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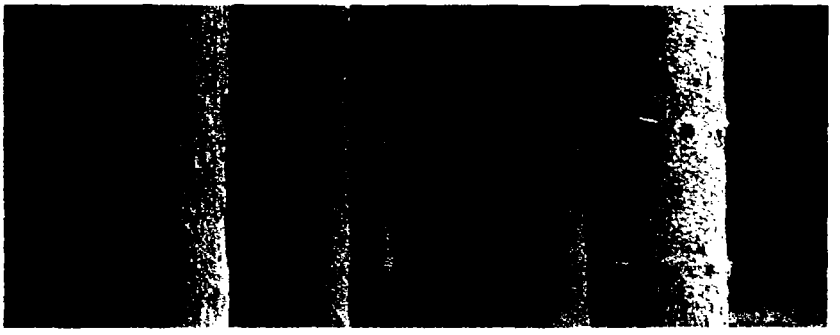

Phase I Removal Action Report Addendum

Riverdale Chemical Company

November 2001

Excavation and Model Check Sampling

Prepared For

Nufarm

Prepared By

RMT

EPA Region 5 Records Ctr.

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PHASE I REMOVAL ACTION REPORT ADDENDUM

EXCAVATION AND MODEL CHECK SAMPLING

RIVERDALE CHEMICAL COMPANY

Prepared For
Riverdale Chemical Company
Chicago Heights, Illinois

Prepared By
RMT, Inc.
Chicago, Illinois

November 2001

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Table of Contents

List of Acronyms iii

1. Introduction 1-1

2. Project Background 2-1

3. Soil Sampling and Removal Activities 3-1
   - 3.1 Description of the Excavation/Model Check Sampling Activities 3-1
   - 3.2 E&MC Activities 3-2
     - 3.2.1 DMA AST 3-3
     - 3.2.2 Railroad Unloading Area 3-4
     - 3.2.3 South of Finished Goods Building 3-4
     - 3.2.4 Southwest Corner 3-5
     - 3.2.5 Pipeline Rack from the Liquid Storage Area 3-5
     - 3.2.6 Low-lying Area 3-5

4. Analytical Results 4-1
   - 4.1 DMA AST 4-1
   - 4.2 Railroad Unloading Area 4-2
   - 4.3 South of Finished Goods Building 4-2
   - 4.4 Southwest Corner 4-2
   - 4.5 Pipeline Rack from the Liquid Storage Area 4-2

5. Certification 5-1

6. References 6-1

List of Tables

Table 3-1 Summary of Sampling Program
Table 3-2 Summary of Excavation and Model Check Sampling Program
Table 4-1 Pesticide Sampling Results – Excavation and Model Check Samples
Table 4-2 Dioxin TEQ Concentrations – Excavation and Model Check Samples
Table 4-3 Residual Contamination Documentation Samples

List of Figures

Figure 3-1 Phase I Removal Action Sampling Locations with Excavation Areas

List of Appendices

Appendix A Technical Memorandum
Appendix B Waste Manifests

List of Acronyms

AOC	Administrative Order on Consent
AST	aboveground storage tank
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
BN/As	base neutral/acid extractables
cm/s	centimeters per second
DMA	dimethylamine
EE/CA	Engineering Evaluation/Cost Analysis
FIT	Field Investigation Team
FS	Feasibility Study
FSAP	Field Sampling and Analysis Plan
ft	feet
HASP	Health and Safety Plan
IEPA	Illinois Environmental Protection Agency
IRM	Interim Remedial Measure
mg	milligrams
OSHA	Occupational Safety and Health Administration
PHE	Public Health Evaluation
ppb	parts per billion
QAPP	Quality Assurance Project Plan
RI/FS	Remedial Investigation/Feasibility Study
TEQs	toxicity equivalents
TCLP	Toxicity Characteristic Leaching Procedure
USEPA	United States Environmental Protection Agency
yd^3	cubic yard

Section 1
Introduction

This Phase I Removal Action Report Addendum for Excavation and Model Check Sampling (E&MC Addendum) was prepared on behalf of the Nufarm Americas Inc. (formerly Riverdale Chemical Company (Riverdale)), to summarize the activities that have occurred at the site during the final Phase I RA conducted in April through July 2001. The work was conducted under an Administrative Order on Consent (AOC, Docket No. V-W-01-0-621) between Riverdale and the United States Environmental Protection Agency (USEPA) dated November 16, 2000.

This E&MC Addendum describes the removal activities associated with the excavation of impacted soil at 15 discrete areas prior to conducting the Phase II Removal Action. In addition, Riverdale voluntarily removed impacted soil from the low-lying area prior to implementation of the Phase II Removal Action.

This report documents the excavation activities as proposed in the Addendum to the Phase I RA Work Plan dated June 8, 2001. The Addendum described the excavation of limited areas of impacted soil based on data obtained in April and May 2001. The USEPA approved the Addendum on June 21, 2001. The sampling and excavation components of the E&MC activities included the following:

- Soil sampling around the 15 discrete areas to determine risk levels.
- Soil sampling at 15 model check locations to determine risk levels.
- Excavation and off-site disposal of all soil which exceed a total cumulative cancer risk of 1×10^{-4} and/or a hazard index of 1, or dioxin (2,3,7,8 – TCDD) above 15 parts per billion (ppb) toxicity equivalents (TEQs). The horizontal extent of excavation was defined by confirmatory sampling. The vertical extent was defined by confirmatory sampling or a maximum depth of 8 feet below ground surface (bgs).
- Voluntary soil excavation and off-site disposal of impacted soil from the low-lying area on the southeast corner of the site.

This report presents the objectives and the technical approach used in completing the tasks outlined above. It also describes the methods used to complete each of the components of the Phase I RA. The Report has been organized into the following six sections:

- Section 1: Introduction – provides the basis, approach, and organization of the Report.
- Section 2: Project Background – summarizes the information presented in the previous studies conducted at the Site.
- Section 3: Soil Sampling and Removal Activities – presents the scope of work and a description of the activities that occurred on site during the Phase I RA.
- Section 4: Analytical Results – presents the results of analysis for each of the areas.
- Section 5: Certification – provides certification as required in the AOC.
- Section 6: References – provides document references.

Section 2
Project Background

The Riverdale Chemical Company in Chicago Heights, Illinois, is an active facility used for the formulation and packaging of various agricultural and turf chemicals. The Phase I Removal Action Report, dated February 2001, provides information on the project background.

Section 3
Soil Sampling and Removal Activities

3.1 Description of the Excavation/Model Check Sampling Activities

The Excavation and Model Check (E&MC) sampling activities were conducted from April to July 2001. The primary objectives were to determine horizontal and vertical extent of removal areas, evaluate residual concentrations within the modeled construction worker risk scenarios, and excavate areas with levels of pesticides in the soil exceeding risk calculations. The scope of work for the E&MC sampling activities was determined based on discussions between Riverdale and the USEPA.

The basis for the removal activities included the excavation and off-site disposal of soil at these 15 specified areas where the level of compounds detected in the soil exceeded total cumulative cancer risk for construction workers of 1×10^{-4} and/or a hazard index of 1, or dioxin (2,3,7,8 – TCDD) above 15 parts per billion (ppb) toxicity equivalents (TEQs). The horizontal extent of excavation has been defined by confirmatory sampling. The vertical extent has been defined by confirmatory sampling or a maximum depth of 8 feet below ground surface (bgs). At the excavations that extend to 8 feet bgs, markers were installed to document the depth of excavation and one sample was collected from the base of each excavation to document residual contamination.

The results of the confirmatory sampling indicated that the remaining soil risk levels at the site will exhibit a total cancer risk for construction workers of less than 1×10^{-4}, a hazard index less than 1, and dioxin (2,3,7,8 – TCDD) below 15 ppb TEQs.

The soil sampling and removal action components of this E&MC Addendum Report include the following:

- DMA AST (south of Building #3) – Ten areas (10 feet (ft) by 10 ft, with one 30 ft by 10 ft area and two 20 ft by 10 ft areas) were delineated and excavated. Six model check samples were collected. Samples were analyzed for pesticides. Several samples were analyzed for dioxin. Four soil samples were also collected at the base of excavation areas (EX2, EX3, EX6, and EX9) and analyzed for pesticides to document residual contamination.
- Railroad Unloading Area – One area (10 ft by 10 ft) was delineated and excavated. Three model check samples were collected. Samples were analyzed for pesticides.
- South of Finished Goods Warehouse (Building #1) - One area (10 ft by 60 ft) was delineated and excavated. Four model check samples were collected. Samples were analyzed for pesticides. Several samples were analyzed for dioxin.

- Southwest Corner (at fence line south of Building #1) – One area (10 ft by 30 ft) was delineated and excavated. One model check sample was collected. Samples were analyzed for pesticides.
- Pipeline Rack (south of Building #2) – Two areas (10 ft by 10 ft) were delineated and excavated. Two model check samples were collected. Samples were analyzed for pesticides. Four samples were analyzed for dioxins.
- Low-lying Area (southeast corner of the facility) – Voluntary removal of surficial soils in the low-lying area to prepare for Phase II of Removal Action.

The Phase I RA activities were conducted using procedures described in the Phase I Work Plan including the associated Quality Assurance Project Plan (QAPP), the Field Sampling Plan (FSAP), and the Health and Safety Plan (HASP). Sampling and removal action activities were conducted to be consistent with current Occupational Safety and Health Administration (OSHA) regulations and protocols that have been designed to protect on-site personnel from potential hazards associated with the site activities as described in the HASP. The excavation and model check sampling were described in the following:

- Addendum to the Work Plan letter dated June 8.
- Addendum to the Work Plan letter dated May 8.
- Addendum to the Work Plan letter dated April 3.

The Technical Memorandum on Excavation and Model Check Sampling was submitted on June 27, 2001, to the USEPA to document the data obtained from the sampling events and the associated cancer risks and hazard indices prior to excavation of the soil. The Technical Memorandum is provided in Appendix A.

3.2 E&MC Activities

The E&MC removal activities included sampling to determine areas of excavation, sampling to check concentrations within the modeled construction worker risk scenarios, and the excavation of impacted soil prior to conducting the Phase II Removal Action. In addition, Riverdale voluntarily removed impacted soil from the low-lying area in the southeast portion of the site. A chronology of the E&M activities includes:

- On April 6, April 12, and May 10, 2001, soil sampling was conducted to determine potential areas of excavation and to provide model checks (based on the risk model presented in the EE/CA).
- On June 8th, an Addendum to the Phase I RA Work Plan was submitted to the USEPA for the excavation of limited areas of impacted soil based on data obtained in April and May 2001. The USEPA approved the Addendum on June 21st.

- On June 27th, a Technical Memorandum on the Excavation and Model Check Sampling Activities was submitted to the USEPA documented the results of the sampling activities.
- On June 28th and June 29th, soil excavation activities were conducted as described in the Proposed Excavation Areas Addendum (June 8).
- On June 28th and June 29th, four soil samples were collected (locations EX2, EX3, EX6, and EX9) and analyzed for pesticides.
- On July 9th, excavation at the railroad unloading area was conducted and construction of the additional railroad unloading area was initiated.
- In June and July, excavated soils were managed as special waste and shipped to CID landfill for disposal.

A summary of the sampling program is provided in Table 3-1. Figure 3-1 provides sampling locations and areas of excavation. The removal areas, their respective areas and volumes, the samples collected to define the areas, and the associated samples are presented in Table 3-2.

The excavated soils from all of the E&MC activities (958 tons) were shipped and properly disposed at CID Landfill in Calumet City, Illinois. Waste manifests are provided in Appendix B.

The activities at each of the five E&MC areas are described in more detail in the following sections.

3.2.1 DMA AST

The removal action at the DMA AST included soil sampling and excavation of contaminated soil. Soil samples were collected from 50 locations with 66 samples submitted for analysis for selected pesticides and/or dioxin.

On April 6 and 12, 2001, 40 soil borings (SL100 through SL126 and SL147 through SL159) were drilled in the DMA AST area to determine the extent of impact. Soil samples were collected from the 40 locations with 52 samples submitted for analysis. There was no recovery at one location due to excessive fill material present below ground (SL148). These samples were submitted for analysis of pesticides and several samples were submitted for dioxin analysis.

Additional sampling was conducted on May 10, 2001, at locations SL163 through SL172. Soil samples were collected from 10 locations with 14 samples submitted for analysis. These samples were submitted for analysis of pesticides and several samples were submitted for dioxin analysis.

Ten removal areas (Excavation Areas 1 though 9, and 11) were defined by the sampling events. The soils were excavated as indicated on Figure 3-1. Samples were collected at the base of the four excavations (EX2, EX3, EX6, and EX9) to document the presence of residual contamination, if any. Three of the excavations (EX2, EX6, and EX9) were documented based on agreed terms for the excavations with USEPA. The fourth excavation (EX3) could not be excavated to the depth due to water present in the excavation. The sample was collected from the base of the excavation to document residual contamination.

3.2.2 Railroad Unloading Area

The removal action at the Railroad Unloading Area included soil sampling and excavation of contaminated soil. Soil samples were collected from 13 locations with 14 samples submitted for analysis for selected pesticides.

On April 6, 2001, 13 soil borings (SL90 through SL99) were drilled (Geoprobe®) in the railroad unloading area. Soil samples were collected from the 10 locations with 11 samples submitted for analysis. One location was not sampled because the area had been excavated previously during the installation of the containment area surrounding the tracks. These samples were submitted for analysis of pesticides.

Additional sampling was conducted on May 10, 2001, at locations SL176 through SL178. Soil samples were collected from three locations with three samples submitted for analysis. These samples were submitted for analysis of pesticides.

One removal area (Excavation Area 15) was defined by the sampling events. The soils were excavated as indicated on Figure 3-1. Additional soil was also excavated from a trench in this area to allow for facility improvement.

3.2.3 South of Finished Goods Building

The removal action at the South of the Finished Goods Building included soil sampling and excavation of contaminated soil. On April 12, 2001, 10 soil borings (SL132 through SL141) were drilled (Geoprobe®) south of the Finished Goods Building. Soil samples were collected from the 10 locations with 10 samples submitted for analysis. These samples were submitted for analysis of pesticides and several were submitted for dioxin.

One removal area (Excavation Area 13) was defined by the sampling events. The soils were excavated as indicated on Figure 3-1.

3.2.4 Southwest Corner

The removal action at the Southwest Corner included soil sampling and excavation of contaminated soil. On April 12, 2001, five soil borings (SL142 through SL146) were drilled at the southwest corner to determine the extent of impact. Soil samples were collected from 5 locations with 5 samples submitted for analysis for pesticides.

One removal area (Excavation Area 10) was defined by the sampling events. The soils were excavated as indicated on Figure 3-1.

3.2.5 Pipeline Rack from the Liquid Storage Area

The removal action at the Pipeline Rack from the Liquid Storage Area included soil sampling and excavation of contaminated soil. Soil samples were collected from 11 locations with 12 samples submitted for analysis for selected pesticides and/or dioxin.

On April 12, 2001, eight soil borings (SL127 through SL131 and SL160 through SL162) were drilled (Geoprobe®) at the Pipeline Rack from the Liquid Storage Area. Soil samples were collected from the 8 locations with 9 samples submitted for analysis. These samples were submitted for analysis of pesticides and several samples were submitted for dioxin analysis.

Additional sampling was conducted on May 10, 2001, to better define horizontal and vertical extent of contamination at certain locations (SL173 through SL175). One sample location from the April sampling event exceeded the cumulative cancer risk guideline of 1×10^{-4} (SL162). Three additional samples were collected around SL162. Six samples were collected from 3 locations with 3 samples submitted for analysis. These samples were submitted for analysis of pesticides and several samples were submitted for dioxin analysis.

Two removal areas (Excavation Areas 12 and 14) were defined by the sampling events. The soils were excavated as indicated on Figure 3-1.

3.2.6 Low-lying Area

The voluntary removal action in the low-lying area consisted of removal of impacted surficial soils. Impacted soils from the low-lying area were determined based on the results of the soil sampling as documented in the Phase I Removal Action Report, dated February 2001. The top 6 to 12 inches of soil was removed from this area. The soil was initially stockpiled following excavation to allow the soil to dry out and was disposed of at CID landfill in July 2001.

Section 4
Analytical Results

The soil sampling activities were centered around five distinct areas around the site: the DMA AST area, railroad unloading area, south of the Finished Goods Building, the southwest corner of the Riverdale site, and the pipeline rack from the liquid storage area. The data is summarized in the following tables:

- Table 4-1, Pesticide Sampling Results
- Table 4-2, Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivalent Factors
- Table 4-3, Residual Contamination Documentation Samples

The majority of the soil samples collected and analyzed during the Phase I Addendum RA were from soils subsequently excavated and disposed off site. Each excavation area is described in the following sections. Risk levels for soil samples defining the extent of contamination are summarized.

As mentioned earlier in this report, the Technical Memorandum on Excavation and Model Check Sampling was submitted on June 27, 2001 to USEPA to document the data obtained from the sampling events and the associated cancer risks and hazard indices prior to excavation of the soil. The Technical Memorandum is provided in Appendix A.

4.1 DMA AST

The results for areas of excavation (based on risk levels) are defined by the samples indicated on Figure 3-1. The samples collected at Excavation Areas 1, 3, 4, 5, 7, 8, and 11 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1. Dioxin was not detected above 15 ppb TEQs at any location.

The risk levels at three Excavation Areas: 2, 6, and 9, exceeded agreed levels, therefore, the areas were excavated to 8 feet bgs. Excavation Area 3 was excavated to 4 feet bgs due to water present in the excavation. Barrier fencing was placed at the base of each excavation to document the extent of excavation.

Four samples (EX2, EX3, EX6, and EX9) were collected from the bases of four excavations to document the presence of residual contamination, if any, in the excavation. The results are presented in Table 4-3. The samples collected at Excavation Areas 2, 3, and 6 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index

guideline of 1. The risk levels were exceeded at the sample collected at the base Excavation 9. The barrier fencing will document the extent of excavation and presence of residual contamination as agreed with the USEPA.

4.2 Railroad Unloading Area

The results for areas of excavation (based on risk levels) are defined by the samples SL90, SL91, and SL92 as indicated on Figure 3-1. The samples collected at Excavation Area 15 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1.

4.3 South of Finished Goods Building

The results for areas of excavation (based on risk levels) are defined by the samples SL132, SL133, SL134, SL135, SL136, and SL137 as indicated on Figure 3-1. The samples collected at Excavation Area 13 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1.

4.4 Southwest Corner

The results for areas of excavation (based on risk levels) are defined by the samples SL142, SL143, SL144, and Sl145 as indicated on Figure 3-1. The samples collected at Excavation Area 10 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1. All samples in this location were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1.

4.5 Pipeline Rack from the Liquid Storage Area

The results for areas of excavation (based on risk levels) are defined by the samples SL127, SL128, SL129, SL160, SL161, SL162, Sl173, SL174, and SL175 as indicated on Figure 3-1. The samples collected at Excavation Areas 12 and 14 were below the cumulative cancer risk guideline for construction workers of 1×10^{-4} and the hazard index guideline of 1. Dioxin was not detected above 15 ppb TEQs.

Section 5
Certification

Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquires of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete.

Signature and Date:

11/28/01

Rae Mindock
Senior Project Manager

Section 6
References

RMT, Inc., 2001. Letter to USEPA, Subject: Riverdale Chemical Company, Addendum to Phase I Removal Action Work Plan. June 8, 2001.

RMT, Inc., 2001. Letter to USEPA, Subject: Riverdale Chemical Company, Addendum to Phase I Removal Action Work Plan. May 8, 2001.

