1.55E-08	NA	2.56E-08
SL65-1FT	2.52E-09	9.25E-09	1.44E-09	6.67E-10	1.62E-09	1.63E-08	NA	3.18E-08
SL65-4FT	2.39E-09	2.25E-09	5.30E-10	6.33E-10	1.28E-09	1.55E-08	NA	2.26E-08
SL66-1FT	2.64E-09	4.98E-09	1.20E-09	7.00E-10	1.42E-09	1.71E-08	NA	2.81E-08
SL66-4FT	2.52E-09	4.74E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.60E-08
SL67-1FT	2.64E-09	4.86E-09	4.05E-10	7.00E-10	1.42E-09	1.71E-08	NA	2.71E-08
SL67-4FT	2.52E-09	4.62E-09	3.85E-10	6.67E-10	1.35E-09	1.63E-08	NA	2.58E-08

Notes

(1) Risk was calculated based on assumptions in RI baseline risk assessment.

(2) If the analyte concentration was below method detection limit, 1/2 of the method detection limit was used as the exposure point concentration (EPC).

NA - Not Analyzed

HMI ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL62-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Derm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.63
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14	0.0E+00	0.0E+00	1.4E-10	2.2E-09	4.9E-09	18.58
Chlordane	2.4E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.9E-10	2.5E-10	2.2E-15	2.8E-15	0.0E+00	0.0E+00	1.6E-10	2.1E-10	4.6E-10	1.77
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.55
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.16
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	62.32
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER LIFETIME RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SEG2-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABSO)	Derm (ABSD)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.75
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	17.89
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.49
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.58
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.22
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	63.07
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4E+09
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL63-1F1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.70
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.6E-09	1.8E-15	2.9E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.7E-09	18.26
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.48
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.57
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.19
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	62.79
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface Area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL63 4E1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dirm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	9.5E-04	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.7E-11	1.3E-09	8.6E-16	1.5E-14	0.0E+00	0.0E+00	6.4E-11	1.1E-09	2.4E-09	9.66
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	18.66
Chlordane	1.9E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.5E-10	2.0E-10	1.7E-15	2.2E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.7E-10	1.48
Heptachlor	9.5E-04	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.7E-11	3.5E-10	8.6E-16	4.0E-15	0.0E+00	0.0E+00	6.4E-11	2.9E-10	6.3E-10	2.56
Heptachlor epoxide	9.5E-04	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.7E-11	7.0E-10	8.6E-16	7.8E-15	0.0E+00	0.0E+00	6.4E-11	5.8E-10	1.3E-09	5.17
Toxaphene	9.5E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		7.7E-09	8.5E-09	8.6E-14	9.5E-14	0.0E+00	0.0E+00	6.4E-09	7.0E-09	1.5E-08	62.49
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.5E-13		0.0E+00		1.1E-08	2.5E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIG (unitless)	1
Fraction Inhaled, FIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	46,300,000,000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * FT}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRIS = IDIS * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

TIME ADJUSTED CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL64-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (AbO)	Dermal (AbD)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.64
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	17.69
Chlordane	3.5E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.8E-10	3.7E-10	3.2E-15	4.1E-15	0.0E+00	0.0E+00	2.3E-10	3.1E-10	6.7E-10	2.58
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.55
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.16
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	62.38
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRIS = IDIS * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

TABLE ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL64-4FT

Chemical Name	Concentration in soil (CS) mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABSO)	Dermal (ABSD)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	9.5E-04	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.7E-11	1.3E-09	8.6E-16	1.5E-14	0.0E+00	0.0E+00	6.4E-11	1.1E-09	2.4E-09	9.36
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	18.09
Chlordane	6.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		4.8E-10	6.3E-10	5.4E-15	7.0E-15	0.0E+00	0.0E+00	4.0E-10	5.2E-10	1.1E-09	4.48
Heptachlor	9.5E-04	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.7E-11	3.5E-10	8.6E-16	4.0E-15	0.0E+00	0.0E+00	6.4E-11	2.9E-10	6.3E-10	2.48
Heptachlor epoxide	9.5E-04	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.7E-11	7.0E-10	8.6E-16	7.8E-15	0.0E+00	0.0E+00	6.4E-11	5.8E-10	1.3E-09	5.01
Toxaphene	9.5E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		7.7E-09	8.5E-09	8.6E-14	9.5E-14	0.0E+00	0.0E+00	6.4E-09	7.0E-09	1.5E-08	60.58
DIOXIN																	
2,3,7,8-TCDD No samples collected	N/A	1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Ingestion Fraction, FI (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL65 1F1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	7.92
Dieldrin	3.9E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.2E-10	5.1E-09	3.5E-15	5.7E-14	0.0E+00	0.0E+00	2.6E-10	4.2E-09	9.2E-09	29.08
Chlordane	7.5E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		6.1E-10	7.9E-10	6.8E-15	8.8E-15	0.0E+00	0.0E+00	5.0E-10	6.5E-10	1.4E-09	4.54
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.10
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.7E-11	8.9E-10	1.1E-15	9.9E-15	0.0E+00	0.0E+00	8.1E-11	7.3E-10	1.6E-09	5.09
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	51.27
DIOXIN																	
2,3,7,8 TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.7E-08		1.9E-13		0.0E+00		1.4E-08	3.2E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL65 4FT

Chemical Name	Concentration in soil (CS) mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABS)	Drm (ABS)	Volatilization factor (VF) m³/kg	Dermal Absorption Amount Absorbed (IDD) mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	9.5E-04	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.7E-11	1.3E-09	8.6E-16	1.5E-14	0.0E+00	0.0E+00	6.4E-11	1.1E-09	2.4E-09	10.60
Dieldrin	9.5E-04	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.7E-11	1.2E-09	8.6E-16	1.4E-14	0.0E+00	0.0E+00	6.4E-11	1.0E-09	2.3E-09	9.98
Chlordane	2.8E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		2.2E-10	2.9E-10	2.5E-15	3.2E-15	0.0E+00	0.0E+00	1.8E-10	2.4E-10	5.3E-10	2.35
Heptachlor	9.5E-04	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.7E-11	3.5E-10	8.6E-16	4.0E-15	0.0E+00	0.0E+00	6.4E-11	2.9E-10	6.3E-10	2.81
Heptachlor epoxide	9.5E-04	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.7E-11	7.0E-10	8.6E-16	7.8E-15	0.0E+00	0.0E+00	6.4E-11	5.8E-10	1.3E-09	5.67
Toxaphene	9.5E-02	1.1E+00	1.1E+00	1.1E+00	1	0.10		7.7E-09	8.5E-09	8.6E-14	9.5E-14	0.0E+00	0.0E+00	6.4E-09	7.0E-09	1.5E-08	68.59
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.2E-08		1.4E-13		0.0E+00		1.0E-08	2.3E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

HIM: ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL66-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.5E-11	1.4E-09	9.5E-16	1.6E-14	0.0E+00	0.0E+00	7.0E-11	1.2E-09	2.6E-09	9.43
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14	0.0E+00	0.0E+00	1.4E-10	2.3E-09	5.0E-09	17.74
Chlordane	6.3E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		5.1E-10	6.6E-10	5.7E-15	7.4E-15	0.0E+00	0.0E+00	4.2E-10	5.5E-10	1.2E-09	4.29
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15	0.0E+00	0.0E+00	7.0E-11	3.2E-10	7.0E-10	2.50
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15	0.0E+00	0.0E+00	7.0E-11	6.4E-10	1.4E-09	5.05
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13	0.0E+00	0.0E+00	7.0E-09	7.7E-09	1.7E-08	61.00
DIOXIN																	
2,3,7,8-TCDD No samples collected	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									1.5E-08		1.7E-13		0.0E+00		1.3E-08	2.8E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL66 4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.70
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.6E-09	1.8E-15	2.9E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.7E-09	18.26
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.48
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.57
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.19
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	62.79
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