RMT, Inc., 2001. Letter to USEPA, Subject: Riverdale Chemical Company, Addendum to Phase I Removal Action Work Plan. April 3, 2001.

RMT, Inc., 2001. Phase I Removal Action Report, Riverdale Chemical Company, Chicago Heights, Illinois. February 2001.

RMT, Inc., 2001. Phase I Removal Action Work Plan, Riverdale Chemical Company, Chicago Heights, Illinois. September 2000.

RMT, Inc., 2001. Technical Memorandum of Sampling Activities, Riverdale Chemical Company. Chicago Heights, Illinois. June 27, 2001.

USEPA, 2000. Administrative Order of Consent, November 16, 2000.

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL01 - 4 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL03 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL04 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL05 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL06 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 2.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL09 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL10 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL10 - 5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 4.5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL12 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL12 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 1.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL14 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL15 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL16 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL18 - 2.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL19 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT DUP	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL21 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 2 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL23 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT DUP	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL25 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL25 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL26 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL26 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL28 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL 28 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL29 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL30 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL31 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL32 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL33 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL33 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 1 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL37 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL38 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL39 - 6.2 FT	Railroad Unloading Storage Basin	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL40-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		8/28/2000	CLP Pesticide
SL41-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs
		8/28/2000	CLP Pesticide
SL41-5.2FT-DUP	Railroad Unloading Spill Containment Basin	8/28/2000	CLP Pesticide
SL44-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL44-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-DUP	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL48-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL48-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL50-6IN (SL50-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL50-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-6IN (SL51-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-6IN (SL52-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL53-6IN (SL53-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL54-6IN (SL54-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL55-6IN (SL55-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL56-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL57-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL58-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL59-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		9/6/2000	CLP Pesticide
SL60-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL61-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL62-1FT	Utility Area	9/21/2000	CLP Pesticide
SL62-4FT	Utility Area	9/21/2000	CLP Pesticide
SL63-1FT	Utility Area	9/21/2000	CLP Pesticide
SL63-4FT	Utility Area	9/21/2000	CLP Pesticide
SL64-1FT	Utility Area	9/21/2000	CLP Pesticide
SL64-4FT	Utility Area	9/21/2000	CLP Pesticide
SL65-1FT	Utility Area	9/21/2000	CLP Pesticide
SL65-4FT	Utility Area	9/21/2000	CLP Pesticide
SL66-1FT	Utility Area	9/21/2000	CLP Pesticide
SL66-4FT	Utility Area	9/21/2000	CLP Pesticide
SL67-1FT	Utility Area	9/21/2000	CLP Pesticide
SL67-4FT	Utility Area	9/21/2000	CLP Pesticide
SL68-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL69-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL70-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL71-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL72-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL73-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL74-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL75-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL76-4FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL77-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL78-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL79-2.5FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL80-5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL81-3.5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL82-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL83-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL84-5FT	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL84-5FT DUP	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL85-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL86-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL86-3FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL87-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL87-3FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL87-3FTDUP	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL88-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL89-1FT	Low Lying Area	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL90-6FT	Railroad Unloading	4/6/2001	
SL90-7FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL91-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL91-7FT	Railroad Unloading	4/6/2001	
SL92-6FT	Railroad Unloading	4/6/2001	
SL92-7FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL93-2FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL94-1FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL95-8FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL96-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL97-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL97-7FT	Railroad Unloading	4/6/2001	
SL98-1FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL99-1FT	Railroad Unloading	4/6/2001	
SL100-3FT	DMA AST	4/6/2001	CLP Pesticides
SL101-7FT	DMA AST	4/6/2001	CLP Pesticides

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL101-8FT	DMA AST	4/6/2001	
SL102-2FT	DMA AST	4/6/2001	CLP Pesticides
SL102-4FT	DMA AST	4/6/2001	CLP Pesticides
SL103-2FT	DMA AST	4/6/2001	CLP Pesticides
SL103-4FT	DMA AST	4/6/2001	CLP Pesticides
SL104-2FT	DMA AST	4/6/2001	CLP Pesticides
SL104-4FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL105-2FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL105-4FT	DMA AST	4/6/2001	Dioxin
SL106-2FT	DMA AST	4/6/2001	CLP Pesticides
SL106-4FT	DMA AST	4/6/2001	CLP Pesticides
SL107-2FT	DMA AST	4/6/2001	CLP Pesticides
SL107-4FT	DMA AST	4/6/2001	CLP Pesticides
SL108-2FT	DMA AST	4/6/2001	CLP Pesticides
SL108-4FT	DMA AST	4/6/2001	CLP Pesticides
SL109-2FT	DMA AST	4/6/2001	CLP Pesticides
SL109-4FT	DMA AST	4/6/2001	
SL110-2FT	DMA AST	4/6/2001	CLP Pesticides
SL110-4FT	DMA AST	4/6/2001	CLP Pesticides
SL111-2FT	DMA AST	4/6/2001	CLP Pesticides
SL111-4FT	DMA AST	4/6/2001	CLP Pesticides
SL112-2FT	DMA AST	4/6/2001	CLP Pesticides
SL112-4FT	DMA AST	4/6/2001	CLP Pesticides
SL113-2FT	DMA AST	4/6/2001	Dioxin
SL113-4FT	DMA AST	4/6/2001	CLP Pesticides
SL113-6FT	DMA AST	5/10/2001	CLP Pesticides
SL114-2FT	DMA AST	4/6/2001	CLP Pesticides
SL114-4FT	DMA AST	4/6/2001	
SL115-2FT	DMA AST	4/6/2001	CLP Pesticides
SL116-5FT	DMA AST	4/6/2001	CLP Pesticides
SL117-5FT	DMA AST	4/6/2001	
SL117-6FT	DMA AST	4/6/2001	CLP Pesticides
SL118-2FT	DMA AST	4/6/2001	CLP Pesticides
SL119-2FT	DMA AST	4/6/2001	CLP Pesticides
SL120-2FT	DMA AST	4/6/2001	CLP Pesticides

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL121-1FT	DMA AST	4/6/2001	CLP Pesticides
SL122-5FT	DMA AST	4/6/2001	CLP Pesticides
SL123-5FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL124-5FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL125-5FT	DMA AST	4/6/2001	CLP Pesticides
SL126-4FT	DMA AST	4/6/2001	CLP Pesticides
SL127-5FT	Pipeline Rack	4/6/2001	CLP Pesticides, Dioxin
SL127-7FT	Pipeline Rack	4/6/2001	
SL128-5FT	Pipeline Rack	4/6/2001	
SL128-7FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL129-5FT	Pipeline Rack	4/6/2001	CLP Pesticides, Dioxin
SL129-7FT	Pipeline Rack	4/6/2001	
SL129-9FT	Pipeline Rack	4/6/2001	
SL130-2FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL131-2FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL132-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL132-4FT	South of Finished Goods	4/12/2001	
SL133-2FT	South of Finished Goods	4/12/2001	CLP Pesticides, Dioxin
SL133-4FT	South of Finished Goods	4/12/2001	
SL134-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL134-4FT	South of Finished Goods	4/12/2001	
SL135-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL135-4FT	South of Finished Goods	4/12/2001	
SL136-2FT	South of Finished Goods	4/12/2001	CLP Pesticides, Dioxin
SL136-4FT	South of Finished Goods	4/12/2001	
SL137-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL137-4FT	South of Finished Goods	4/12/2001	
SL138-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL139-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL140-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL141-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL142-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL142-4FT	Southwest Corner	4/12/2001	
SL143-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL143-4FT	Southwest Corner	4/12/2001	
SL144-2FT	Southwest Corner	4/12/2001	CLP Pesticides

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL144-4FT	Southwest Corner	4/12/2001	
SL145-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL145-4FT	Southwest Corner	4/12/2001	
SL146-1FT	Southwest Corner	4/12/2001	CLP Pesticides
SL147-2FT	DMA AST	4/12/2001	CLP Pesticides
SL147-4FT	DMA AST	4/12/2001	
SL149-2FT	DMA AST	4/12/2001	CLP Pesticides
SL149-4FT	DMA AST	4/12/2001	
SL150-1FT	DMA AST	4/12/2001	CLP Pesticides
SL151-2FT	DMA AST	4/12/2001	CLP Pesticides
SL151-4FT	DMA AST	4/12/2001	
SL152-2FT	DMA AST	4/12/2001	CLP Pesticides
SL152-4FT	DMA AST	4/12/2001	
SL153-2FT	DMA AST	4/12/2001	CLP Pesticides
SL153-4FT	DMA AST	4/12/2001	CLP Pesticides
SL154-2FT	DMA AST	4/12/2001	CLP Pesticides
SL154-4FT	DMA AST	4/12/2001	
SL155-2FT	DMA AST	4/12/2001	CLP Pesticides
SL155-4FT	DMA AST	4/12/2001	
SL156-2FT	DMA AST	4/12/2001	CLP Pesticides
SL156-4FT	DMA AST	4/12/2001	
SL157-2FT	DMA AST	4/12/2001	CLP Pesticides
SL157-4FT	DMA AST	4/12/2001	
SL158-2FT	DMA AST	4/12/2001	CLP Pesticides
SL158-4FT	DMA AST	4/12/2001	
SL159-1FT	DMA AST	4/12/2001	CLP Pesticides
SL160-2FT	Pipeline Rack	4/12/2001	CLP Pesticides, Dioxin
SL160-4FT	Pipeline Rack	4/12/2001	
SL161-2FT	Pipeline Rack	4/12/2001	CLP Pesticides
SL161-4FT	Pipeline Rack	4/12/2001	
SL162-4FT	Pipeline Rack	4/12/2001	CLP Pesticides, Dioxin
SL162-6FT	Pipeline Rack	4/12/2001	CLP Pesticides
SL163-2FT	DMA AST	5/10/2001	CLP Pesticides
SL163-4FT	DMA AST	5/10/2001	
SL164-2FT	DMA AST	5/10/2001	CLP Pesticides
SL164-4FT	DMA AST	5/10/2001	

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL164-6FT	DMA AST	5/10/2001	
SL164-8FT	DMA AST	5/10/2001	
SL165-2FT	DMA AST	5/10/2001	CLP Pesticides
SL165-4FT	DMA AST	5/10/2001	
SL165-6FT	DMA AST	5/10/2001	
SL166-2FT	DMA AST	5/10/2001	CLP Pesticides
SL166-4FT	DMA AST	5/10/2001	
SL166-6FT	DMA AST	5/10/2001	
SL166-8FT	DMA AST	5/10/2001	
SL167-2FT	DMA AST	5/10/2001	CLP Pesticides
SL167-4FT	DMA AST	5/10/2001	
SL167-6FT	DMA AST	5/10/2001	
SL167-8FT	DMA AST	5/10/2001	
SL168-2FT	DMA AST	5/10/2001	CLP Pesticides
SL168-4FT	DMA AST	5/10/2001	CLP Pesticides
SL169-2FT	DMA AST	5/10/2001	CLP Pesticides
SL169-4FT	DMA AST	5/10/2001	
SL170-2FT	DMA AST	5/10/2001	CLP Pesticides
SL170-4FT	DMA AST	5/10/2001	Dioxin
SL171-2FT	DMA AST	5/10/2001	CLP Pesticides
SL171-4FT	DMA AST	5/10/2001	CLP Pesticides
SL172-2FT	DMA AST	5/10/2001	CLP Pesticides
SL172-4FT	DMA AST	5/10/2001	CLP Pesticides
SL173-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL173-4FT	Pipeline Rack	5/10/2001	
SL174-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL174-4FT	Pipeline Rack	5/10/2001	
SL175-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL175-4FT	Pipeline Rack	5/10/2001	
SL176-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL176-4FT	Railroad Unloading	5/10/2001	
SL177-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL177-4FT	Railroad Unloading	5/10/2001	
SL178-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL178-4FT	Railroad Unloading	5/10/2001	
DSL1	Railroad Unloading Area	8/23/2000	Full TCLP

Table 3-1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
DSL2	Phase I: Liquid Storage Area	8/23/2000	Full TCLP
DSL3	Raw Materials Warehouse (Potential)	9/6/2000	Full TCLP
DSL4	Raw Materials Warehouse (Contaminated)	9/6/2000	Full TCLP
DSL5	Railroad Unloading Spill Containment Basin (8 FT)	9/8/2000	Full TCLP
		9/18/2000	Dioxin - 8280
DSL6	Raw Materials Warehouse (Small Pile)	9/11/2000	TCLP Pesticides
DSL7	Raw Materials Warehouse (Under Concrete)	9/15/2000	TCLP Pesticides
DSL8	Pipeline Run (1-4FT)	9/26/2000	TCLP Pesticides
		9/26/2000	Dioxin - 8280
DSL9	Pipeline Run (4-8FT)	9/26/2000	TCLP Pesticides
DSL10	Railroad Unloading Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL11	Railroad Unloading Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL12	Phase II: Liquid Storage Area (berm)	10/26/2000	TCLP Pesticides/Herbicides
DSL13	Phase II: Liquid Storage Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
		10/26/2000	Dioxin 8280
DSL14	Phase II: Liquid Storage Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL15	Railroad Unloading Area	11/3/2000	TCLP Pesticides
DSL16	Phase II: Liquid Storage Area	11/7/2000	TCL SVOC/Pesticide/Herbicide
DSL17	Phase II: Liquid Storage Area	11/7/2000	TCL VOC
DSL18	Phase II: Liquid Storage Area	11/10/2000	BTEX
DSL19	Railroad Unloading Trench (1-4FT)	11/10/2000	BTEX
DSL20	Phase II: Liquid Storage Area	11/10/2000	Full TCLP
DSL21	Phase II: Liquid Storage Area	11/15/2000	EOX
DSL22	Phase II: Liquid Storage Area	11/15/2000	TCLP Pesticides
DSL23	Phase II: Liquid Storage Area	11/29/200	TCLP Pesticides
DSL24	Disposal Composite	5/10/2001	COD; fats, oils, and greases; ammonia nitrogen; pH; total cyanide; and presence of oxidizing agents
EX2	DMA AST (8 ft)	6/28/2001	CLP Pesticides
EX3	DMA AST (4 ft)	6/28/2001	CLP Pesticides
EX6	DMA AST (8 ft)	6/28/2001	CLP Pesticides
EX9	DMA AST (8 ft)	6/29/2001	CLP Pesticides

[1] These samples were not analyzed due to problems with laboratory. Additional locations were chosen and samples submitted for analysis.
[2] These samples were not analyzed per discussions with the USEPA.

Table 3-2

Summary of Excavation and Model Check Sampling Areas

Location	Area of Excavation	Depth of Excavation (bgs)	Volume of Excavation (yd^3)	Confirmation Samples (for defining areas of excavation)	Cancer Risk of Confirmation Samples	Hazard Index of Confirmation Samples
Railroad Unloading EX15	Approximately 1750 ft^2	7 feet	457 (685 tons)	SL90-7	4.36E-9	3.13E-4
				SL91-6	4.03E-9	3.01E-4
				SL92-7	4.18E-9	3.14E-4
South of Finished Goods EX13	10 ft x 36 ft & 10 ft x 27 ft (630 ft^2)	2 feet	46.7 (70 tons)	SL132-2	4.05E-9	3.04E-4
				SL133-2	2.30E-8	3.88E-4
				SL134-2	4.03E-9	3.01E-4
				SL135-2	4.32E-9	3.29E-4
				SL136-2	2.36E-8	3.01E-4
				SL137-2	4.03E-9	3.01E-4
Southwest Corner EX10	9 ft x 28 ft (252 ft^2)	2 feet	18.7 (28 tons)	SL142-2	4.32E-9	3.22E-4
				SL143-2	4.03E-9	3.01E-4
				SL144-2	4.08E-9	3.07E-4
				SL145-2	4.03E-9	3.01E-4
Pipeline Rack EX14	12 ft x 6 ft (72 ft^2)	6 feet	16 (24 tons)	SL160-2	2.68E-6	7.22E-4
				SL161-2	4.12E-7	3.33E-2
				SL162-6	5.37E-8	2.78E-3
				SL173-2	4.69E-9	3.55E-4
				SL174-2	7.53E-8	7.08E-3
				SL175-2	2.16E-8	2.72E-3
EX12	10ft x 11 ft (110 ft^2)	7 feet	28.5 (42.8 tons)	SL127-5	1.27E-8	3.45E-4
				SL128-7	5.57E-9	5.26E-4
				SL129-5	9.42E-7	5.96E-3

Table 3-2

Summary of Excavation and Model Check Sampling Areas

Location	Area of Excavation	Depth of Excavation (bgs)	Volume of Excavation (yd^3)	Confirmation Samples (for defining areas of excavation)	Cancer Risk of Confirmation Samples	Hazard Index of Confirmation Samples
Railroad Unloading EX15	Approximately 1750 ft^2	7 feet	457 (685 tons)	SL90-7	4.36E-9	3.13E-4
				SL91-6	4.03E-9	3.01E-4
				SL92-7	4.18E-9	3.14E-4
South of Finished Goods EX13	10 ft x 36 ft & 10 ft x 27 ft (630 ft^2)	2 feet	46.7 (70 tons)	SL132-2	4.05E-9	3.04E-4
				SL133-2	2.30E-8	3.88E-4
				SL134-2	4.03E-9	3.01E-4
				SL135-2	4.32E-9	3.29E-4
				SL136-2	2.36E-8	3.01E-4
				SL137-2	4.03E-9	3.01E-4
Southwest Corner EX10	9 ft x 28 ft (252 ft^2)	2 feet	18.7 (28 tons)	SL142-2	4.32E-9	3.22E-4
				SL143-2	4.03E-9	3.01E-4
				SL144-2	4.08E-9	3.07E-4
				SL145-2	4.03E-9	3.01E-4
Pipeline Rack EX14	12 ft x 6 ft (72 ft^2)	6 feet	16 (24 tons)	SL160-2	2.68E-6	7.22E-4
				SL161-2	4.12E-7	3.33E-2
				SL162-6	5.37E-8	2.78E-3
				SL173-2	4.69E-9	3.55E-4
				SL174-2	7.53E-8	7.08E-3
				SL175-2	2.16E-8	2.72E-3
EX12	10ft x 11 ft (110 ft^2)	7 feet	28.5 (42.8 tons)	SL127-5	1.27E-8	3.45E-4
				SL128-7	5.57E-9	5.26E-4
				SL129-5	9.42E-7	5.96E-3

Location	*Area of* Excavation	Depth of *Excavation* (bgs)	Volume of Excavation (yd^3)	Confirmation Samples (for defining areas of excavation)	Cancer Risk of Confirmation Samples	Hazard Index of Confirmation Samples
DMA AST						
EX9	13 ft x 16 ft (208 ft^2)	8 feet	38.5 (57.8 tons)	SL102-4	4.05E-6	2.94E-1
				SL104-4	1.63E-7	1.87E-2
Note: Excavated to 8 ft bgs				SL170-4	1.19E-8	NA
				SL171-4	1.05E-7	1.16E-2
				SL172-4	6.23E-9	5.07E-4
EX4	11 ft x 12 ft (132 ft^2)	3 feet	14.7 (22 tons)	SL147-2	9.40E-8	8.88E-3
				SL149-2	4.82E-9	3.67E-4
EX3	11 ft x 13 ft (143 ft^2)	4 feet	21.2 (31.8 tons)	SL117-6	4.22E-8	4.66E-3
Note: Excavated to 4 ft bgs				SL118-2	1.22E-8	1.44E-3
				SL119-2	2.21E-8	2.57E-3
				SL120-2	5.88E-9	5.48E-4
EX1, EX1a	10 ft x 21 ft (210 ft^2)	6 feet	46.7 (70 tons)	SL115-2	2.51E-7	2.72E-2
				SL113-6	1.11E-8	1.14E-3
				SL163-2	2.41E-7	3.02E-2
				SL167-2	4.52E-7	6.26E-2
EX8	10 ft x 10 ft (100 ft^2)	3 feet	11.1 (16.7 tons)	SL155-2	6.40E-7	5.52E-2
				SL156-2	2.13E-8	2.05E-3
				SL157-2	5.27E-9	3.98E-4
				SL158-2	2.65E-7	2.54E-2
EX2	11 ft x 12 ft (132 ft^2)	8 feet	39.1 (58.7 tons)	SL109-2	3.16E-6	3.14E-1
Note: Excavated to 8 ft bgs				SL110-4	5.49E-7	8.67E-2
				SL111-4	2.02E-5	4.36
				SL112-4	1.48E-7	2.03E-2
EX7	10 ft x 11 ft (110 ft^2)	5 feet	20.4 (30.6 tons)	SL122-5	4.93E-8	5.62E-3
				SL123-5	3.18E-8	3.36E-3
				SL124-5	2.13E-8	1.92E-3
				SL125-5	9.99E-7	7.44E-2
EX6	30 ft x 10 ft (300 ft^2)	8 feet	88.9 (133.3 tons)	SL101-7	3.50E-6	3.33E-1
Note: Excavated to 8 ft bgs						
EX11	10 ft x 10 ft (100 ft^2)	4 feet	14.8 (22.2 tons)	SL151-2	1.51E-8	1.81E-3
				SL152-2	5.20E-9	4.61E-4
				SL153-4	1.39E-8	1.57E-3
				SL154-2	1.22E-8	1.50E-3
EX5	9 ft x 10 ft (90 ft^2)	5 feet	16.7 (25 tons)	SL168-4	5.51E-8	7.48E-3
				SL169-2	3.74E-8	5.05E-3

Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL90-7*	SL91-6*	SL92-7*	SL93-2	SL94-1	SL95-8	SL96-6	SL97-6	SL98-1	SL100-3	SL101-7*
4,4'-DDD	ND	ND	ND	ND	ND	12 J	ND	ND	ND	ND	2,000 C
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	790 C
4,4'-DDT	ND	ND	ND	2.5 J	ND	27	45	ND	ND	ND	6,100 C
Aldrin	2	ND	ND	5.9	2,100 C	280	2,800 C	5	2.5	2.9	4,000 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	6.6 P	ND	9.4 P	ND	2.7	ND	ND	710 C
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	950 C
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	10	85	71	32 J	ND	ND	ND	1,700 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	91 J
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	15 J	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	34	26	41	130 J	19	ND	1.7 J	1,700 C
Heptachlor	ND	ND	ND	50	21 J	63	170 J	ND	1.3 J	1.1 J	510 C
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	82 JP
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil was excavated during the Phase I Removal Action in June 2001.

Table 4-1
Pesticide Sample Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL102-2*	SL102-4*	SL103-2*	SL103-4*	SL104-2*	SL104-4*	SL105-2*	SL106-2*	SL106-4*	SL107-2*	SL107-4*
4,4'-DDD	330 P	ND	840 CP	1,100 CP	ND	9.3 P	6,500 CP	30,000 C	22,000 C	29,000 C	4,700 C
4,4'-DDE	220 P	ND	700 JC	1,100 C	460 JC	ND	1,100 CP	2,300 JCP	1,800 CP	1,300 CP	600 CP
4,4'-DDT	1,100 C	140 J	5,300 C	11,000 C	2,700 C	7.8 P	910 CP	8,600 C	6,800 C	5,300 C	4,400 C
Aldrin	5,800 C	270	5,800 C	6,300 C	4,300 C	130	5,700 C	26,000 C	25,000 C	43,000 C	19,000 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	1,400 C	190	2,500 C	2,400 C	950 C	62	1,200 JCP	16,000 C	11,000 C	17,000 C	6,400 C
beta-BHC	ND	52 JP	2,000 PC	ND	860 PC	ND	ND	23,000 CP	ND	7,600 P	ND
delta-BHC	ND	ND	ND	240 JP	ND	ND	ND	ND	ND	ND	81 JP
Dieldrin	8,500 C	6,800 C	22,000 C	53,000 C	26,000 C	310	7,100 C	18,000 C	17,000 C	16,000 C	12,000 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	290	ND	490 JC	570 JC	ND	4.7 JP	940 CP	2,000	1,200 CP	3,200 C	650 CP
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	420 JC	160 JP
Endrin	170 J	ND	ND	ND	ND	ND	990 CP	ND	790 JC	8,600 C	1,200 C
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	290 P	360	780 C	1,800 C	1,400 C	16	ND	ND	490 JC	3,600 C	660 C
gamma-BHC (Lindane)	4,200 C	ND	250 J	400 J	ND	ND	ND	1,500 JC	340 J	920 C	150
gamma-Chlordane	2,700 C	580 C	5,300 C	6,500 C	2,900 C	56 P	1,100 JCP	23,000 C	14,000 C	31,000 C	10,000 C
Heptachlor	3,600 C	300	3,700 C	9,300 C	3,600 C	ND	ND	61,000 C	27,000 C	24,000 C	15,000 C
Heptachlor epoxide	160 P	260	370 JCP	1,600 C	1,800 C	8.0 P	270 P	ND	410 JCP	810 CP	280 P
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	3,900 JC	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
All concentrations are presented in micrograms per kilogram (µg/kg).
C= The presence of the compound was confirmed by GC/MS analysis.
J= Reported value is less than the reporting limit but greater than the method detection limit.
P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.
j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
ND= Not Detected.
*= Soil was excavated during the Phase I Removal Action in June 2001.

Table 4-1
Pesticide Sampling Results - Evcavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL108-2*	SL108-4*	SL109-2*	SL110-2*	SL110-4*	SL111-2*	SL111-4*	SL112-2*	SL112-4*	SL113-4*	SL113-6*	SL114-2*
4,4'-DDD	6,600 C	3,400 CP	190 P	2,000 JCP	57 P	1,400 C	3,800 C	ND	21	2,200 C	2.8 JP	6,600 C
4,4'-DDE	1,100 JC	1,300 JCP	75 JP	ND	89 P	290 JP	1,300 C	ND	16 P	550 JCP	ND	ND
4,4'-DDT	7,200 C	3,400 C	160 P	12,000 C	95 P	5,300	10,000 C	4,900 JC	29 P	9,600 C	26	33,000 C
Aldrin	15,000 C	68,000 C	3,200 C	38,000 C	240	19,000 C	27,000 C	210,000 C	63	47,000 C	11	57,000 C
alpha-BHC	ND	ND	ND	ND	22	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	9,100 C	14,000 C	430	1,100 C	230	1,200 C	2,500	ND	39 P	930 C	2.1	24,000 C
beta-BHC	4,400 CP	ND	440 P	ND	330	ND	ND	ND	ND	ND	ND	15,000 CP
delta-BHC	ND	ND	96	ND	74	ND	170 J	ND	ND	ND	ND	ND
Dieldrin	24,000 C	29,000 C	3,400 C	15,000 C	1,700 C	5,600 C	84,000 C	14,000 C	410 C	9,500 C	5.8	240,000 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	1,500 JC	2,200 CP	58 JP	ND	ND	ND	ND	ND	16 P	ND	ND	ND
Endosulfan sulfate	1,100 JC	970 JC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	3,800 C	2,800 C	96 JP	ND	20 JP	ND	2,200 C	ND	9.4 JP	ND	ND	ND
Endrin aldehyde	850 JC	ND	ND	ND	ND	ND	410 J	ND	ND	ND	ND	ND
Endrin ketone	1,400 JC	ND	610 C	1,200 JC	390	440	1,300 C	ND	50	710 JP	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	14 J	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	17,000 C	17,000 C	1,200 C	7,100 C	320	6,600 C	10,000 C	3,800 JC	62	6,300 C	9.4	110,000 C
Heptachlor	34,000 C	23,000 C	320 P	17,000 C	ND	9,600 C	2000 JC	7,300 C	56	11,000 C	18	54,000 C
Heptachlor epoxide	850 CP	ND	63 P	ND	110 P	160 JP	300 JP	ND	20 P	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	1,100	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

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Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL115-2*	SL116-5	SL117-6*	SL118-2*	SL119-2*	SL120-2*	SL121-1	SL122-5*	SL123-5*	SL124-5*	SL125-5*
4,4'-DDD	10 J	3 JP	ND	ND	2.7 JP	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	15	ND	ND	ND	6.4	ND	2.5 J	ND	ND	ND	ND
Aldrin	310	12	52	20	30	5	160	69	44 E	20	790 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	8.3	ND	ND	ND	1.4 JP	ND	2 JP	ND	ND	1.4 JP	ND
beta-BHC	5.9 JP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	85	3.9 JP	24	4.9 P	22	2.6 J	69	15 P	23	19 P	140
Endosulfan I	ND	ND	ND	ND	ND	ND	1.3 JP	21 P	1.8 JP	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	4.8	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	41	2.4	1.6 J	ND	3.6	ND	8	ND	2.5	2.9	ND
Heptachlor	39	ND	2.8	ND	ND	ND	11	ND	3.5	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

E= Result concentration exceeds the calibration range.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil was excavated during the Phase I Removal Action in June 2001.

Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL126-4	SL127-5*	SL128-7*	SL129-5*	SL130-2*	SL131-2*	SL132-2*	SL133-2*	SL134-2*	SL135-2*	SL136-2*
4,4'-DDD	4.8 J	ND	ND	10.0 P	ND	12.0 P	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	18	ND	5.1 JP	ND	ND	ND	ND	ND
4,4'-DDT	2.1 J	ND	ND	59	ND	6.5 J	ND	ND	ND	ND	ND
Aldrin	32	ND	5.1	20	ND	200	ND	2.5	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	3.5 P	ND	ND	16 P	ND	32	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	15 P	2.9 JP	2 JP	48	ND	75	ND	ND	ND	2.8 JP	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4 JP	ND
Endosulfan II	ND	ND	ND	7.8	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	6.4	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	6.9	1.4 J	ND	52	ND	47	1 J	1.4 J	ND	ND	ND
Heptachlor	2.2 P	ND	1.1 J	19	1.9 JP	4 J	ND	2.2	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	6.4 P	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

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Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL137-2*	SL138-1	SL139-1	SL140-1	SL141-1	SL142-2*	SL143-2*	SL144-2*	SL145-2*	SL146-1	SL147-2*	SL149-2*
4,4'-DDD	ND	ND	ND	ND	ND	15 P	ND	ND	ND	ND	60	20
4,4'-DDE	ND	ND	ND	ND	2.1 J	ND	ND	ND	ND	ND	4.9	ND
4,4'-DDT	ND	ND	ND	ND	7.8	ND	ND	ND	ND	ND	4.7	ND
Aldrin	ND	ND	ND	ND	21	ND	ND	ND	ND	ND	30	1.4 J
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	2.8 P	ND	ND	1.4 JP	ND	ND	9.2	3.7
beta-BHC	ND	ND	ND	ND	2.0 P	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	20	2.6 J	ND	2.1 JP	ND	ND	140	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1 J	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	ND	7.8	ND	ND	ND	ND	ND	12	1.5 JP
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2 JP	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2 P	17 P	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

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J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

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Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL150-1	SL151-2*	SL152-2*	SL153-2*	SL153-4*	SL154-2*	SL155-2*	SL156-2*	SL157-2*	SL158-2*	SL159-1*
4,4'-DDD	ND	4.2	ND	2,300 C	4.3 P	5.6	97 P	ND	ND	27 J	20,000 C
4,4'-DDE	ND	6.6	ND	230 JP	6.6	2.8 J	58 P	ND	ND	8.4 P	ND
4,4'-DDT	5	5.9	ND	3,600 C	20	2.3 J	380	5.7 Pj	ND	68	14,000 C
Aldrin	6.7	25	3.7	12,000 C	17	23	67	7.1	ND	3.6	140,000 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	3.2	2.1 P	ND	1,600 C	1.7 JP	ND	270	9.8 Pj	ND	61 P	6,500 C
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9,200 EPC
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	18	6.7 P	ND	3,000 C	11	ND	780 C	41 Pj	3.1 JP	620 C	30,000 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	260 J	ND	ND	110	ND	ND	6.6 P	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	15 JP	ND	ND	3.9 JP	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	400 C	ND	ND	47	ND	ND	20	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	5.9	6.6	2.0 J	4,400 C	5.7 P	1.6 J	600 C	15	ND	160	26,000 JC
Heptachlor	4	5.4	ND	6,100 C	4.4	1.6 J	130 J	4.9	ND	63 E	7,700 C
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	60	1.3 JPj	ND	28	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	33	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

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E= Result concentration exceeds the calibration range.

J= Reported value is less than the reporting limit but greater than the method detection limit.

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Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL160-2*	SL161-2*	SL162-4*	SL162-6*	SL163-2*	SL164-2*	SL165-2*	SL166-2	SL167-2*	SL168-2*	SL168-4*
4,4'-DDD	15	ND	150,000	350 P	84	2,300 PC	31,000 JC	84,000 PC	630 C	ND	ND
4,4'-DDE	ND	ND	4,700	9.7 JP	18	2,900 PC	ND	43,000 C	ND	ND	ND
4,4'-DDT	ND	ND	2,800	ND	31	14,000 C	92,000 C	1,900,000 C	1,900 C	ND	ND
Aldrin	5.8	ND	1,800	ND	420	23,000 C	170,000 C	29,000 C	750 C	150,000 C	120
alpha-BHC	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	2.7 P	59 P	3,600	ND	62	9,500 C	76,000 C	67,000 C	120 J	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	1,300 C	ND	ND	ND	ND	ND
Dieldrin	6.0 P	260 JP	25,000	49 P	110	110,000 C	310,000 C	160,000 C	250 J	ND	22
Endosulfan I	1.5 JP	ND	ND	80 JP	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	75 P	7,700	13	ND	990 JC	ND	17,000 JP	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	4.4 P	530 CP	ND	39	ND	1,000 JPC	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	2,700	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	5,300 C	ND	ND	ND	ND	2.5 J
gamma-BHC (Lindane)	ND	13 J	ND	ND	ND	470 JC	ND	ND	ND	ND	ND
gamma-Chlordane	3.7	34 P	ND	ND	270	25,000 C	410,000 C	72,000 C	220	ND	ND
Heptachlor	ND	ND	ND	ND	300	18,000 C	840,000 C	32,000 C	73	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	7.0 P	2,000 PC	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil was excavated during the Phase I Removal Action in June 2001.

Table 4-1
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL169-2*	SL170-2*	SL171-2*	SL171-4*	SL172-2*	SL172-4*	SL173-2*	SL174-2*	SL175-2*	SL176-2	SL177-2	SL178-2
4,4'-DDD	4.3	700 PC	ND	9.9	1,000 PC	ND	ND	790 PC	95 P	920 C	2.5 J	ND
4,4'-DDE	ND	870 C	ND	2.2 JP	1,700 C	ND	ND	ND	11	ND	ND	ND
4,4'-DDT	15	6,200 C	1,300 JC	40 P	12,000 C	ND	ND	51 P	290	260	ND	ND
Aldrin	70	6,300 C	37,000 C	50	8,300 C	2 J	1.1 J	ND	7.9	12	91	1.5 J
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	7.2 P	1,300 C	880 PC	11	3,000 C	ND	ND	60	14 P	14	1.1 JP	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	19 P	24,000 C	15,000 C	230	78,000 C	5.5	2.9 JP	91 P	27 P	26 P	5.6 P	18
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	320 J	ND	3.5 JP	850 C	ND	ND	180 P	8.8 P	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	25 JP	ND	ND	ND	ND
Endrin	ND	ND	ND	2.2 JP	460 JPC	ND	ND	71 P	10.0 P	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	590	ND	32	2,800 C	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	12,000 C	3.9	690 C	ND	ND	ND	ND	ND	ND	2.1 JP
gamma-Chlordane	26	3,600 C	2,900 C	23 P	8,100 C	ND	ND	300	9.9 P	130	3.2	ND
Heptachlor	4.6	3,200 C	3,500 C	20	8,400 C	ND	ND	ND	7.1	220	ND	1.4 J
Heptachlor epoxide	2.4	680 C	ND	6.6 P	2,000 C	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	18,000 C	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil was excavated during the Phase I Removal Action in June 2001.

Table 4-2

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivalant Factors

ANALYTE		SL104-2 ng/kg		SL105-2 ng/kg		SL105-4 ng/kg		SL113-2 ng/kg		SL123-5 ng/kg		SL124-5 ng/kg	
	I-TEFs												
2378-TCDD	1	**1.10E+01**	1.10E+01	**3.20E+05**	3.20E+05	**7.80E+01**	7.80E+01	**6.90E+03**	6.90E+03	**1.20E+00**	1.20E+00	**1.20E+00**	1.20E+00
12378-PeCDD	0.5	**6.20E+00**	3.10E+00	**1.50E+04**	7.50E+03	**8.40E+00**	4.20E+00	**1.30E+02**	6.50E+01	**2.50E+00**	1.25E+00	**2.50E+00**	1.25E+00
123478-HxCDD	0.1	**2.50E+00**	2.50E-01	**3.50E+02**	3.50E+01	**3.30E-01**	3.30E-02	**1.60E+01**	1.60E+00	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
123678-HxCDD	0.1	**2.50E+00**	2.50E-01	**9.60E+01**	9.60E+00	**3.65E-01**	3.65E-02	**7.80E+02**	7.80E+01	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
123789-HxCDD	0.1	**2.50E+00**	2.50E-01	**9.40E+01**	9.40E+00	**9.50E-01**	9.50E-02	**3.10E+02**	3.10E+01	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
1234678-HpCDD	0.01	**2.50E+00**	2.50E-02	**5.50E+02**	5.50E+00	**2.60E+00**	2.60E-02	**5.30E+02**	5.30E+00	**2.50E+00**	2.50E-02	**2.50E+00**	2.50E-02
OCDD	0.001	**2.30E+01**	2.30E-02	**7.30E+03**	7.30E+00	**2.10E+01**	2.10E-02	**4.40E+03**	4.40E+00	**5.00E+00**	5.00E-03	**5.00E+00**	5.00E-03
2378-TCDF	0.1	**5.00E-01**	5.00E-02	**4.10E+02**	4.10E+01	**8.60E-01**	8.60E-02	**3.80E+01**	3.80E+00	**5.00E-01**	5.00E-02	**5.00E-01**	5.00E-02
12378-PeCDF	0.05	**2.50E+00**	1.25E-01	**2.60E+01**	1.30E+00	**3.10E-01**	1.55E-02	**7.10E+00**	3.55E-01	**2.50E+00**	1.25E-01	**2.50E+00**	1.25E-01
23478-PeCDF	0.5	**2.50E+00**	1.25E+00	**9.20E+01**	4.60E+01	**2.00E-01**	1.00E-01	**6.80E+00**	3.40E+00	**2.50E+00**	1.25E+00	**2.50E+00**	1.25E+00
123478-HxCDF	0.1	**2.50E+00**	2.50E-01	**2.70E+01**	2.70E+00	**4.60E-01**	4.60E-02	**4.00E+01**	4.00E+00	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
123678-HxCDF	0.1	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01	**2.10E-01**	2.10E-02	**1.30E+01**	1.30E+00	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
123789-HxCDF	0.1	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01	**1.50E-01**	1.50E-02	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
234678-HxCDF	0.1	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01	**1.45E-01**	1.45E-02	**9.00E+00**	9.00E-01	**2.50E+00**	2.50E-01	**2.50E+00**	2.50E-01
1234678-HpCDF	0.01	**2.50E+00**	2.50E-02	**1.20E+02**	1.20E+00	**6.50E-01**	6.50E-03	**2.70E+03**	2.70E+01	**2.50E+00**	2.50E-02	**2.50E+00**	2.50E-02
1234789-HpCDF	0.01	2.50E+00	2.50E-02	7.80E+00	7.80E-02	1.20E-01	1.20E-03	3.50E+01	3.50E-01	2.50E+00	2.50E-02	2.50E+00	2.50E-02
OCDF	0.001	**5.00E+00**	5.00E-03	**4.70E+02**	4.70E-01	**8.00E-01**	8.00E-04	1.40E+03	1.40E+00	**5.00E+00**	5.00E-03	**5.00E+00**	5.00E-03
	ng/kg	TEQ	1.74E+01	TEQ	3.28E+05	TEQ	8.27E+01	TEQ	7.13E+03	TEQ	5.71E+00	TEQ	5.71E+00
	mg/kg		1.74E-05		3.3E-01		8.3E-05		7.1E-03		5.7E-06		5.7E-06
	µg/kg		0.0174		330		0.0827		7.1		0.0057		0.0057