HME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL67-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.5E-11	1.4E-09	9.5E-16	1.6E-14	0.0E+00	0.0E+00	7.0E-11	1.2E-09	2.6E-09	9.75
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.9E-15	3.0E-14	0.0E+00	0.0E+00	1.4E-10	2.2E-09	4.9E-09	17.91
Chlordane	2.1E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.7E-10	2.2E-10	1.9E-15	2.5E-15	0.0E+00	0.0E+00	1.4E-10	1.8E-10	4.0E-10	1.49
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.5E-11	3.8E-10	9.5E-16	4.4E-15	0.0E+00	0.0E+00	7.0E-11	3.2E-10	7.0E-10	2.58
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.5E-11	7.7E-10	9.5E-16	8.7E-15	0.0E+00	0.0E+00	7.0E-11	6.4E-10	1.4E-09	5.22
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.5E-09	9.4E-09	9.5E-14	1.0E-13	0.0E+00	0.0E+00	7.0E-09	7.7E-09	1.7E-08	63.06
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.5E-08		1.7E-13		0.0E+00		1.2E-08	2.7E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL67-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Slope Factor (SFI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.1E-11	1.4E-09	9.1E-16	1.5E-14	0.0E+00	0.0E+00	6.7E-11	1.1E-09	2.5E-09	9.75
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.5E-09	1.8E-15	2.8E-14	0.0E+00	0.0E+00	1.3E-10	2.1E-09	4.6E-09	17.89
Chlordane	2.0E-03	1.3E+00	1.3E+00	1.3E+00	1	0.10		1.6E-10	2.1E-10	1.8E-15	2.4E-15	0.0E+00	0.0E+00	1.3E-10	1.7E-10	3.9E-10	1.49
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.1E-11	3.6E-10	9.1E-16	4.2E-15	0.0E+00	0.0E+00	6.7E-11	3.0E-10	6.7E-10	2.58
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-11	7.4E-10	9.1E-16	8.2E-15	0.0E+00	0.0E+00	6.7E-11	6.1E-10	1.3E-09	5.22
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-09	8.9E-09	9.1E-14	1.0E-13	0.0E+00	0.0E+00	6.7E-09	7.4E-09	1.6E-08	63.07
DIOXIN																	
2,3,7,8-TCDD	NA	1.5E+05	1.5E+05	1.5E+05	1	0.10											
No samples collected																	
Total Cancer Risk									1.4E-08		1.6E-13		0.0E+00		1.2E-08	2.6E-08	100

ASSUMPTIONS

Averaging Time, AT (yr)	70
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, FIF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD * ET}{BW * AT * TCF * TC}$$

$$CRD = IDD * SFD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$CRI = IDI * SFI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$CRIV = IDIV * SFI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$CRIG = IDIG * SFO$$

Total Non-Cancer Hazard Quotient
Utility Area
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte							Total Non-Cancer Risk
	Aldrin	Dieldrin	Chlordane	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL62-1FT	3.46E-04	4.25E-04	4.15E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.90E-03
SL62-4FT	3.46E-04	4.05E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.81E-03
SL63-1FT	3.46E-04	4.15E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.82E-03
SL63-4FT	3.28E-04	4.05E-04	3.28E-04	1.97E-05	6.57E-04	0.00E+00	NA	1.74E-03
SL64-1FT	3.46E-04	4.05E-04	6.05E-04	2.07E-05	6.91E-04	0.00E+00	NA	2.07E-03
SL64-4FT	3.28E-04	4.05E-04	1.03E-03	1.97E-05	6.57E-04	0.00E+00	NA	2.44E-03
SL65-1FT	3.46E-04	8.09E-04	1.30E-03	2.07E-05	8.30E-04	0.00E+00	NA	3.30E-03
SL65-4FT	3.28E-04	1.97E-04	4.75E-04	1.97E-05	6.57E-04	0.00E+00	NA	1.68E-03
SL66-1FT	3.63E-04	4.36E-04	1.08E-03	2.18E-05	7.26E-04	0.00E+00	NA	2.63E-03
SL66-4FT	3.46E-04	4.15E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.82E-03
SL67-1FT	3.63E-04	4.25E-04	3.63E-04	2.18E-05	7.26E-04	0.00E+00	NA	1.90E-03
SL67-4FT	3.46E-04	4.05E-04	3.46E-04	2.07E-05	6.91E-04	0.00E+00	NA	1.81E-03

Notes
(1) Risk was calculated based on assumptions in RI baseline risk assessment.
(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).
NA - Not Analyzed