Table 4-2

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivalant Factors

ANALYTE		SL127-5 ng/kg		SL129-5 ng/kg		SL133-2 ng/kg		SL136-2 ng/kg		SL160-2 ng/kg		SL162-4 ng/kg	
	I-TEFs												
2378-TCDD	1	2.50E+00	2.50E+00	2.70E+02	2.70E+02	1.10E+00	1.10E+00	1.50E+00	1.50E+00	8.20E+02	8.20E+02	7.30E+04	7.30E+04
12378-PeCDD	0.5	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	6.30E+01	3.15E+01
123478-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.20E+01	2.20E+00
123789-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	6.50E+01	6.50E+00
1234678-HpCDD	0.01	2.50E+00	2.50E-02	9.00E+00	9.00E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	3.10E+01	3.10E-01
OCDD	0.001	5.00E+00	5.00E-03	8.50E+01	8.50E-02	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	1.30E+02	1.30E-01
2378-TCDF	0.1	5.00E-01	5.00E-02	3.60E+00	3.60E-01	5.00E-01	5.00E-02	5.00E-01	5.00E-02	8.00E-01	8.00E-02	1.50E+02	1.50E+01
12378-PeCDF	0.05	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01
23478-PeCDF	0.5	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	7.80E+00	3.90E+00
123478-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123789-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
234678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
1234678-HpCDF	0.01	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	1.90E+01	1.90E-01
1234789-HpCDF	0.01	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02
OCDF	0.001	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	3.50E+01	3.50E-02
	ng/kg	TEQ	7.01E+00	TEQ	2.75E+02	TEQ	5.61E+00	TEQ	6.01E+00	TEQ	8.25E+02	TEQ	7.31E+04
	mg/kg		7.01E-06		2.75E-04		5.61E-06		6.01E-06		8.25E-04		7.31E-02
	µg/kg		0.007010		0.275		0.005610		0.006010		0.825		73.06

Riverdale Chemical
h:/data/projects/Riverdale/Remedy/teqsall.xls

Created by: Brendan McLennan
Checked by: Rae Mindock
11/27/2001

Table 4-2

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivalant Factors

ANALYTE		SL170-4 ng/kg	
	I-TEFs		
2378-TCDD	1	1.10E+00	1.10E+00
12378-PeCDD	0.5	3.15E-01	1.58E-01
123478-HxCDD	0.1	1.30E-01	1.30E-02
123678-HxCDD	0.1	2.25E-01	2.25E-02
123789-HxCDD	0.1	4.20E-01	4.20E-02
1234678-HpCDD	0.01	1.20E+00	1.20E-02
OCDD	0.001	1.30E+01	1.30E-02
2378-TCDF	0.1	2.70E+00	2.70E-01
12378-PeCDF	0.05	2.70E+00	1.35E-01
23478-PeCDF	0.5	2.60E+00	1.30E+00
123478-HxCDF	0.1	4.10E+00	4.10E-01
123678-HxCDF	0.1	9.00E-01	9.00E-02
123789-HxCDF	0.1	1.30E-01	1.30E-02
234678-HxCDF	0.1	5.00E-01	5.00E-02
1234678-HpCDF	0.01	3.30E+00	3.30E-02
1234789-HpCDF	0.01	1.75E-01	1.75E-03
OCDF	0.001	6.00E-01	6.00E-04
	ng/kg	TEQ	3.66E+00
	mg/kg		3.66E-06
	µg/kg		0.00366

Table 4-3
Residual Contamination Documentation Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	EX2-8	EX3-4	EX6-8	EX9-8
4,4'-DDD	ND	ND	30,000 C	36 P
4,4'-DDE	ND	ND	ND	ND
4,4'-DDT	ND	ND	11,000 C	51
Aldrin	2.4	ND	34,000 C	290
alpha-BHC	ND	740 C	ND	ND
alpha-Chlordane	ND	37 J	8,800 C	28
beta-BHC	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND
Dieldrin	ND	620 C	6,500 C	400
Endosulfan I	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	24
gamma-BHC (Lindane)	ND	ND	ND	ND
gamma-Chlordane	ND	100	13,000 C	94 J
Heptachlor	ND	31 J	93,000 C	250
Heptachlor epoxide	ND	ND	ND	8.0 J
Methoxychlor	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram (µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

FIGURES

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Figure 3-1 – Phase 1 Removal Action Sampling Locations with Excavation Areas

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Appendix A
Technical Memorandum

Technical Memorandum

Date: June 27, 2001

To: Callie Bollatino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5

cc: Karen Peaceman, USEPA
Peter Bibby, Riverdale
Todd Wiener, MWE

From: Rae Mindock, RMT
Brendan McLennan, RMT

Project No.: 4962.01

Subject: Riverdale Chemical Company
Excavation and Model Check Sampling Activities

RMT, Inc. (RMT) has prepared this Technical Memo to provide the USEPA with sampling data obtained during the Excavation and Model Check Sampling Activities conducted during April and May. The sampling activities were conducted as described in:

- Addendum to the Work Plan letter dated May 8,
- Addendum to the Work Plan letter dated April 3.

Both documents are provided in Appendix A.

Soil samples were collected at 89 locations (SL90 to SL178) to determine potential areas of excavation and to provide model checks (based on the risk model presented in the EE/CA). Samples were collected at five areas as discussed with the USEPA:

- Railroad Unloading Area – Two areas of potential excavation (10 ft by 10 ft) and three model check samples were collected at this location. Samples were analyzed for pesticides.
- South of Finished Goods Warehouse (Building No. 1) – One area of potential excavation (10 ft by 50 ft) and four model check samples were collected at this location. Sample locations were modified slightly from the proposed locations due to access problems. Samples were analyzed for pesticides. Several samples were analyzed for dioxin.
- Southwest Corner (at fence line south of Building No. 1) – One area of potential excavation (10 ft by 30 ft) and one model check sample. Samples were analyzed for pesticides.
- Liquid Storage Area Pipeline Rack (south of Building No. 2) – Two areas of potential excavation (10 ft by 10 ft) and two model check samples were collected at this location. Samples were analyzed for pesticides. Several samples were analyzed for dioxin.

- DMA AST (south of Building No. 3) - Nine areas of potential excavation (10 ft by 10 ft, with one 10 ft by 30 ft) and six model check samples were collected at this location. Excessive fill material limited sample collection at two locations, FIT sampling location B8 and RI sampling location SS01. Petroleum/kerosene odors and stained soils were observed at FIT sampling location B10, directly west of the Liquid Storage Area. Samples were analyzed for pesticides. Several samples were analyzed for dioxin.

The samples were collected to delineate areas of excavation and to check concentrations within the modeled construction worker risk scenarios. A summary of the sampling program is provided in Table 1. The sampling locations are provided on Figure 1. The sampling was conducted using procedures described in the Phase I Remedial Action Work Plan including the associated Quality Assurance Project Plan (QAPP), the Field Sampling Analysis Plan (FSAP), and the Health and Safety Plan (HASP).

Sampling results are provided in Table 2. The proposed excavation areas, remaining hazard index and cancer risk at excavation locations and model check locations are provided on Figure 2. The horizontal extent of the excavations were determined by the confirmatory samples. The vertical extent has been defined by confirmatory samples or a maximum depth of 8 feet below ground surface (bgs). The confirmatory sampling indicates that after excavation of the fifteen discrete areas, the remaining soil risk levels at the site will be less than a total cancer risk of 1×10^{-4}, a hazard index less than 1, and dioxin below 15 ppb TEQs. Risk calculations and dioxin TEQs are provided in Appendix B.

TABLES

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL01 - 4 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL03 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL04 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL05 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL06 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 2.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL09 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL10 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL10 - 5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 4.5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL12 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL12 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 1.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL14 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL15 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL16 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL18 - 2.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL19 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT DUP	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL21 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 2 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL23 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT DUP	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL25 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL25 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL26 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL26 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL28 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL 28 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL29 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL30 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL31 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL32 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL33 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL33 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 1 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL37 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL38 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL39 - 6.2 FT	Railroad Unloading Storage Basin	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL40-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		8/28/2000	CLP Pesticide
SL41-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs
		8/28/2000	CLP Pesticide
SL41-5.2FT-DUP	Railroad Unloading Spill Containment Basin	8/28/2000	CLP Pesticide
SL44-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL44-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-DUP	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL48-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL48-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL50-6IN (SL50-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL50-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-6IN (SL51-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-6IN (SL52-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL53-6IN (SL53-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL54-6IN (SL54-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL55-6IN (SL55-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL56-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL57-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL58-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL59-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		9/6/2000	CLP Pesticide
SL60-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL61-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL62-1FT	Utility Area	9/21/2000	CLP Pesticide
SL62-4FT	Utility Area	9/21/2000	CLP Pesticide
SL63-1FT	Utility Area	9/21/2000	CLP Pesticide
SL63-4FT	Utility Area	9/21/2000	CLP Pesticide
SL64-1FT	Utility Area	9/21/2000	CLP Pesticide
SL64-4FT	Utility Area	9/21/2000	CLP Pesticide
SL65-1FT	Utility Area	9/21/2000	CLP Pesticide
SL65-4FT	Utility Area	9/21/2000	CLP Pesticide
SL66-1FT	Utility Area	9/21/2000	CLP Pesticide
SL66-4FT	Utility Area	9/21/2000	CLP Pesticide
SL67-1FT	Utility Area	9/21/2000	CLP Pesticide
SL67-4FT	Utility Area	9/21/2000	CLP Pesticide
SL68-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL69-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL70-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL71-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL72-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL73-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL74-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL75-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL76-4FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL77-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL78-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL79-2.5FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL80-5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL81-3.5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL82-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL83-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL84-5FT	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL84-5FT DUP	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL85-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL86-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL86-3FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL87-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL87-3FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL87-3FTDUP	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, Dioxin & RCRA Metals
SL88-1FT	Off -Site Drainage Ditch	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL89-1FT	Low Lying Area	3/5/2001	VOCs, SVOCs, Pesticides/PCBs, Herbicides, & RCRA Metals
SL90-6FT	Railroad Unloading	4/6/2001	
SL90-7FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL91-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL91-7FT	Railroad Unloading	4/6/2001	
SL92-6FT	Railroad Unloading	4/6/2001	
SL92-7FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL93-2FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL94-1FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL95-8FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL96-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL97-6FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL97-7FT	Railroad Unloading	4/6/2001	
SL98-1FT	Railroad Unloading	4/6/2001	CLP Pesticides
SL99-1FT	Railroad Unloading	4/6/2001	
SL100-3FT	DMA AST	4/6/2001	CLP Pesticides
SL101-7FT	DMA AST	4/6/2001	CLP Pesticides

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL101-8FT	DMA AST	4/6/2001	
SL102-2FT	DMA AST	4/6/2001	CLP Pesticides
SL102-4FT	DMA AST	4/6/2001	CLP Pesticides
SL103-2FT	DMA AST	4/6/2001	CLP Pesticides
SL103-4FT	DMA AST	4/6/2001	CLP Pesticides
SL104-2FT	DMA AST	4/6/2001	CLP Pesticides
SL104-4FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL105-2FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL105-4FT	DMA AST	4/6/2001	Dioxin
SL106-2FT	DMA AST	4/6/2001	CLP Pesticides
SL106-4FT	DMA AST	4/6/2001	CLP Pesticides
SL107-2FT	DMA AST	4/6/2001	CLP Pesticides
SL107-4FT	DMA AST	4/6/2001	CLP Pesticides
SL108-2FT	DMA AST	4/6/2001	CLP Pesticides
SL108-4FT	DMA AST	4/6/2001	CLP Pesticides
SL109-2FT	DMA AST	4/6/2001	CLP Pesticides
SL109-4FT	DMA AST	4/6/2001	
SL110-2FT	DMA AST	4/6/2001	CLP Pesticides
SL110-4FT	DMA AST	4/6/2001	CLP Pesticides
SL111-2FT	DMA AST	4/6/2001	CLP Pesticides
SL111-4FT	DMA AST	4/6/2001	CLP Pesticides
SL112-2FT	DMA AST	4/6/2001	CLP Pesticides
SL112-4FT	DMA AST	4/6/2001	CLP Pesticides
SL113-2FT	DMA AST	4/6/2001	Dioxin
SL113-4FT	DMA AST	4/6/2001	CLP Pesticides
SL113-6FT	DMA AST	5/10/2001	CLP Pesticides
SL114-2FT	DMA AST	4/6/2001	CLP Pesticides
SL114-4FT	DMA AST	4/6/2001	
SL115-2FT	DMA AST	4/6/2001	CLP Pesticides
SL116-5FT	DMA AST	4/6/2001	CLP Pesticides
SL117-5FT	DMA AST	4/6/2001	
SL117-6FT	DMA AST	4/6/2001	CLP Pesticides
SL118-2FT	DMA AST	4/6/2001	CLP Pesticides
SL119-2FT	DMA AST	4/6/2001	CLP Pesticides
SL120-2FT	DMA AST	4/6/2001	CLP Pesticides

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL121-1FT	DMA AST	4/6/2001	CLP Pesticides
SL122-5FT	DMA AST	4/6/2001	CLP Pesticides
SL123-5FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL124-5FT	DMA AST	4/6/2001	CLP Pesticides, Dioxin
SL125-5FT	DMA AST	4/6/2001	CLP Pesticides
SL126-4FT	DMA AST	4/6/2001	CLP Pesticides
SL127-5FT	Pipeline Rack	4/6/2001	CLP Pesticides, Dioxin
SL127-7FT	Pipeline Rack	4/6/2001	
SL128-5FT	Pipeline Rack	4/6/2001	
SL128-7FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL129-5FT	Pipeline Rack	4/6/2001	CLP Pesticides, Dioxin
SL129-7FT	Pipeline Rack	4/6/2001	
SL129-9FT	Pipeline Rack	4/6/2001	
SL130-2FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL131-2FT	Pipeline Rack	4/6/2001	CLP Pesticides
SL132-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL132-4FT	South of Finished Goods	4/12/2001	
SL133-2FT	South of Finished Goods	4/12/2001	CLP Pesticides, Dioxin
SL133-4FT	South of Finished Goods	4/12/2001	
SL134-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL134-4FT	South of Finished Goods	4/12/2001	
SL135-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL135-4FT	South of Finished Goods	4/12/2001	
SL136-2FT	South of Finished Goods	4/12/2001	CLP Pesticides, Dioxin
SL136-4FT	South of Finished Goods	4/12/2001	
SL137-2FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL137-4FT	South of Finished Goods	4/12/2001	
SL138-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL139-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL140-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL141-1FT	South of Finished Goods	4/12/2001	CLP Pesticides
SL142-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL142-4FT	Southwest Corner	4/12/2001	
SL143-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL143-4FT	Southwest Corner	4/12/2001	
SL144-2FT	Southwest Corner	4/12/2001	CLP Pesticides

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL144-4FT	Southwest Corner	4/12/2001	
SL145-2FT	Southwest Corner	4/12/2001	CLP Pesticides
SL145-4FT	Southwest Corner	4/12/2001	
SL146-1FT	Southwest Corner	4/12/2001	CLP Pesticides
SL147-2FT	DMA AST	4/12/2001	CLP Pesticides
SL147-4FT	DMA AST	4/12/2001	
SL149-2FT	DMA AST	4/12/2001	CLP Pesticides
SL149-4FT	DMA AST	4/12/2001	
SL150-1FT	DMA AST	4/12/2001	CLP Pesticides
SL151-2FT	DMA AST	4/12/2001	CLP Pesticides
SL151-4FT	DMA AST	4/12/2001	
SL152-2FT	DMA AST	4/12/2001	CLP Pesticides
SL152-4FT	DMA AST	4/12/2001	
SL153-2FT	DMA AST	4/12/2001	CLP Pesticides
SL153-4FT	DMA AST	4/12/2001	CLP Pesticides
SL154-2FT	DMA AST	4/12/2001	CLP Pesticides
SL154-4FT	DMA AST	4/12/2001	
SL155-2FT	DMA AST	4/12/2001	CLP Pesticides
SL155-4FT	DMA AST	4/12/2001	
SL156-2FT	DMA AST	4/12/2001	CLP Pesticides
SL156-4FT	DMA AST	4/12/2001	
SL157-2FT	DMA AST	4/12/2001	CLP Pesticides
SL157-4FT	DMA AST	4/12/2001	
SL158-2FT	DMA AST	4/12/2001	CLP Pesticides
SL158-4FT	DMA AST	4/12/2001	
SL159-1FT	DMA AST	4/12/2001	CLP Pesticides
SL160-2FT	Pipeline Rack	4/12/2001	CLP Pesticides, Dioxin
SL160-4FT	Pipeline Rack	4/12/2001	
SL161-2FT	Pipeline Rack	4/12/2001	CLP Pesticides
SL161-4FT	Pipeline Rack	4/12/2001	
SL162-4FT	Pipeline Rack	4/12/2001	CLP Pesticides, Dioxin
SL162-6FT	Pipeline Rack	4/12/2001	CLP Pesticides
SL163-2FT	DMA AST	5/10/2001	CLP Pesticides
SL163-4FT	DMA AST	5/10/2001	
SL164-2FT	DMA AST	5/10/2001	CLP Pesticides
SL164-4FT	DMA AST	5/10/2001	

Table 1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL164-6FT	DMA AST	5/10/2001	
SL164-8FT	DMA AST	5/10/2001	
SL165-2FT	DMA AST	5/10/2001	CLP Pesticides
SL165-4FT	DMA AST	5/10/2001	
SL165-6FT	DMA AST	5/10/2001	
SL166-2FT	DMA AST	5/10/2001	CLP Pesticides
SL166-4FT	DMA AST	5/10/2001	
SL166-6FT	DMA AST	5/10/2001	
SL166-8FT	DMA AST	5/10/2001	
SL167-2FT	DMA AST	5/10/2001	CLP Pesticides
SL167-4FT	DMA AST	5/10/2001	
SL167-6FT	DMA AST	5/10/2001	
SL167-8FT	DMA AST	5/10/2001	
SL168-2FT	DMA AST	5/10/2001	CLP Pesticides
SL168-4FT	DMA AST	5/10/2001	CLP Pesticides
SL169-2FT	DMA AST	5/10/2001	CLP Pesticides
SL169-4FT	DMA AST	5/10/2001	
SL170-2FT	DMA AST	5/10/2001	CLP Pesticides
SL170-4FT	DMA AST	5/10/2001	Dioxin
SL171-2FT	DMA AST	5/10/2001	CLP Pesticides
SL171-4FT	DMA AST	5/10/2001	CLP Pesticides
SL172-2FT	DMA AST	5/10/2001	CLP Pesticides
SL172-4FT	DMA AST	5/10/2001	CLP Pesticides
SL173-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL173-4FT	Pipeline Rack	5/10/2001	
SL174-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL174-4FT	Pipeline Rack	5/10/2001	
SL175-2FT	Pipeline Rack	5/10/2001	CLP Pesticides
SL175-4FT	Pipeline Rack	5/10/2001	
SL176-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL176-4FT	Railroad Unloading	5/10/2001	
SL177-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL177-4FT	Railroad Unloading	5/10/2001	
SL178-2FT	Railroad Unloading	5/10/2001	CLP Pesticides
SL178-4FT	Railroad Unloading	5/10/2001	
DSL1	Railroad Unloading Area	8/23/2000	Full TCLP

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
DSL2	Phase I: Liquid Storage Area	8/23/2000	Full TCLP
DSL3	Raw Materials Warehouse (Potential)	9/6/2000	Full TCLP
DSL4	Raw Materials Warehouse (Contaminated)	9/6/2000	Full TCLP
DSL5	Railroad Unloading Spill Containment Basin (8 FT)	9/8/2000	Full TCLP
		9/18/2000	Dioxin - 8280
DSL6	Raw Materials Warehouse (Small Pile)	9/11/2000	TCLP Pesticides
DSL7	Raw Materials Warehouse (Under Concrete)	9/15/2000	TCLP Pesticides
DSL8	Pipeline Run (1-4FT)	9/26/2000	TCLP Pesticides
		9/26/2000	Dioxin - 8280
DSL9	Pipeline Run (4-8FT)	9/26/2000	TCLP Pesticides
DSL10	Railroad Unloading Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL11	Railroad Unloading Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL12	Phase II: Liquid Storage Area (berm)	10/26/2000	TCLP Pesticides/Herbicides
DSL13	Phase II: Liquid Storage Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
		10/26/2000	Dioxin 8280
DSL14	Phase II: Liquid Storage Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL15	Railroad Unloading Area	11/3/2000	TCLP Pesticides
DSL16	Phase II: Liquid Storage Area	11/7/2000	TCL SVOC/Pesticide/Herbicide
DSL17	Phase II: Liquid Storage Area	11/7/2000	TCL VOC
DSL18	Phase II: Liquid Storage Area	11/10/2000	BTEX
DSL19	Railroad Unloading Trench (1-4FT)	11/10/2000	BTEX
DSL20	Phase II: Liquid Storage Area	11/10/2000	Full TCLP
DSL21	Phase II: Liquid Storage Area	11/15/2000	EOX
DSL22	Phase II: Liquid Storage Area	11/15/2000	TCLP Pesticides
DSL23	Phase II: Liquid Storage Area	11/29/200	TCLP Pesticides
DSL24	Disposal Composite	5/10/2001	COD; fats, oils, and greases; ammonia nitrogen; pH; total cyanide; and presence of oxidizing agents

[1] These samples were not analyzed due to problems with laboratory. Additional locations were chosen and samples submitted for analysis.

[2] These samples were not analyzed per discussions with the USEPA.

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS	ANALYSIS DUE	RISK
SL01 - 4 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	3.36E-08
SL02 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	9.50E-08
SL02 - 5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	3.23E-08
SL03 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	4.47E-07
SL04 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	3.34E-08
SL05 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	2.45E-07
SL06 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	3.47E-08
SL07 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	1.96E-06
SL07 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	3.72E-08
SL08 - 2.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	1.62E-06
SL08 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	4.18E-08
SL09 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	2.77E-06
SL10 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	1.72E-07
SL10 - 5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	1.52E-07
SL11 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	2.99E-08
SL11 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs	NA	2.86E-08
SL12 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	2.09E-07
SL12 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	3.10E-08
SL13 - 1.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	3.16E-07
SL13 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	3.60E-08
SL14 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	2.72E-08
SL15 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	5.26E-07
SL16 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	4.61E-06
SL17 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	4.03E-05
SL17 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	2.23E-05
SL18 - 2.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	1.02E-07
SL19 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	4.91E-08
SL20 - 2 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	4.89E-08
SL20 - 2 FT DUP	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs	NA	5.31E-08
SL21 - 1 FT	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL22 - 1 FT	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL22 - 2 FT	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL23 - 1 FT	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL24 - 1 FT	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL24 - 1 FT DUP	Phase I & II: Liquid Storage Area	8/8/2000	Not Analyzed[1]	NA	NA
SL25 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL25 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL26 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS	ANALYSIS DUE	RISK
SL26 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL27 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL27 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL28 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL 28 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]	NA	NA
SL29 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]	NA	NA
SL30 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]	NA	NA
SL31 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]	NA	NA
SL32 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]	NA	NA
SL33 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	2.07E-03
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL33 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	1.42E-06
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL34 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	2.06E-04
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL34 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	1.52E-08
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL35 - 1 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	1.15E-05
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL35 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	2.55E-06
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL36 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	1.76E-04
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL36 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs	NA	2.98E-05
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL37 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs	NA	1.50E-08
		8/23/2000	CLP Pesticide COPCs	9/15/2000	
SL38 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs	NA	1.37E-08
		8/23/2000	CLP Pesticide COPCs	9/15/2000	
SL39 - 6.2 FT	Railroad Unloading Storage Basin	8/24/2000	SW846 Pesticide COPCs	NA	1.37E-08
		8/24/2000	CLP Pesticide COPCs	9/15/2000	
SL40-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs	9/8/2000	1.93E-05
		8/28/2000	CLP Pesticide COPCs	9/22/2000	
SL41-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs	9/8/2000	3.36E-04
		8/28/2000	CLP Pesticide COPCs	9/22/2000	
SL41-5.2FT-DUP	Railroad Unloading Spill Containment Basin	8/28/2000	CLP Pesticide COPCs	9/22/2000	
SL44-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL44-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS	ANALYSIS DUE	RISK
SL45-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL45-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL46-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL46-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL47-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL47-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL47-DUP	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL48-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL48-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL49-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL49-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide COPCs	9/29/2000	
SL50-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL50-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL51-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL51-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL52-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL52-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL53-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
		8/31/2000	Dioxin - 8290	9/27/2000	
SL54-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
		8/31/2000	Dioxin - 8290	9/27/2000	
SL55-6IN	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide	9/29/2000	
SL56-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs	9/20/2000	4.44E-06
		9/6/2000	CLP Pesticide COPCs	10/9/2000	
SL57-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs	9/20/2000	6.65E-07
		9/6/2000	CLP Pesticide COPCs	10/9/2000	
SL58-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs	9/20/2000	2.98E-08
		9/6/2000	CLP Pesticide COPCs	10/9/2000	
SL59-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs	9/20/2000	4.52E-08
		9/6/2000	CLP Pesticide COPCs	10/9/2000	
SL60-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide COPCs	10/11/2000	
SL61-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide COPCs	10/11/2000	
SL62-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL62-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL63-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL63-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL64-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL64-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	

Table 1
Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS	ANALYSIS DUE	RISK
SL65-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL65-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL66-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL66-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL67-1FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL67-4FT	Utility Area	9/21/2000	CLP Pesticide COPCs	10/25/2000	
SL68-8FT	Pipeline Run	9/26/2000	Dioxin - 8280		
SL69-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
SL70-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
SL71-8FT	Pipeline Run	9/26/2000	Dioxin - 8280		
SL72-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
SL73-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
SL74-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
SL75-8FT	Pipeline Run	9/26/2000	CLP Pesticide COPCs		
DSL1	Railroad Unloading Area	8/23/2000	Full TCLP	NA	clean
DSL2	Phase I: Liquid Storage Area	8/23/2000	Full TCLP	NA	clean
DSL3	Raw Materials Warehouse (Potential)	9/6/2000	Full TCLP	NA	clean
DSL4	Raw Materials Warehouse (Contaminated)	9/6/2000	Full TCLP	NA	clean
DSL5	Railroad Unloading Spill Containment Basin (8 FT)	9/8/2000	Full TCLP	9/22/2000	
		9/18/2000	Dioxin - 8280	9/22/2000	
DSL6	Raw Materials Warehouse (Small Pile)	9/11/2000	TCLP Pesticides	NA	clean
DSL7	Raw Materials Warehouse (Under Concrete)	9/15/2000	TCLP Pesticides	9/22/2000	
DSL8	Pipeline Run (1-4FT)	9/26/2000	TCLP Pesticides		
		9/26/2000	Dioxin - 8280		
DSL9	Pipeline Run (4-8FT)	9/26/2000	TCLP Pesticides		

[1] These samples were not analyzed.

[2] These samples were not analyzed per discussions with the USEPA.

Table 1a

Summary of Samples to be Validated/Figure 3-3

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL37 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide COPCs
SL38 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL39 - 6.2 FT	Railroad Unloading Storage Basin	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL48-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL48-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL50-6IN (SL50-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL50-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-6IN (SL51-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-6IN (SL52-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL53-6IN (SL53-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL54-6IN (SL54-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL55-6IN (SL55-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL56-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL57-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL58-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL59-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL60-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL61-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL62-1FT	Utility Area	9/21/2000	CLP Pesticide
SL62-4FT	Utility Area	9/21/2000	CLP Pesticide

Table 1a

Summary of Samples to be Validated/Figure 3-3

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL63-1FT	Utility Area	9/21/2000	CLP Pesticide
SL63-4FT	Utility Area	9/21/2000	CLP Pesticide
SL64-1FT	Utility Area	9/21/2000	CLP Pesticide
SL64-4FT	Utility Area	9/21/2000	CLP Pesticide
SL65-1FT	Utility Area	9/21/2000	CLP Pesticide
SL65-4FT	Utility Area	9/21/2000	CLP Pesticide
SL66-1FT	Utility Area	9/21/2000	CLP Pesticide
SL66-4FT	Utility Area	9/21/2000	CLP Pesticide
SL67-1FT	Utility Area	9/21/2000	CLP Pesticide
SL67-4FT	Utility Area	9/21/2000	CLP Pesticide
SL68-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL69-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL70-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL71-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL72-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL73-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL74-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL75-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL77-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL78-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL80-5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL81-3.5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL82-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL83-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL84-5FT	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL84-5FT DUP	Hartwell Building Expansion	11/10/2000	CLP Pesticide

Table 1a

Summary of Samples to be Validated/Figure 3-3

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
[1] These samples were not analyzed due to problems with laboratory. Additional locations were chosen and samples submitted for analysis.			
[2] These samples were not analyzed per discussions with the USEPA.			
[3] Several modifications/revisions were made to the table. The changes are indicated by italics.			

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL01 - 4 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL02 - 5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL03 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL04 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL05 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL06 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL07 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 2.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL08 - 4.5 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL09 - 3 FT	Raw Materials Warehouse	6/28/2000	Pesticides COPCs
SL10 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL10 - 5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 3 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL11 - 4.5 FT	Phase I & II: Liquid Storage Area	6/28/2000	Pesticides COPCs
SL12 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL12 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 1.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL13 - 3.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL14 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL15 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL16 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL17 - 3 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL18 - 2.5 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL19 - 1 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL20 - 2 FT DUP	Phase I & II: Liquid Storage Area	7/3/2000	Pesticides COPCs
SL21 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL22 - 2 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL23 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL24 - 1 FT DUP	Phase II: Liquid Storage Area	8/8/2000	Not Analyzed[1]
SL25 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL25 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL26 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL26 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL27 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL28 - 2 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL 28 - 4 FT	Raw Materials Warehouse	8/8/2000	Not Analyzed[1]
SL29 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL30 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL31 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL32 - 10 FT	Phase I: Liquid Storage Area	8/18/2000	Not Analyzed[2]
SL33 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL33 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL34 - 3.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 1 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL35 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 1.2 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL36 - 4.5 FT	Raw Materials Warehouse	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL37 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL38 - 6.2 FT	Railroad Unloading Storage Basin	8/23/2000	SW846 Pesticide COPCs
		8/23/2000	CLP Pesticide
SL39 - 6.2 FT	Railroad Unloading Storage Basin	8/24/2000	SW846 Pesticide COPCs
		8/24/2000	CLP Pesticide
SL40-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs
		8/28/2000	CLP Pesticide
SL41-5.2FT	Railroad Unloading Spill Containment Basin	8/28/2000	SW846 Pesticide COPCs
		8/28/2000	CLP Pesticide
SL41-5.2FT-DUP	Railroad Unloading Spill Containment Basin	8/28/2000	CLP Pesticide

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL44-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL44-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL45-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL46-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-1FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-4FT	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL47-DUP	Phase II: Liquid Storage Area	8/31/2000	CLP Pesticide
SL48-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL48-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-1FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL49-4FT	Hartwell Building Expansion	8/31/2000	CLP Pesticide
SL50-6IN (SL50-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL50-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-6IN (SL51-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL51-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-6IN (SL52-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL52-4FT	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL53-6IN (SL53-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL54-6IN (SL54-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
		8/31/2000	Dioxin - 8290
SL55-6IN (SL55-0.5FT)	Low Lying Area	8/31/2000	CLP: VOA, Metals, Semi-VOA, Pesticide,Herbicides
SL56-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL57-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL58-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL59-5FT	Raw Materials Warehouse	9/6/2000	SW846 Pesticide COPCs
		9/6/2000	CLP Pesticide
SL60-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL61-5FT	Railroad Unloading Spill Containment Basin	9/8/2000	CLP Pesticide
SL62-1FT	Utility Area	9/21/2000	CLP Pesticide
SL62-4FT	Utility Area	9/21/2000	CLP Pesticide
SL63-1FT	Utility Area	9/21/2000	CLP Pesticide

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
SL63-4FT	Utility Area	9/21/2000	CLP Pesticide
SL64-1FT	Utility Area	9/21/2000	CLP Pesticide
SL64-4FT	Utility Area	9/21/2000	CLP Pesticide
SL65-1FT	Utility Area	9/21/2000	CLP Pesticide
SL65-4FT	Utility Area	9/21/2000	CLP Pesticide
SL66-1FT	Utility Area	9/21/2000	CLP Pesticide
SL66-4FT	Utility Area	9/21/2000	CLP Pesticide
SL67-1FT	Utility Area	9/21/2000	CLP Pesticide
SL67-4FT	Utility Area	9/21/2000	CLP Pesticide
SL68-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL69-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL70-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL71-8FT	Pipeline Run	9/26/2000	Dioxin - 8280
SL72-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL73-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL74-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL75-8FT	Pipeline Run	9/26/2000	CLP Pesticide
SL76-4FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL77-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL78-6FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL79-2.5FT	Phase II: Liquid Storage Area	10/20/2000	CLP Pesticide/Herbicide
SL80-5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL81-3.5FT	Phase II: Liquid Storage Area	11/2/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL82-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL83-9FT	Phase II: Liquid Storage Area	11/7/2000	CLP Pesticide/Herbicide
			CLP VOA/SVOA
SL84-5FT	Hartwell Building Expansion	11/10/2000	CLP Pesticide
SL84-5FT DUP	Hartwell Building Expansion	11/10/2000	CLP Pesticide
DSL1	Railroad Unloading Area	8/23/2000	Full TCLP
DSL2	Phase I: Liquid Storage Area	8/23/2000	Full TCLP
DSL3	Raw Materials Warehouse (Potential)	9/6/2000	Full TCLP
DSL4	Raw Materials Warehouse (Contaminated)	9/6/2000	Full TCLP
DSL5	Railroad Unloading Spill Containment Basin (8 FT)	9/8/2000	Full TCLP

Table 1

Summary of the Sampling Program

SAMPLE ID	SAMPLE LOCATION	SAMPLE DATE	ANALYSIS
		9/18/2000	Dioxin - 8280
DSL6	Raw Materials Warehouse (Small Pile)	9/11/2000	TCLP Pesticides
DSL7	Raw Materials Warehouse (Under Concrete)	9/15/2000	TCLP Pesticides
DSL8	Pipeline Run (1-4FT)	9/26/2000	TCLP Pesticides
		9/26/2000	Dioxin - 8280
DSL9	Pipeline Run (4-8FT)	9/26/2000	TCLP Pesticides
DSL10	Railroad Unloading Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL11	Railroad Unloading Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL12	Phase II: Liquid Storage Area (berm)	10/26/2000	TCLP Pesticides/Herbicides
DSL13	Phase II: Liquid Storage Trench (1-4FT)	10/26/2000	TCLP Pesticides/Herbicides
		10/26/2000	Dioxin 8280
DSL14	Phase II: Liquid Storage Trench (4-8FT)	10/26/2000	TCLP Pesticides/Herbicides
DSL15	Railroad Unloading Area	11/3/2000	TCLP Pesticides
DSL16	Phase II: Liquid Storage Area	11/7/2000	TCL SVOC/Pesticide/Herbicide
DSL17	Phase II: Liquid Storage Area	11/7/2000	TCL VOC
DSL18	Phase II: Liquid Storage Area	11/10/2000	BTEX
DSL19	Railroad Unloading Trench (1-4FT)	11/10/2000	BTEX
DSL20	Phase II: Liquid Storage Area	11/10/2000	Full TCLP
DSL21	Phase II: Liquid Storage Area	11/15/2000	EOX
DSL22	Phase II: Liquid Storage Area	11/15/2000	TCLP Pesticides
DSL23	Phase II: Liquid Storage Area	11/29/200	TCLP Pesticides
[1] These samples were not analyzed due to problems with laboratory. Additional locations were chosen and samples submitted for analysis.			
[2] These samples were not analyzed per discussions with the USEPA.			
[3] Several modifications/revisions were made to the table. The changes are indicated by italics.			

Table 2
Pesticide Sampling Results - Evcavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL108-2*	SL108-4*	SL109-2*	SL110-2*	SL110-4*	SL111-2*	SL111-4*	SL112-2*	SL112-4*	SL113-4*	SL113-6*	SL114-2*
4,4'-DDD	6,600 C	3,400 CP	190 P	2,000 JCP	57 P	1,400 C	3,800 C	ND	21	2,200 C	2.8 JP	6,600 C
4,4'-DDE	1,100 JC	1,300 JCP	75 JP	ND	89 P	290 JP	1,300 C	ND	16 P	550 JCP	ND	ND
4,4'-DDT	7,200 C	3,400 C	160 P	12,000 C	95 P	5,300	10,000 C	4,900 JC	29 P	9,600 C	26	33,000 C
Aldrin	15,000 C	68,000 C	3,200 C	38,000 C	240	19,000 C	27,000 C	210,000 C	63	47,000 C	11	57,000 C
alpha-BHC	ND	ND	ND	ND	22	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	9,100 C	14,000 C	430	1,100 C	230	1,200 C	2,500	ND	39 P	930 C	2.1	24,000 C
beta-BHC	4,400 CP	ND	440 P	ND	330	ND	ND	ND	ND	ND	ND	15,000 CP
delta-BHC	ND	ND	96	ND	74	ND	170 J	ND	ND	ND	ND	ND
Dieldrin	24,000 C	29,000 C	3,400 C	15,000 C	1,700 C	5,600 C	84,000 C	14,000 C	410 C	9,500 C	5.8	240,000 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	1,500 JC	2,200 CP	58 JP	ND	ND	ND	ND	ND	16 P	ND	ND	ND
Endosulfan sulfate	1,100 JC	970 JC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	3,800 C	2,800 C	96 JP	ND	20 JP	ND	2,200 C	ND	9.4 JP	ND	ND	ND
Endrin aldehyde	850 JC	ND	ND	ND	ND	ND	410 J	ND	ND	ND	ND	ND
Endrin ketone	1,400 JC	ND	610 C	1,200 JC	390	440	1,300 C	ND	50	710 JP	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	14 J	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	17,000 C	17,000 C	1,200 C	7,100 C	320	6,600 C	10,000 C	3,800 JC	62	6,300 C	9.4	110,000 C
Heptachlor	34,000 C	23,000 C	320 P	17,000 C	ND	9,600 C	2000 JC	7,300 C	56	11,000 C	18	54,000 C
Heptachlor epoxide	850 CP	ND	63 P	ND	110 P	160 JP	300 JP	ND	20 P	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	1,100	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil is to be excavated during the Phase I Removal Action in June 2001.