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL62 1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	18 21
Dieldrin	2 1E-03	5 0E-05	5 0E-05		1	0 10		1 2E-08	2 3E-04	1 3E-13				9 6E-09	1 9E-04	4 3E-04	22 40
Chlordane	2 4E-03	6 0E-05	6 0E-05		1	0 10		1 4E-08	2 3E-04	1 5E-13				1 1E-08	1 9E-04	4 1E-04	21 86
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1 09
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	36 43
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6 3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 0E-03						8 6E-04	1 9E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL62 4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	19 12
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2 2E-04	1 2E-13				9 2E-09	1 8E-04	4 0E-04	22 37
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1 1E-08	1 9E-04	1 3E-13				9 4E-09	1 6E-04	3 5E-04	19 12
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1.15
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	38 24
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6 3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									9 9E-04						8 2E-04	1 8E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL63-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Dermal (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	19 01
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2 3E-04	1 3E-13				9 4E-09	1 9E-04	4 1E-04	22 81
Chlordane	2 0E-03	6 0E-05	6 0E-05		1	0 10		1 1E-08	1 9E-04	1.3E-13				9 4E-09	1 6E-04	3 5E-04	19 01
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2.1E-05	1 14
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3 8E-04	6 3E-14				4 7E-09	3 1E-04	6 9E-04	38 02
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 0E-03						8 2E-04	1 8E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL63 4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dermal (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	9.5E-04	3.0E-05	3.0E-05		1	0.10		5.4E-09	1.8E-04	6.0E-14				4.5E-09	1.5E-04	3.3E-04	18.90
Dieldrin	2.0E-03	5.0E-05	5.0E-05		1	0.10		1.1E-08	2.2E-04	1.2E-13				9.2E-09	1.8E-04	4.0E-04	23.27
Chlordane	1.9E-03	6.0E-05	6.0E-05		1	0.10		1.1E-08	1.8E-04	1.2E-13				8.9E-09	1.5E-04	3.3E-04	18.90
Heptachlor	9.5E-04	5.0E-04	5.0E-04		1	0.10		5.4E-09	1.1E-05	6.0E-14				4.5E-09	8.9E-06	2.0E-05	1.13
Heptachlor epoxide	9.5E-04	1.5E-05	1.5E-05		1	0.10		5.4E-09	3.6E-04	6.0E-14				4.5E-09	3.0E-04	6.6E-04	37.80
Toxaphene	9.5E-02	NI	NI		1	0.10		5.4E-07		6.0E-12				4.5E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									9.5E-04						7.9E-04	1.7E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL64-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Dim (ABS)	Volatilization factor (VF), m^3/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 0E-03	3 0E-05	3 0E-05		1	0 10		5 7E-09	1 9E-04	6 3E-14				4 7E-09	1 6E-04	3 5E-04	16 72
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2.2E-04	1 2E-13				9 2E-09	1 8E-04	4 0E-04	19 57
Chlordane	3 5E-03	6 0E-05	6 0E-05		1	0 10		2 0E-08	3 3E-04	2 2E-13				1 6E-08	2 7E-04	6 1E-04	29 26
Heptachlor	1 0E-03	5 0E-04	5 0E-04		1	0 10		5 7E-09	1 1E-05	6 3E-14				4 7E-09	9 4E-06	2 1E-05	1 00
Heptachlor epoxide	1 0E-03	1 5E-05	1 5E-05		1	0 10		5 7E-09	3.8E-04	6.3E-14				4 7E-09	3 1E-04	6 9E-04	33 44
Toxaphene	1 0E-01	NI	NI		1	0 10		5 7E-07		6.3E-12				4 7E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 1E-03						9 4E-04	2 1E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL64-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dirm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	9 5E-04	3 0E-05	3 0E-05		1	0 10		5 4E-09	1 8E-04	6 0E-14				4 5E-09	1 5E-04	3 3E-04	13 47
Dieldrin	2 0E-03	5 0E-05	5 0E-05		1	0 10		1 1E-08	2 2E-04	1 2E-13				9 2E-09	1 8E-04	4 0E-04	16 59
Chlordane	6 0E-03	6 0E-05	6 0E-05		1	0 10		3 4E-08	5 6E-04	3 8E-13				2 8E-08	4 7E-04	1 0E-03	42 19
Heptachlor	9 5E-04	5 0E-04	5 0E-04		1	0 10		5 4E-09	1 1E-05	6 0E-14				4 5E-09	8 9E-06	2 0E-05	0 81
Heptachlor epoxide	9 5E-04	1 5E-05	1 5E-05		1	0 10		5 4E-09	3 6E-04	6 0E-14				4 5E-09	3 0E-04	6 6E-04	26 94
Toxaphene	9 5E-02	NI	NI		1	0 10		5 4E-07		6 0E-12				4 5E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 3E-03						1 1E-03	2 4E-03	100