Table 2

Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL115-2*	SL116-5	SL117-6*	SL118-2*	SL119-2*	SL120-2*	SL121-1	SL122-5*	SL123-5*	SL124-5*	SL125-5*
4,4'-DDD	10 J	3 JP	ND	ND	2.7 JP	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	15	ND	ND	ND	6.4	ND	2.5 J	ND	ND	ND	ND
Aldrin	310	12	52	20	30	5	160	69	44 E	20	790 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	8.3	ND	ND	ND	1.4 JP	ND	2 JP	ND	ND	1.4 JP	ND
beta-BHC	5.9 JP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	85	3.9 JP	24	4.9 P	22	2.6 J	69	15 P	23	19 P	140
Endosulfan I	ND	ND	ND	ND	ND	ND	1.3 JP	21 P	1.8 JP	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	4.8	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	41	2.4	1.6 J	ND	3.6	ND	8	ND	2.5	2.9	ND
Heptachlor	39	ND	2.8	ND	ND	ND	11	ND	3.5	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

E= Result concentration exceeds the calibration range.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

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Table 2
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL126-4	SL127-5*	SL128-7*	SL129-5*	SL130-2*	SL131-2*	SL132-2*	SL133-2*	SL134-2*	SL135-2*	SL136-2*
4,4'-DDD	4.8 J	ND	ND	10.0 P	ND	12.0 P	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	18	ND	5.1 JP	ND	ND	ND	ND	ND
4,4'-DDT	2.1 J	ND	ND	59	ND	6.5 J	ND	ND	ND	ND	ND
Aldrin	32	ND	5.1	20	ND	200	ND	2.5	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	3.5 P	ND	ND	16 P	ND	32	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	15 P	2.9 JP	2 JP	48	ND	75	ND	ND	ND	2.8 JP	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4 JP	ND
Endosulfan II	ND	ND	ND	7.8	ND	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	6.4	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	6.9	1.4 J	ND	52	ND	47	1 J	1.4 J	ND	ND	ND
Heptachlor	2.2 P	ND	1.1 J	19	1.9 JP	4 J	ND	2.2	ND	ND	ND
Heptachlor epoxide	ND	ND	ND	6.4 P	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
All concentrations are presented in micrograms per kilogram(µg/kg).
C= The presence of the compound was confirmed by GC/MS analysis.
J= Reported value is less than the reporting limit but greater than the method detection limit.
P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.
j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.
ND= Not Detected.
*= Soil is to be excavated during the Phase I Removal Action in June 2001.

Table 2
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL137-2*	SL138-1	SL139-1	SL140-1	SL141-1	SL142-2*	SL143-2*	SL144-2*	SL145-2*	SL146-1	SL147-2*	SL149-2*
4,4'-DDD	ND	ND	ND	ND	ND	15 P	ND	ND	ND	ND	60	20
4,4'-DDE	ND	ND	ND	ND	2.1 J	ND	ND	ND	ND	ND	4.9	ND
4,4'-DDT	ND	ND	ND	ND	7.8	ND	ND	ND	ND	ND	4.7	ND
Aldrin	ND	ND	ND	ND	21	ND	ND	ND	ND	ND	30	1.4 J
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	ND	ND	ND	ND	2.8 P	ND	ND	1.4 JP	ND	ND	9.2	3.7
beta-BHC	ND	ND	ND	ND	2.0 P	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	20	2.6 J	ND	2.1 JP	ND	ND	140	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.6	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.1 J	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	ND	ND	ND	ND	7.8	ND	ND	ND	ND	ND	12	1.5 JP
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2 JP	ND
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.2 P	17 P	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil is to be excavated during the Phase I Removal Action in June 2001.

Table 2
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL150-1	SL151-2*	SL152-2*	SL153-2*	SL153-4*	SL154-2*	SL155-2*	SL156-2*	SL157-2*	SL158-2*	SL159-1*
4,4'-DDD	ND	4.2	ND	2,300 C	4.3 P	5.6	97 P	ND	ND	27 J	20,000 C
4,4'-DDE	ND	6.6	ND	230 JP	6.6	2.8 J	58 P	ND	ND	8.4 P	ND
4,4'-DDT	5	5.9	ND	3,600 C	20	2.3 J	380	5.7 Pj	ND	68	14,000 C
Aldrin	6.7	25	3.7	12,000 C	17	23	67	7.1	ND	3.6	140,000 C
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	3.2	2.1 P	ND	1,600 C	1.7 JP	ND	270	9.8 Pj	ND	61 P	6,500 C
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9,200 EPC
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	18	6.7 P	ND	3,000 C	11	ND	780 C	41 Pj	3.1 JP	620 C	30,000 C
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	260 J	ND	ND	110	ND	ND	6.6 P	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	15 JP	ND	ND	3.9 JP	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	400 C	ND	ND	47	ND	ND	20	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-Chlordane	5.9	6.6	2.0 J	4,400 C	5.7 P	1.6 J	600 C	15	ND	160	26,000 JC
Heptachlor	4	5.4	ND	6,100 C	4.4	1.6 J	130 J	4.9	ND	63 E	7,700 C
Heptachlor epoxide	ND	ND	ND	ND	ND	ND	60	1.3 JPj	ND	28	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	33	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

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E= Result concentration exceeds the calibration range.

J= Reported value is less than the reporting limit but greater than the method detection limit.

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Table 2
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL160-2*	SL161-2*	SL162-4*	SL162-6*	SL163-2*	SL164-2*	SL165-2*	SL166-2	SL167-2*	SL168-2*	SL168-4*
4,4'-DDD	15	ND	150,000	350 P	84	2,300 PC	31,000 JC	84,000 PC	630 C	ND	ND
4,4'-DDE	ND	ND	4,700	9.7 JP	18	2,900 PC	ND	43,000 C	ND	ND	ND
4,4'-DDT	ND	ND	2,800	ND	31	14,000 C	92,000 C	1,900,000 C	1,900 C	ND	ND
Aldrin	5.8	ND	1,800	ND	420	23,000 C	170,000 C	29,000 C	750 C	150,000 C	120
alpha-BHC	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	2.7 P	59 P	3,600	ND	62	9,500 C	76,000 C	67,000 C	120 J	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	1,300 C	ND	ND	ND	ND	ND
Dieldrin	6.0 P	260 JP	25,000	49 P	110	110,000 C	310,000 C	160,000 C	250 J	ND	22
Endosulfan I	1.5 JP	ND	ND	80 JP	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	75 P	7,700	13	ND	990 JC	ND	17,000 JP	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	4.4 P	530 CP	ND	39	ND	1,000 JPC	ND	ND	ND	ND	ND
Endrin aldehyde	ND	ND	2,700	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	ND	ND	ND	ND	5,300 C	ND	ND	ND	ND	2.5 J
gamma-BHC (Lindane)	ND	13 J	ND	ND	ND	470 JC	ND	ND	ND	ND	ND
gamma-Chlordane	3.7	34 P	ND	ND	270	25,000 C	410,000 C	72,000 C	220	ND	ND
Heptachlor	ND	ND	ND	ND	300	18,000 C	840,000 C	32,000 C	73	ND	ND
Heptachlor epoxide	ND	ND	ND	ND	7.0 P	2,000 PC	ND	ND	ND	ND	ND
Methoxychlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil is to be excavated during the Phase I Removal Action in June 2001.

Table 2
Pesticide Sampling Results - Excavation and Model Check Samples
Riverdale Chemical Company - Chicago Heights, Illinois

	SL169-2*	SL170-2*	SL171-2*	SL171-4*	SL172-2*	SL172-4*	SL173-2*	SL174-2*	SL175-2*	SL176-2	SL177-2	SL178-2
4,4'-DDD	4.3	700 PC	ND	9.9	1,000 PC	ND	ND	790 PC	95 P	920 C	2.5 J	ND
4,4'-DDE	ND	870 C	ND	2.2 JP	1,700 C	ND	ND	ND	11	ND	ND	ND
4,4'-DDT	15	6,200 C	1,300 JC	40 P	12,000 C	ND	ND	51 P	290	260	ND	ND
Aldrin	70	6,300 C	37,000 C	50	8,300 C	2 J	1.1 J	ND	7.9	12	91	1.5 J
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-Chlordane	7.2 P	1,300 C	880 PC	11	3,000 C	ND	ND	60	14 P	14	1.1 JP	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	19 P	24,000 C	15,000 C	230	78,000 C	5.5	2.9 JP	91 P	27 P	26 P	5.6 P	18
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	320 J	ND	3.5 JP	850 C	ND	ND	180 P	8.8 P	ND	ND	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	ND	ND	25 JP	ND	ND	ND	ND
Endrin	ND	ND	ND	2.2 JP	460 JPC	ND	ND	71 P	10.0 P	ND	ND	ND
Endrin aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin ketone	ND	590	ND	32	2,800 C	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	12,000 C	3.9	690 C	ND	ND	ND	ND	ND	ND	2.1 JP
gamma-Chlordane	26	3,600 C	2,900 C	23 P	8,100 C	ND	ND	300	9.9 P	130	3.2	ND
Heptachlor	4.6	3,200 C	3,500 C	20	8,400 C	ND	ND	ND	7.1	220	ND	1.4 J
Heptachlor epoxide	2.4	680 C	ND	6.6 P	2,000 C	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	ND	18,000 C	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are presented in micrograms per kilogram(µg/kg).

C= The presence of the compound was confirmed by GC/MS analysis.

J= Reported value is less than the reporting limit but greater than the method detection limit.

P= The difference for detected pesticide result between the two GC columns is greater than 25 percent.

j= Specific QC criteria are outside the established control limits, the reported concentration is appropriate when the difference between the two GC columns was greater than 30 percent, j-qualifier suggests uncertainty in the sample results.

ND= Not Detected.

*= Soil is to be excavated during the Phase I Removal Action in June 2001.

FIGURES

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APPENDIX A

RMT
Integrated
Environmental
Solutions

222 South Riverside Plaza
Suite 820
Chicago, IL 60606
Telephone: 312-575-0200
Fax: 312-575-0300

April 3, 2001

Via Messenger

Ms. Callie Bolattino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60640

Subject: Riverdale Chemical Company
Addendum to Phase I RA Field Sampling and Analysis Plan

Dear Callie:

Riverdale Chemical Company (Riverdale) is submitting this Addendum to the Phase I Remedial Action Sampling Plan based on our discussions during the meeting with the USEPA on March 29, 2001. Riverdale proposes to collect additional soil samples, without any agreement or admission that any further excavation is warranted at the site.

Soil samples will be collected to attempt to delineate potential areas of excavation and check concentrations within the modeled construction worker risk scenarios. The sampling will be conducted using procedures described in the Phase I Remedial Action Work Plan including the associated Quality Assurance Project Plan (QAPP), the Field Sampling and Analysis Plan (FSAP) and the Health and Safety Plan (HSP). The proposed sampling is summarized in Table 1, with sampling locations provided on Figure 1. Sampling locations may be modified in the field, depending on accessibility to locations.

Please contact me with any questions or comments. Thank you for your timely review of this document.

Sincerely,

RMT, Inc.

Rae Mindock
Project Manager

Attachments: Figure 1, Proposed Soil Sampling Locations

cc: Matt Ohl, USEPA
Karen Peaceman, USEPA
Om Patel, Weston
Peter Bibby, Riverdale
Todd Wiener, MWE

Table 1
Proposed Soil Sampling Program

Location	Area	Number of Samples	Sample Depth	Sample Analysis
Railroad Unloading				
SS10	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
SS11	10 ft x 10 ft	3	2 ft below limestone	Pesticide (3)
Model Check	Discrete	3	1 ft below limestone	Pesticide (3)
South of Finished Goods				
SS46, SS33 – SS35	10 ft x 50 ft	6	2 ft below limestone	Pesticide (6) Dioxin (2)
Model Check	Discrete	4	1 ft below limestone	Pesticide (4)
Southwest Corner				
SS16, SS36	10 ft x 30 ft	4	2 ft below limestone	Pesticide (4)
Model Check	Discrete	1	1 ft below limestone	Pesticide (1)
Pipeline Rack				
B11	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4) Dioxin (2)
SB06	10 ft x 10 ft	3	4 ft below limestone	Pesticide (3) Dioxin (2)
Model Check	Discrete	2	1 ft below limestone	Pesticide (2)
DMA AST				
B7	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4) Dioxin (2)
B8	10 ft x 10 ft	3	2 ft below limestone	Pesticide (3)
B10	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
SS01	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
SS18	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
SS38	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
SB05	10 ft x 10 ft	4	5 ft below limestone	Pesticide (4)
SS17, SS39	10 ft x 30 ft	4	2 ft below limestone	Pesticide (4)
Model Check	Discrete	5	1 ft below limestone	Pesticide (5)
Total Samples				Pesticide (72) Dioxin (8)

RMT Integrated Environmental Solutions

222 South Riverside Plaza
Suite 820
Chicago, IL 60606
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Fax: 312-575-0300

May 8, 2001

Via Messenger

Ms. Callie Bolattino
On-Scene Coordinator
USEPA, Emergency Response Branch, Region 5
77 West Jackson Boulevard (SE-5J)
Chicago, Illinois 60640

Subject: Riverdale Chemical Company
Addendum to Phase I RA Field Sampling and Analysis Plan

Dear Callie:

Riverdale Chemical Company (Riverdale) is submitting this Addendum to the Phase I Remedial Action Sampling Plan based on our discussions during our meeting on May 3, 2001. Riverdale proposes to collect additional soil samples, without any agreement or admission that any further excavation is warranted at the site.

Soil samples will be collected at four additional locations based on the results of the April 2001 sampling event. The proposed locations are adjacent to SL105, SL114, SL159 and SL162. The proposed sampling is summarized in Table 1, with sampling locations provided on Figure 1. We are also recalculating the cancer risk and hazard indices at each location using the assumption that the value for the Skin Surface Area Available for Dermal Contact is 5,800 cm^2/day as discussed during our meeting on May 3rd. Sampling locations may be modified based on the results of the re-calculated values or in the field (depending on accessibility to locations).

Table 1
Proposed Additional Soil Sampling Locations

Location	Area	Number of Samples	Sample Depth	Sample Analysis
Pipeline Rack				
SL162	10 ft x 10 ft	3	2 ft below limestone	Pesticide (3)
DMA AST				
SL105	10 ft x 10 ft	3	2 ft below limestone	Pesticide (3)
SL114	10 ft x 10 ft	3	2 ft below limestone	Pesticide (3)
SL159	10 ft x 10 ft	4	2 ft below limestone	Pesticide (4)
Total Samples		13		Pesticide (13)

The sampling will be conducted using procedures described in the Phase I Remedial Action Work Plan including the associated Quality Assurance Project Plan (QAPP), the Field Sampling and Analysis Plan (FSAP) and the Health and Safety Plan (HSP).

Please contact me with any questions or comments. Thank you for your timely review of this document.

Sincerely,

RMT, Inc.

Rae Mindock
Project Manager

Attachments: Figure 1, Proposed Additional Soil Sampling Locations

cc: Matt Ohl, USEPA
Karen Peaceman, USEPA
Om Patel, Weston
Peter Bibby, Riverdale
Todd Wiener, MWE

APPENDIX B

Total Cancer Risk
Removal Action Sampling
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte														Total Cancer Risk
	Aldrin	Alpha-BHC	Beta-BHC	4,4-DDD	4,4-DDE	4,4-DDT	Delta-BHC	Dieldrin	Chlordane	Gamma-BHC	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL90-7	7.38E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	0.00E+00	3.91E-11	6.78E-10	1.52E-11	0.00E+00	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.36E-09
SL91-6	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL92-7	3.88E-10	1.44E-10	4.11E-11	1.04E-11	1.48E-11	1.48E-11	4.11E-11	6.95E-10	1.60E-11	0.00E+00	1.03E-10	2.08E-10	2.51E-09	0.00E+00	4.18E-09
SL93-2	2.18E-09	4.38E-10	1.25E-10	3.13E-11	4.43E-11	1.85E-11	1.25E-10	3.48E-09	3.24E-10	0.00E+00	5.18E-09	6.32E-10	7.65E-09	0.00E+00	2.02E-08
SL94-1	7.75E-07	1.57E-08	4.50E-09	1.15E-09	1.62E-09	1.62E-09	4.50E-09	2.95E-08	2.89E-10	3.25E-09	2.05E-09	2.27E-08	2.75E-07	0.00E+00	1.14E-06
SL95-8	1.11E-07	5.34E-10	1.52E-10	6.26E-11	5.17E-11	1.99E-10	1.52E-10	2.47E-08	3.83E-10	1.10E-10	6.16E-09	7.31E-10	8.84E-09	0.00E+00	1.53E-07
SL96-6	1.03E-06	1.37E-08	3.91E-09	9.90E-10	1.40E-09	3.32E-10	3.91E-09	1.11E-08	3.34E-10	4.24E-10	1.66E-08	1.98E-08	2.39E-07	0.00E+00	1.35E-06
SL97-6	1.85E-09	1.37E-09	3.91E-10	1.02E-11	1.44E-11	1.44E-11	3.91E-10	6.78E-10	1.65E-10	2.82E-10	9.77E-11	1.98E-10	2.39E-09	0.00E+00	7.85E-09
SL98-1	9.23E-10	1.51E-10	4.30E-11	1.15E-11	1.62E-11	1.62E-11	4.30E-11	7.65E-10	1.67E-11	3.11E-11	1.27E-10	2.17E-10	2.63E-09	0.00E+00	4.99E-09
SL100-3	1.07E-09	1.44E-10	4.11E-11	1.07E-11	1.51E-11	1.51E-11	4.11E-11	7.12E-10	2.09E-11	2.96E-11	1.08E-10	2.08E-10	2.51E-09	0.00E+00	4.92E-09
SL101-7	1.51E-06	6.36E-08	4.30E-08	1.04E-08	5.83E-09	4.50E-08	1.82E-08	5.91E-07	1.85E-08	1.31E-08	5.08E-08	1.62E-08	1.11E-06	0.00E+00	3.50E-06
SL102-2	2.29E-06	6.91E-08	1.97E-08	1.72E-09	1.62E-09	8.12E-09	1.97E-08	2.88E-06	3.34E-08	1.24E-07	3.81E-07	3.16E-08	1.31E-07	0.00E+00	6.00E-06
SL102-4	9.97E-08	7.53E-08	2.15E-08	5.21E-09	7.38E-09	1.03E-09	2.15E-08	2.40E-06	5.85E-09	1.55E-08	2.93E-08	5.14E-08	1.31E-06	0.00E+00	4.05E-06
SL103-2	2.81E-06	2.60E-07	7.43E-08	4.38E-09	5.17E-09	3.91E-08	7.43E-08	7.99E-06	5.93E-08	7.06E-09	3.62E-07	7.31E-08	4.54E-06	0.00E+00	1.63E-05
SL103-4	2.33E-06	3.08E-07	8.80E-08	2.29E-08	3.25E-08	6.87E-08	8.80E-08	1.84E-05	5.13E-08	6.35E-08	9.09E-07	4.45E-07	5.38E-06	0.00E+00	2.82E-05
SL104-2	1.59E-06	3.01E-07	8.60E-08	2.24E-08	3.40E-09	1.99E-08	8.60E-08	9.04E-06	3.65E-08	6.21E-08	3.52E-07	3.56E-07	5.26E-06	5.67E-08	1.73E-05
SL104-4	4.80E-08	2.26E-10	6.45E-11	4.85E-11	2.36E-11	3.47E-11	6.45E-11	1.08E-07	8.97E-10	4.66E-11	1.61E-10	1.58E-09	3.94E-09	0.00E+00	1.63E-07
SL105-2	2.47E-06	1.51E-07	4.30E-08	3.39E-08	8.12E-09	6.72E-09	4.30E-08	2.47E-06	1.75E-08	3.11E-08	1.08E-07	5.34E-08	2.63E-06	1.04E-03	1.05E-03
SL105-4														2.69E-07	2.69E-07
SL106-2	1.29E-05	1.30E-06	4.30E-07	1.56E-07	1.70E-08	6.35E-08	3.71E-07	6.26E-06	2.96E-07	4.24E-08	6.94E-06	1.88E-06	2.27E-05	0.00E+00	5.34E-05
SL106-4	9.23E-06	3.01E-08	8.60E-09	1.30E-07	1.33E-08	5.02E-08	8.60E-09	5.91E-06	1.90E-07	9.60E-09	2.64E-06	8.10E-08	5.26E-07	0.00E+00	1.88E-05
SL107-2	1.59E-05	2.94E-07	2.97E-07	1.62E-07	9.60E-09	3.91E-08	8.41E-08	6.26E-06	3.73E-07	2.60E-08	2.54E-06	1.60E-07	5.14E-06	0.00E+00	3.13E-05
SL107-4	5.17E-06	6.84E-09	1.95E-09	2.66E-08	4.43E-09	3.62E-08	3.17E-09	2.81E-06	1.08E-07	4.24E-09	1.27E-06	5.53E-08	1.19E-07	0.00E+00	9.62E-06
SL108-2	7.38E-06	5.68E-07	1.64E-07	3.44E-08	8.12E-09	5.32E-08	1.62E-07	8.34E-06	2.06E-07	1.17E-07	3.71E-06	1.68E-07	9.92E-06	0.00E+00	3.08E-05
SL108-4	2.47E-05	6.29E-08	1.80E-08	1.77E-08	9.60E-09	2.51E-08	1.80E-08	1.04E-05	2.43E-07	1.30E-08	2.44E-06	9.09E-08	1.10E-06	0.00E+00	3.92E-05
SL109-2	1.22E-06	3.63E-08	1.72E-08	9.90E-10	5.54E-10	1.18E-09	3.75E-09	1.18E-06	1.39E-08	7.48E-09	3.13E-08	1.25E-08	6.33E-07	0.00E+00	3.16E-06
SL110-2	1.66E-05	7.53E-08	2.15E-08	1.04E-08	7.75E-09	8.86E-08	2.15E-08	5.21E-06	6.23E-08	1.55E-08	1.66E-06	1.09E-07	1.31E-06	0.00E+00	2.52E-05
SL110-4	6.65E-08	3.01E-09	1.29E-08	2.97E-10	6.57E-10	7.02E-10	2.89E-09	4.17E-07	4.11E-09	3.95E-10	7.33E-10	2.17E-08	1.79E-08	0.00E+00	5.49E-07
SL111-2	7.38E-06	1.51E-07	4.30E-08	7.30E-09	2.14E-09	1.55E-08	4.30E-08	1.95E-06	6.54E-08	3.11E-08	1.08E-06	3.16E-08	2.63E-06	0.00E+00	1.34E-05
SL111-4	9.97E-06	2.26E-08	6.45E-09	1.98E-08	9.60E-09	8.86E-08	6.65E-09	9.38E-06	9.50E-08	4.66E-09	1.86E-07	5.93E-08	3.94E-07	0.00E+00	2.02E-05
SL112-2	8.12E-05	2.81E-06	8.01E-07	2.06E-07	2.92E-07	3.62E-08	8.01E-07	4.87E-06	4.45E-08	5.79E-07	7.14E-07	4.05E-06	4.90E-05	0.00E+00	1.45E-04
SL112-4	1.40E-08	4.31E-10	1.23E-10	1.09E-10	1.18E-10	2.14E-10	1.23E-10	1.15E-07	7.68E-10	8.89E-11	5.47E-09	3.95E-09	7.53E-09	0.00E+00	1.48E-07
SL113-2														2.25E-05	2.25E-05
SL113-4	1.74E-05	3.22E-07	9.19E-08	1.15E-08	4.06E-09	7.09E-08	9.19E-08	3.30E-06	6.31E-08	6.64E-08	1.17E-06	4.64E-07	5.61E-06	0.00E+00	2.86E-05
SL113-6	4.06E-09	1.44E-10	4.11E-11	1.46E-11	1.48E-11	1.92E-10	4.11E-11	2.02E-09	8.74E-11	2.96E-11	1.76E-09	2.08E-10	2.51E-09	0.00E+00	1.11E-08
SL114-2	2.55E-05	1.92E-06	5.86E-07	3.44E-08	1.99E-07	2.44E-07	5.47E-07	8.34E-05	1.02E-06	3.95E-07	5.86E-06	2.77E-06	3.34E-05	0.00E+00	1.56E-04
SL115-2	1.26E-07	4.52E-09	2.31E-10	5.21E-11	4.80E-10	1.11E-10	1.29E-09	2.95E-08	5.32E-10	9.32E-10	3.81E-09	6.52E-09	7.88E-08	0.00E+00	2.52E-07
SL116-5	4.43E-09	1.57E-10	4.50E-11	1.56E-11	1.62E-11	1.62E-11	4.50E-11	1.36E-09	2.70E-11	3.25E-11	1.12E-10	2.27E-10	2.75E-09	0.00E+00	9.23E-09
SL117-6	2.10E-08	5.95E-10	1.70E-10	4.43E-11	6.28E-11	6.28E-11	1.70E-10	8.34E-09	2.28E-11	1.23E-10	2.74E-10	8.60E-10	1.04E-08	0.00E+00	4.22E-08
SL118-2	7.38E-09	1.44E-10	4.11E-11	1.07E-11	1.51E-11	1.51E-11	4.11E-11	1.70E-09	1.60E-11	2.96E-11	1.03E-10	2.08E-10	2.51E-09	0.00E+00	1.22E-08
SL119-2	1.11E-08	1.51E-10	4.30E-11	1.41E-11	1.55E-11	4.73E-11	4.30E-11	7.65E-09	3.80E-11	3.11E-11	1.08E-10	2.17E-10	2.63E-09	0.00E+00	2.21E-08
SL120-2	1.85E-09	1.44E-10	4.11E-11	1.04E-11	1.48E-11	1.48E-11	4.11E-11	9.04E-10	1.60E-11	2.96E-11	1.03E-10	2.08E-10	2.51E-09	0.00E+00	5.88E-09
SL121-1	5.91E-08	1.64E-09	4.69E-10	1.20E-10	1.70E-10	1.85E-11	4.69E-10	2.40E-08	7.60E-11	3.39E-10	1.08E-09	2.37E-09	2.87E-08	0.00E+00	1.18E-07
SL122-5	2.81E-08	7.53E-10	2.15E-10	5.73E-11	8.12E-11	8.12E-11	2.15E-10	5.21E-09	8.36E-11	1.55E-10	1.95E-10	1.09E-09	1.31E-08	0.00E+00	4.93E-08
SL123-5	1.62E-08	1.57E-10	4.50E-11	1.15E-11	1.62E-11	1.62E-11	4.50E-11	7.99E-09	2.77E-11	3.25E-11	3.42E-10	2.27E-10	2.75E-09	3.91E-09	3.18E-08
SL124-5	7.38E-09	1.57E-10	4.50E-11	1.15E-11	1.62E-11	1.62E-11	4.50E-11	6.60E-09	3.27E-11	3.25E-11	1.12E-10	2.27E-10	2.75E-09	3.91E-09	2.13E-08
SL125-5	3.32E-07	1.57E-08	4.50E-09	1.15E-09	1.62E-09	1.62E-09	4.50E-09	4.87E-08	1.75E-09	3.25E-09	1.12E-08	2.27E-08	2.75E-07	0.00E+00	7.24E-07
SL126-4	1.33E-08	2.94E-10	8.41E-11	2.50E-11	3.10E-11	1.55E-11	8.41E-11	5.21E-09	7.91E-11	6.07E-11	2.15E-10	4.25E-10	5.14E-09	0.00E+00	2.50E-08

Notes:
(1) Risk was calculated based on assumptions in EE/CA developed by Ecology and Environment, Inc. (with revised assumption)
(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC).

H:\Data\Projects\Riverdale\Remedy\Pref_CancerConstruct_half.xlscancer summary
Last Updated: 6/26/20018:54 AM

Riverdale Chemical Company
Prepared By: Brendan McLennan
Checked By: Rae Mindock

Sampling Location	Analyte														Total Cancer Risk
	Aldrin	Alpha-BHC	Beta-BHC	4,4-DDD	4,4-DDE	4,4-DDT	Delta-BHC	Dieldrin	Chlordane	Gamma-BHC	Heptachlor	Heptachlor Epoxide	Toxaphene	2,3,7,8-TCDD	
SL127-5	3.88E-10	1.44E-10	4.11E-11	1.07E-11	1.51E-11	1.51E-11	4.11E-11	1.01E-09	1.86E-11	2.90E-11	1.03E-10	2.08E-10	2.51E-09	8.15E-09	1.27E-08
SL128-7	1.85E-09	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.95E-10	1.52E-11	2.82E-11	1.08E-10	1.98E-10	2.39E-09	0.00E+00	5.57E-09
SL129-5	7.38E-09	7.53E-10	2.15E-10	5.21E-11	1.33E-10	4.36E-10	4.36E-10	3.30E-08	1.04E-09	1.55E-10	4.01E-09	1.26E-09	1.31E-08	8.80E-07	9.42E-07
SL130-2	4.43E-10	1.64E-10	4.69E-11	1.20E-11	1.70E-11	1.70E-11	1.70E-11	7.99E-10	1.82E-11	3.39E-11	1.86E-10	2.37E-10	2.87E-09	0.00E+00	4.84E-09
SL131-2	7.75E-08	2.94E-09	8.41E-10	6.26E-11	3.77E-11	4.80E-11	8.41E-10	2.01E-08	6.01E-10	6.07E-10	3.91E-10	4.25E-09	5.14E-08	0.00E+00	1.66E-07
SL132-2	3.69E-10	1.37E-10	3.91E-11	1.04E-11	1.48E-11	1.48E-11	3.91E-11	6.95E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.05E-09
SL133-2	9.23E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.82E-11	2.82E-11	2.15E-10	1.98E-10	2.39E-09	1.83E-08	2.30E-08
SL134-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL135-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	9.73E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.32E-09
SL136-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	1.95E-08	2.36E-08
SL137-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL138-1	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL139-1	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL140-1	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL141-1	7.75E-09	1.37E-10	7.82E-11	1.02E-11	1.55E-11	5.76E-11	3.91E-11	6.95E-10	8.06E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	1.78E-08
SL142-2	3.69E-10	1.37E-10	3.91E-11	7.82E-11	1.44E-11	1.44E-11	3.91E-11	9.04E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.32E-09
SL143-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL144-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	7.30E-10	1.82E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.08E-09
SL145-2	3.69E-10	1.37E-10	3.91E-11	1.02E-11	1.44E-11	1.44E-11	3.91E-11	6.78E-10	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	4.03E-09
SL146-1	3.88E-10	1.44E-10	4.11E-11	1.07E-11	1.51E-11	1.51E-11	4.11E-11	7.12E-10	1.86E-11	2.90E-11	1.03E-10	6.32E-10	2.51E-09	0.00E+00	4.66E-09
SL147-2	1.11E-08	1.37E-09	4.50E-10	3.13E-10	3.62E-11	3.47E-11	4.50E-10	4.87E-08	1.61E-10	3.25E-10	1.17E-10	3.36E-09	2.75E-08	0.00E+00	9.40E-08
SL149-2	5.17E-10	1.57E-10	4.50E-11	1.04E-10	1.62E-11	1.62E-11	4.50E-11	7.65E-10	3.95E-11	3.25E-11	1.12E-10	2.27E-10	2.75E-09	0.00E+00	4.82E-09
SL150-1	2.47E-09	1.57E-10	4.50E-11	1.15E-11	1.62E-11	3.69E-11	4.50E-11	6.26E-09	6.92E-11	3.25E-11	3.91E-10	2.27E-10	2.75E-09	0.00E+00	1.25E-08
SL151-2	9.23E-09	1.37E-10	3.91E-11	2.19E-11	4.87E-11	4.26E-11	3.91E-11	2.33E-09	6.61E-11	2.82E-11	5.28E-10	1.98E-10	2.39E-09	0.00E+00	1.51E-08
SL152-2	1.37E-09	1.44E-10	4.11E-11	1.10E-11	1.48E-11	1.48E-11	4.11E-11	6.95E-10	2.32E-11	2.96E-11	1.03E-10	2.08E-10	2.51E-09	0.00E+00	5.20E-09
SL153-2	7.75E-06	1.23E-07	3.52E-08	1.20E-08	1.70E-09	2.66E-08	3.52E-08	1.16E-06	7.91E-08	2.54E-08	1.17E-06	1.78E-07	2.15E-06	0.00E+00	1.26E-05
SL153-4	6.28E-09	1.51E-10	4.30E-11	2.24E-11	4.87E-11	1.48E-10	4.30E-11	3.82E-09	5.63E-11	3.11E-11	4.30E-10	2.17E-10	2.63E-09	0.00E+00	1.39E-08
SL154-2	8.49E-09	1.37E-10	3.91E-11	2.93E-11	2.07E-11	1.70E-11	3.91E-11	6.78E-10	1.98E-11	2.82E-11	1.56E-10	1.98E-10	2.39E-09	0.00E+00	1.22E-08
SL155-2	2.47E-08	9.58E-09	2.74E-09	5.06E-10	4.28E-10	4.06E-09	2.74E-09	3.82E-07	9.20E-09	1.98E-09	2.25E-08	1.19E-08	1.67E-07	0.00E+00	6.08E-07
SL156-2	2.62E-09	1.78E-10	5.08E-11	1.30E-11	1.55E-11	4.21E-11	5.08E-11	1.42E-08	1.89E-10	3.67E-11	4.79E-10	2.57E-10	3.11E-09	0.00E+00	2.13E-08
SL157-2	4.62E-10	1.71E-10	4.89E-11	1.28E-11	1.81E-11	1.81E-11	4.89E-11	1.08E-09	1.90E-11	3.53E-11	1.22E-10	2.47E-10	2.99E-09	0.00E+00	5.27E-09
SL158-2	1.33E-09	1.78E-09	5.08E-10	1.41E-10	6.20E-11	5.02E-10	5.08E-10	2.35E-07	1.68E-09	3.67E-10	6.16E-09	5.53E-09	3.11E-08	0.00E+00	2.65E-07
SL159-1	5.54E-05	2.94E-06	1.56E-07	1.04E-07	3.06E-07	1.03E-07	8.41E-07	1.04E-05	3.61E-07	6.07E-07	7.53E-07	4.25E-06	5.14E-05	0.00E+00	1.28E-04
SL160-2	2.14E-09	1.37E-10	3.91E-11	7.82E-11	1.48E-11	1.48E-11	3.91E-11	2.04E-09	4.87E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	2.67E-08	2.68E-08
SL161-2	3.69E-08	3.42E-09	1.04E-09	1.04E-09	1.48E-09	1.48E-09	3.91E-09	9.04E-08	7.07E-10	3.67E-10	9.77E-09	1.98E-08	2.39E-07	0.00E+00	4.12E-07
SL162-4	6.65E-07	3.51E-08	1.00E-07	7.82E-07	3.47E-08	2.07E-08	4.30E-07	8.69E-06	3.57E-08	3.11E-07	1.08E-06	2.17E-06	2.63E-05	2.38E-04	2.80E-04
SL162-6	1.53E-08	5.68E-09	1.62E-09	1.52E-09	7.16E-11	5.91E-10	1.62E-10	1.70E-08	9.12E-11	1.17E-10	4.06E-10	8.21E-10	9.92E-09	0.00E+00	5.37E-08
SL163-2	1.59E-07	4.79E-10	1.37E-10	4.30E-10	1.11E-10	2.29E-10	1.37E-10	3.82E-08	2.52E-09	9.86E-11	3.07E-08	1.38E-09	8.76E-09	0.00E+00	2.41E-07
SL164-2	9.97E-06	4.72E-06	1.95E-06	1.20E-06	2.14E-06	1.03E-07	5.08E-06	3.82E-05	2.62E-07	1.33E-06	1.95E-06	3.95E-07	8.24E-07	0.00E+00	5.19E-05
SL165-2	6.28E-05	1.51E-06	4.30E-07	1.62E-07	1.55E-07	6.79E-07	4.30E-07	1.08E-04	4.06E-06	3.11E-07	8.99E-05	2.17E-06	2.63E-05	0.00E+00	2.97E-04
SL166-2	1.07E-05	9.56E-07	2.74E-07	4.30E-07	3.13E-07	1.40E-05	2.74E-07	5.5nE-05	1.06E-06	1.98E-07	3.13E-06	1.38E-06	1.67E-05	0.00E+00	1.05E-04
SL167-2	3.06E-07	1.51E-09	4.30E-10	3.25E-09	1.59E-10	1.40E-08	4.30E-10	8.69E-08	2.58E-09	3.11E-10	7.14E-09	2.17E-09	2.63E-08	0.00E+00	4.52E-07
SL168-2	5.54E-05	1.57E-07	4.50E-08	1.17E-08	1.66E-08	1.66E-08	4.50E-08	7.82E-07	1.75E-08	3.25E-08	1.12E-07	2.27E-07	2.75E-06	0.00E+00	5.96E-05
SL168-4	4.43E-08	1.37E-10	3.91E-11	1.04E-11	1.48E-11	1.48E-11	3.91E-11	7.65E-09	1.52E-11	2.82E-11	9.77E-11	1.98E-10	2.39E-09	0.00E+00	5.51E-08
SL169-2	2.66E-08	1.51E-10	4.30E-11	2.24E-11	1.55E-11	1.11E-10	4.30E-11	6.69E-09	2.52E-10	3.11E-11	4.50E-10	4.74E-10	2.63E-09	0.00E+00	3.74E-08
SL170-2	2.66E-06	1.44E-08	4.11E-09	3.65E-09	6.42E-09	5.24E-08	4.11E-09	8.34E-06	3.80E-08	2.96E-09	3.13E-07	1.34E-07	2.51E-07	0.00E+00	1.18E-05
SL170-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-08	1.19E-08
SL171-2	1.51E-05	5.82E-08	1.66E-08	4.17E-09	5.91E-09	9.66E-09	1.66E-08	5.21E-06	2.87E-08	3.39E-07	4.89E-07	8.40E-08	1.10E-06	0.00E+00	2.24E-05
SL171-4	1.85E-08	1.51E-10	4.30E-11	5.66E-11	1.62E-11	2.95E-10	4.30E-11	7.99E-08	2.58E-10	1.10E-10	1.95E-09	1.30E-09	2.63E-08	0.00E+00	1.05E-07
SL172-2	1.66E-06	2.87E-08	8.21E-09	5.21E-09	1.26E-08	8.66E-08	8.21E-09	2.71E-06	8.29E-08	1.95E-08	6.66E-07	3.95E-07	5.02E-07	0.00E+00	3.28E-05
SL172-4	7.38E-10	1.64E-10	4.69E-11	1.20E-11	1.70E-11	1.70E-11	4.69E-11	1.91E-09	1.82E-11	3.39E-11	1.17E-10	2.37E-10	2.87E-09	0.00E+00	6.24E-09
SL173-2	4.06E-10	1.51E-10	4.30E-11	1.04E-11	1.55E-11	1.55E-11	4.30E-11	1.01E-09	1.67E-11	3.11E-11	1.08E-10	2.17E-10	2.63E-09	0.00E+00	4.64E-09
SL174-2	4.06E-09	1.51E-09	4.30E-10	4.12E-09	1.55E-10	3.77E-10	4.30E-10	3.16E-08	2.74E-09	5.11E-10	1.08E-09	2.17E-09	2.63E-08	0.00E+00	7.53E-08
SL175-2	2.92E-09	2.74E-10	7.82E-11	4.95E-10	8.12E-11	2.14E-09	7.82E-11	9.38E-09	1.62E-10	5.65E-11	6.94E-10	3.95E-10	4.78E-09	0.00E+00	2.16E-08
SL176-2	4.43E-09	7.53E-10	2.15E-10	5.06E-09	7.75E-11	1.92E-09	2.15E-10	9.04E-09	9.88E-10	1.55E-10	2.15E-09	1.09E-09	1.31E-08	0.00E+00	5.86E-08
SL177-2	3.36E-08	1.44E-10	4.11E-11	1.30E-11	1.48E-11	1.48E-11	4.11E-11	1.95E-09	3.27E-11	2.96E-11	1.03E-10	2.08E-10	2.51E-09	0.00E+00	3.87E-08
SL178-2	5.54E-10	1.51E-10	4.30E-11	1.09E-11	1.55E-11	1.55E-11	4.30E-11	6.26E-09	1.80E-11	3.11E-11	1.37E-10	2.17E-10	2.63E-09	0.00E+00	1.01E-08