NI : No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E 06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL65-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	3.0E-05	3.0E-05		1	0.10		5.7E-09	1.9E-04	6.3E-14				4.7E-09	1.6E-04	3.5E-04	10.47
Dieldrin	3.9E-03	5.0E-05	5.0E-05		1	0.10		2.2E-08	4.4E-04	2.5E-13				1.8E-08	3.7E-04	8.1E-04	24.50
Chlordane	7.5E-03	6.0E-05	6.0E-05		1	0.10		4.3E-08	7.1E-04	4.8E-13				3.5E-08	5.9E-04	1.3E-03	39.27
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	0.63
Heptachlor epoxide	1.2E-03	1.5E-05	1.5E-05		1	0.10		6.8E-09	4.5E-04	7.6E-14				5.6E-09	3.8E-04	8.3E-04	25.13
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.8E-03						1.5E-03	3.3E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

$$HQD = IDD / RFDD$$

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

$$HQIS = IDIS / RFDI$$

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

$$HQIV = IDIV / RFDI$$

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL65 4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m³/kg	Dermal Absorption		Volatile inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dirm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	9 5E-04	3 0E-05	3 0E-05		1	0 10		5 4E-09	1 8E-04	6 0E-14				4 5E-09	1 5E-04	3 3E-04	19 58
Dieldrin	9 5E-04	5 0E-05	5 0E-05		1	0 10		5 4E-09	1.1E-04	6 0E-14				4 5E-09	8 9E-05	2 0E-04	11 75
Chlordane	2 8E-03	6 0E-05	6 0E-05		1	0 10		1 6E-08	2 6E-04	1 7E-13				1.3E-08	2 2E-04	4 8E-04	28 34
Heptachlor	9 5E-04	5 0E-04	5 0E-04		1	0 10		5 4E-09	1.1E-05	6 0E-14				4 5E-09	8 9E-06	2 0E-05	1 17
Heptachlor epoxide	9 5E-04	1 5E-05	1 5E-05		1	0 10		5 4E-09	3 6E-04	6 0E-14				4 5E-09	3 0E-04	6 6E-04	39 16
Toxaphene	9 5E-02	NI	NI		1	0 10		5 4E-07		6 0E-12				4 5E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									9 2E-04						7 6E-04	1 7E-03	100

NI = No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin Surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL66-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dirm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3 0E-05		1	0 10		6 0E-09	2 0E-04	6 7E-14				4 9E-09	1 6E-04	3 6E-04	13 82
Dieldrin	2 1E-03	5 0E-05	5 0E-05		1	0 10		1 2E-08	2 4E-04	1 3E-13				9 9E-09	2 0E-04	4 4E-04	16 58
Chlordane	6 3E-03	6 0E-05	6 0E-05		1	0 10		3 5E-08	5 9E-04	4 0E-13				2 9E-08	4 9E-04	1 1E-03	41 13
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0 10		6 0E-09	1.2E-05	6 7E-14				4 9E-09	9 9E-06	2 2E-05	0 83
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 0E-09	4.0E-04	6 7E-14				4 9E-09	3 3E-04	7 3E-04	27 64
Toxaphene	1 1E-01	NI	NI		1	0 10		6 0E-07		6 7E-12				4 9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 4E-03						1 2E-03	2 6E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL66-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg·d			Absorption factor, unitless		Volatilization factor (VF), m³/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Dermal (ABS)		Amount Absorbed (IDD), mg/kg·d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS) (mg/kg·d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV) (mg/kg·d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG) (mg/kg·d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.0E-03	3.0E-05	3.0E-05		1	0.10		5.7E-09	1.9E-04	6.3E-14				4.7E-09	1.6E-04	3.5E-04	19.01
Dieldrin	2.0E-03	5.0E-05	5.0E-05		1	0.10		1.1E-08	2.3E-04	1.3E-13				9.4E-09	1.9E-04	4.1E-04	22.81
Chlordane	2.0E-03	6.0E-05	6.0E-05		1	0.10		1.1E-08	1.9E-04	1.3E-13				9.4E-09	1.6E-04	3.5E-04	19.01
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	1.14
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0.10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	38.02
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.0E-03						8.2E-04	1.8E-03	100

NI – No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

FIML ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL67-1FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Absorption factor, unitless Oral (ABO)	Drm (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless	Total Hazard Quotient	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1 1E-03	3 0E-05	3 0E-05		1	0 10		6 0E-09	2 0E-04	6 7E-14				4 9E-09	1 6E-04	3 6E-04	19 12
Dieldrin	2 1E-03	5 0E-05	5 0E-05		1	0 10		1 2E-08	2 3E-04	1 3E-13				9 6E-09	1 9E-04	4 3E-04	22 39
Chlordane	2 1E-03	6 0E-05	6 0E-05		1	0 10		1 2E-08	2 0E-04	1 3E-13				9 9E-09	1 6E-04	3 6E-04	19 12
Heptachlor	1 1E-03	5 0E-04	5 0E-04		1	0 10		6 0E-09	1 2E-05	6 7E-14				4 9E-09	9 9E-06	2 2E-05	1 15
Heptachlor epoxide	1 1E-03	1 5E-05	1 5E-05		1	0 10		6 0E-09	4 0E-04	6 7E-14				4 9E-09	3 3E-04	7 3E-04	38 23
Toxaphene	1 1E-01	NI	NI		1	0 10		6 0E-07		6 7E-12				4 9E-07			
DIOXIN																	
2 3,7,8-TCDD					1	0 10											
No samples collected																	
Total Noncancer Hazard									1 0E-03						8 6E-04	1 9E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1 00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction Inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m³/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m³/kg)	46300000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL67-4FT

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d			Absorption factor, unitless		Volatilization factor (VF), m^3/kg	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Hazard Quotient	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HQIS), unitless	Amount Inhaled (IDIV), (mg/kg-d)	Lifetime HQ (HQIV), unitless	Amount Ingested (IDIG), (mg/kg-d)	Lifetime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	1.0E-03	3.0E-05	3.0E-05		1	0.10		5.7E-09	1.9E-04	6.3E-14				4.7E-09	1.6E-04	3.5E-04	19.12
Dieldrin	2.0E-03	5.0E-05	5.0E-05		1	0.10		1.1E-08	2.2E-04	1.2E-13				9.2E-09	1.8E-04	4.0E-04	22.37
Chlordane	2.0E-03	6.0E-05	6.0E-05		1	0.10		1.1E-08	1.9E-04	1.3E-13				9.4E-09	1.6E-04	3.5E-04	19.12
Heptachlor	1.0E-03	5.0E-04	5.0E-04		1	0.10		5.7E-09	1.1E-05	6.3E-14				4.7E-09	9.4E-06	2.1E-05	1.15
Heptachlor epoxide	1.0E-03	1.5E-05	1.5E-05		1	0.10		5.7E-09	3.8E-04	6.3E-14				4.7E-09	3.1E-04	6.9E-04	38.24
Toxaphene	1.0E-01	NI	NI		1	0.10		5.7E-07		6.3E-12				4.7E-07			
DIOXIN																	
2,3,7,8 TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									9.9E-04						8.2E-04	1.8E-03	100

NI - No Information Available

ASSUMPTIONS

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	1
Body Weight, BW (kg)	70
Contaminant Fraction, CF (unitless)	1
Conversion Factors	
Mass, MCF (kg/mg)	1.00E-06
Time, TCF (d/yr)	365
Exposure Duration	
Dermal, EDD (yr)	1
Inhalation from soil, EDIS (yr)	1
Inhalation from volatiles, EDIV (yr)	1
Ingestion, EDIG (yr)	1
Exposure Frequency, EF (d/yr)	250
Fraction Ingested, FIIG (unitless)	1
Fraction inhaled, FIIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	480
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

$$IDD = \frac{CS * MCF * SA * AF * ABS * EF * EDD}{BW * AT * TCF}$$

HQD = IDD / RFDD

$$IDIS = \frac{CS * IR * RF * CF * EF * EDIS}{BW * AT * TCF * PEF}$$

HQIS = IDIS / RFDI

$$IDIV = \frac{CS * (1/VF) * IR * FIIV * EF * EDIV}{BW * AT * TCF}$$

HQIV = IDIV / RFDI

$$IDIG = \frac{CS * IGR * FIIG * MCF * EF * EDIG}{BW * AT * TCF}$$

HQIG = IDIG / RFDO