Notes:
(1) Risk was calculated based on assumptions in EE/CA developed by Ecology and Environment, Inc (with revised assumption)
(2) If the analyte concentration was below method detection limit, half of the method detection limit was used as the exposure point concentration (EPC)

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL90-7

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	2 0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-11	3.1E-10	1 6E-15	2.8E-14			2.5E-11	4.3E-10	7.4E-10	16.95
Alpha-BHC	1 0E-03	6 3E+00	6.3E+00	6 3E+00	1	0 10		9 0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.14
Beta-BHC	1 0E-03	1 8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8 2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
4,4-DDD	2 0E-03	2.4E-01	2.4E-01	NI	1	0 10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6 0E-12	1.0E-11	0.23
4,4-DDE	2 0E-03	3.4E-01	3 4E-01	NI	1	0.10		1.8E-11	6 0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.33
4,4-DDT		3.4E-01	3.4E-01	3 4E-01	1	0.10											
Delta-BHC	1 0E-03	1.8E+00	1.8E+00	1 8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
Dieldrin	2.0E-03	1.6E+01	1 6E+01	1.6E+01	1	0.10		1 8E-11	2 8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	15.56
Chlordane	2.0E-03	3.5E-01	3.5E-01	3 5E-01	1	0.10		1 8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.35
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin		NI	NI	NI	1	0 10											
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0 10		1.8E-11		1 6E-15				2.5E-11			
Gamma-BHC (Lindane)		1.3E+00	1.3E+00	NI	1	0.10											
Heptachlor	1 0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9 0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.24
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9 0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.54
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	54.85
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.8E-09		1.6E-13				2 6E-09	4.4E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL91-6

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.36
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL92-7

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.5E-12	1.6E-10	8.7E-16	1.5E-14			1.3E-11	2.3E-10	3.9E-10	9.20
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	3.41
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.3E-12	1.6E-15				2.5E-11	6.1E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.35
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.35
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.9E-10	1.6E-15	2.6E-14			2.5E-11	4.1E-10	7.0E-10	16.50
Chlordane	2.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.9E-11	6.6E-12	1.7E-15	6.1E-16			2.7E-11	9.3E-12	1.6E-11	0.38
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.70
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	2.44
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	4.93
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	59.55
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.6E-13				2.5E-09	4.2E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL93-2

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	5.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.3E-11	9.0E-10	4.9E-15	8.3E-14			7.5E-11	1.3E-09	2.2E-09	10.73
Alpha-BHC	3.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.9E-11	1.8E-10	2.6E-15	1.7E-14			4.1E-11	2.6E-10	4.4E-10	2.16
Beta-BHC	3.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.9E-11	5.2E-11	2.6E-15	4.7E-15			4.1E-11	7.3E-11	1.3E-10	0.62
4,4-DDD	6.0E-03	2.4E-01	2.4E-01	NI	1	0.10		5.4E-11	1.3E-11	4.9E-15				7.6E-11	1.8E-11	3.1E-11	0.15
4,4-DDE	6.0E-03	3.4E-01	3.4E-01	NI	1	0.10		5.4E-11	1.8E-11	4.9E-15				7.6E-11	2.6E-11	4.4E-11	0.22
4,4-DDT	2.5E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.3E-11	7.7E-12	2.1E-15	7.0E-16			3.2E-11	1.1E-11	1.8E-11	0.09
Delta-BHC	3.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.9E-11	5.2E-11	2.6E-15	4.7E-15			4.1E-11	7.3E-11	1.3E-10	0.62
Dieldrin	1.0E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.0E-11	1.4E-09	8.2E-15	1.3E-13			1.3E-10	2.0E-09	3.5E-09	17.11
Chlordane	4.3E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.8E-10	1.3E-10	3.5E-14	1.2E-14			5.4E-10	1.9E-10	3.2E-10	1.59
Endosulfan I	3.2E-03	NI	NI	NI	1	0.10		2.9E-11		2.6E-15				4.1E-11			
Endosulfan II	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endosulfan sulfate	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endrin	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endrin aldehyde	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endrin ketone	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Gamma-BHC (Lindane)	3.2E-03	1.3E+00	1.3E+00	NI	1	0.10		2.9E-11	3.7E-11	2.6E-15				4.1E-11	5.3E-11	9.0E-11	0.44
Heptachlor	5.3E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.8E-10	2.1E-09	4.4E-14	2.0E-13			6.7E-10	3.0E-09	5.2E-09	25.51
Heptachlor epoxide	3.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.9E-11	2.6E-10	2.6E-15	2.4E-14			4.1E-11	3.7E-10	6.3E-10	3.11
Methoxychlor	3.2E-02	NI	NI	NI	1	0.10		2.9E-10		2.6E-14				4.1E-10			
Toxaphene	3.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.9E-09	3.2E-09	2.6E-13	2.9E-13			4.1E-09	4.5E-09	7.6E-09	37.65
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									8.4E-09		7.7E-13				1.2E-08	2.0E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL94-1

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	2.1E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.9E-08	3.2E-07	1.7E-12	2.9E-11			2.7E-08	4.5E-07	7.8E-07	68.19
Alpha-BHC	1.2E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-09	6.5E-09	9.5E-14	6.0E-13			1.5E-09	9.2E-09	1.6E-08	1.38
Beta-BHC	1.2E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-09	1.9E-09	9.5E-14	1.7E-13			1.5E-09	2.6E-09	4.5E-09	0.40
4,4-DDD	2.2E-01	2.4E-01	2.4E-01	NI	1	0.10		2.0E-09	4.8E-10	1.8E-13				2.8E-09	6.7E-10	1.1E-09	0.10
4,4-DDE	2.2E-01	3.4E-01	3.4E-01	NI	1	0.10		2.0E-09	6.7E-10	1.8E-13				2.8E-09	9.5E-10	1.6E-09	0.14
4,4-DDT	2.2E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-09	6.7E-10	1.8E-13	6.2E-14			2.8E-09	9.5E-10	1.6E-09	0.14
Delta-BHC	1.2E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-09	1.9E-09	9.5E-14	1.7E-13			1.5E-09	2.6E-09	4.5E-09	0.40
Dieldrin	8.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.7E-10	1.2E-08	7.0E-14	1.1E-12			1.1E-09	1.7E-08	3.0E-08	2.60
Chlordane	3.8E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.4E-10	1.2E-10	3.1E-14	1.1E-14			4.8E-10	1.7E-10	2.9E-10	0.03
Endosulfan I	1.2E-01	NI	NI	NI	1	0.10		1.0E-09		9.5E-14				1.5E-09			
Endosulfan II	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Endosulfan sulfate	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin aldehyde	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin ketone	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Gamma-BHC (Lindane)	1.2E-01	1.3E+00	1.3E+00	NI	1	0.10		1.0E-09	1.3E-09	9.5E-14				1.5E-09	1.9E-09	3.2E-09	0.29
Heptachlor	2.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.9E-10	8.5E-10	1.7E-14	8.0E-14			2.7E-10	1.2E-09	2.1E-09	0.18
Heptachlor epoxide	1.2E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-09	9.4E-09	9.5E-14	8.6E-13			1.5E-09	1.3E-08	2.3E-08	2.00
Methoxychlor	1.2E+00	NI	NI	NI	1	0.10		1.0E-08		9.5E-13				1.5E-08			
Toxaphene	1.2E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-07	1.1E-07	9.5E-12	1.0E-11			1.5E-07	1.6E-07	2.7E-07	24.16
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									4.7E-07		4.3E-11				6.7E-07	1.1E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL95-8

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, f/(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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.0E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.7E-09	4.6E-08	2.5E-13	4.2E-12			3.8E-09	6.5E-08	1.1E-07	72.49
Alpha-BHC	3.9E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.5E-11	2.2E-10	3.2E-15	2.0E-14			5.0E-11	3.1E-10	5.3E-10	0.35
Beta-BHC	3.9E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.5E-11	6.3E-11	3.2E-15	5.8E-15			5.0E-11	8.9E-11	1.5E-10	0.10
4,4-DDD	1.2E-02	2.4E-01	2.4E-01	NI	1	0.10		1.1E-10	2.6E-11	9.9E-15				1.5E-10	3.7E-11	6.3E-11	0.04
4,4-DDE	7.0E-03	3.4E-01	3.4E-01	NI	1	0.10		6.3E-11	2.1E-11	5.8E-15				8.9E-11	3.0E-11	5.2E-11	0.03
4,4-DDT	2.7E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.4E-10	8.3E-11	2.2E-14	7.6E-15			3.4E-10	1.2E-10	2.0E-10	0.13
Delta-BHC	3.9E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.5E-11	6.3E-11	3.2E-15	5.8E-15			5.0E-11	8.9E-11	1.5E-10	0.10
Dieldrin	7.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.4E-10	1.0E-08	5.9E-14	9.4E-13			9.0E-10	1.4E-08	2.5E-08	16.15
Chlordane	5.0E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.5E-10	1.6E-10	4.2E-14	1.5E-14			6.4E-10	2.2E-10	3.8E-10	0.25
Endosulfan I	3.9E-03	NI	NI	NI	1	0.10		3.5E-11		3.2E-15				5.0E-11			
Endosulfan II	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endosulfan sulfate	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin aldehyde	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin ketone	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Gamma-BHC (Lindane)	3.9E-03	1.3E+00	1.3E+00	NI	1	0.10		3.5E-11	4.6E-11	3.2E-15				5.0E-11	6.4E-11	1.1E-10	0.07
Heptachlor	6.3E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		5.7E-10	2.6E-09	5.2E-14	2.4E-13			8.0E-10	3.6E-09	6.2E-09	4.03
Heptachlor epoxide	3.7E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.3E-11	3.0E-10	3.0E-15	2.8E-14			4.7E-11	4.3E-10	7.3E-10	0.48
Methoxychlor	3.7E-02	NI	NI	NI	1	0.10		3.3E-10		3.0E-14				4.7E-10			
Toxaphene	3.7E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.3E-09	3.7E-09	3.0E-13	3.4E-13			4.7E-09	5.2E-09	8.8E-09	5.78
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									6.3E-08		5.8E-12				8.9E-08	1.5E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL96-6

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)	m (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	2.8E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.5E-08	4.3E-07	2.3E-12	3.9E-11			3.6E-08	6.1E-07	1.0E-06	76.85
Alpha-BHC	1.0E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-10	5.7E-09	8.2E-14	5.2E-13			1.3E-09	8.0E-09	1.4E-08	1.02
Beta-BHC	1.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-10	1.6E-09	8.2E-14	1.5E-13			1.3E-09	2.3E-09	3.9E-09	0.29
4,4-DDD	1.9E-01	2.4E-01	2.4E-01	NI	1	0.10		1.7E-09	4.1E-10	1.6E-13				2.4E-09	5.8E-10	9.9E-10	0.07
4,4-DDE	1.9E-01	3.4E-01	3.4E-01	NI	1	0.10		1.7E-09	5.8E-10	1.6E-13				2.4E-09	8.2E-10	1.4E-09	0.10
4,4-DDT	4.5E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.1E-10	1.4E-10	3.7E-14	1.3E-14			5.7E-10	1.9E-10	3.3E-10	0.02
Delta-BHC	1.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-10	1.6E-09	8.2E-14	1.5E-13			1.3E-09	2.3E-09	3.9E-09	0.29
Dieldrin	3.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.9E-10	4.6E-09	2.6E-14	4.2E-13			4.1E-10	6.5E-09	1.1E-08	0.83
Chlordane	4.4E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.0E-10	1.4E-10	3.6E-14	1.3E-14			5.6E-10	2.0E-10	3.3E-10	0.02
Endosulfan I	1.0E-01	NI	NI	NI	1	0.10		9.0E-10		8.2E-14				1.3E-09			
Endosulfan II	1.9E-01	NI	NI	NI	1	0.10		1.7E-09		1.6E-13				2.4E-09			
Endosulfan sulfate	1.9E-01	NI	NI	NI	1	0.10		1.7E-09		1.6E-13				2.4E-09			
Endrin	1.9E-01	NI	NI	NI	1	0.10		1.7E-09		1.6E-13				2.4E-09			
Endrin aldehyde	1.9E-01	NI	NI	NI	1	0.10		1.7E-09		1.6E-13				2.4E-09			
Endrin ketone	1.9E-01	NI	NI	NI	1	0.10		1.7E-09		1.6E-13				2.4E-09			
Gamma-BHC (Lindane)	1.5E-02	1.3E+00	1.3E+00	NI	1	0.10		1.4E-10	1.8E-10	1.2E-14				1.9E-10	2.5E-10	4.2E-10	0.03
Heptachlor	1.7E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.5E-09	6.9E-09	1.4E-13	6.4E-13			2.2E-09	9.7E-09	1.7E-08	1.24
Heptachlor epoxide	1.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-10	8.2E-09	8.2E-14	7.5E-13			1.3E-09	1.2E-08	2.0E-08	1.47
Methoxychlor	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Toxaphene	1.0E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-08	9.9E-08	8.2E-12	9.1E-12			1.3E-07	1.4E-07	2.4E-07	17.76
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.6E-07		5.1E-11				7.9E-07	1.3E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL97-6

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	5.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.5E-11	7.7E-10	4.1E-15	7.0E-14			6.4E-11	1.1E-09	1.8E-09	23.53
Alpha-BHC	1.0E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-11	5.7E-10	8.2E-15	5.2E-14			1.3E-10	8.0E-10	1.4E-09	17.44
Beta-BHC	1.0E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-11	1.6E-10	8.2E-15	1.5E-14			1.3E-10	2.3E-10	3.9E-10	4.98
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.13
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.18
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.18
Delta-BHC	1.0E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-11	1.6E-10	8.2E-15	1.5E-14			1.3E-10	2.3E-10	3.9E-10	4.98
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	8.64
Chlordane	2.2E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.0E-10	6.8E-11	1.8E-14	6.3E-15			2.8E-10	9.7E-11	1.6E-10	2.10
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-02	1.3E+00	1.3E+00	NI	1	0.10		9.0E-11	1.2E-10	8.2E-15				1.3E-10	1.7E-10	2.8E-10	3.60
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	1.25
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	2.52
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	30.45
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									3.3E-09		2.9E-13				4.6E-09	7.8E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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, FtIG (unitless)	1
Fraction Inhaled, FtIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL98-1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	2.5E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.3E-11	3.8E-10	2.1E-15	3.5E-14			3.2E-11	5.4E-10	9.2E-10	18.50
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	3.02
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.86
4,4-DDD	2.2E-03	2.4E-01	2.4E-01	NI	1	0.10		2.0E-11	4.8E-12	1.8E-15				2.8E-11	6.7E-12	1.1E-11	0.23
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.33
4,4-DDT	2.2E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-11	6.7E-12	1.8E-15	6.2E-16			2.8E-11	9.5E-12	1.6E-11	0.33
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.86
Dieldrin	2.2E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.0E-11	3.2E-10	1.8E-15	2.9E-14			2.8E-11	4.5E-10	7.6E-10	15.33
Chlordane	2.2E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.0E-11	6.9E-12	1.8E-15	6.3E-16			2.8E-11	9.8E-12	1.7E-11	0.34
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.62
Heptachlor	1.3E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.2E-11	5.3E-11	1.1E-15	4.9E-15			1.7E-11	7.4E-11	1.3E-10	2.55
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-12	9.0E-11	9.1E-16	8.2E-15			1.4E-11	1.3E-10	2.2E-10	4.36
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	52.68
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.1E-09		1.9E-13				2.9E-09	5.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL100-3

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	2.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.6E-11	4.4E-10	2.4E-15	4.1E-14			3.7E-11	6.3E-10	1.1E-09	21.75
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	2.92
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.83
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.4E-12	1.7E-15				2.6E-11	6.3E-12	1.1E-11	0.22
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.3E-12	1.7E-15				2.6E-11	8.9E-12	1.5E-11	0.31
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.3E-12	1.7E-15	5.7E-16			2.6E-11	8.9E-12	1.5E-11	0.31
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.83
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	3.0E-10	1.7E-15	2.7E-14			2.6E-11	4.2E-10	7.1E-10	14.47
Chlordane	2.8E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.5E-11	8.7E-12	2.3E-15	7.9E-16			3.5E-11	1.2E-11	2.1E-11	0.42
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.60
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-12	4.5E-11	9.1E-16	4.2E-15			1.4E-11	6.3E-11	1.1E-10	2.18
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	4.21
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	50.95
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.0E-09		1.8E-13				2.9E-09	4.9E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL101-7

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	4.1E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.7E-08	6.3E-07	3.4E-12	5.7E-11			5.2E-08	8.9E-07	1.5E-06	43.25
Alpha-BHC	4.7E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		4.2E-09	2.6E-08	3.8E-13	2.4E-12			5.9E-09	3.7E-08	6.4E-08	1.82
Beta-BHC	1.1E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-09	1.8E-08	9.1E-13	1.6E-12			1.4E-08	2.5E-08	4.3E-08	1.23
4,4-DDD	2.0E+00	2.4E-01	2.4E-01	NI	1	0.10		1.8E-08	4.3E-09	1.6E-12				2.5E-08	6.1E-09	1.0E-08	0.30
4,4-DDE	7.9E-01	3.4E-01	3.4E-01	NI	1	0.10		7.1E-09	2.4E-09	6.5E-13				1.0E-08	3.4E-09	5.8E-09	0.17
4,4-DDT	6.1E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.5E-08	1.9E-08	5.0E-12	1.7E-12			7.8E-08	2.6E-08	4.5E-08	1.29
Delta-BHC	4.7E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.2E-09	7.5E-09	3.8E-13	6.9E-13			5.9E-09	1.1E-08	1.8E-08	0.52
Dieldrin	1.7E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.5E-08	2.4E-07	1.4E-12	2.2E-11			2.2E-08	3.5E-07	5.9E-07	16.88
Chlordane	2.4E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-08	7.7E-09	2.0E-12	7.0E-13			3.1E-08	1.1E-08	1.8E-08	0.53
Endosulfan I	4.7E-01	NI	NI	NI	1	0.10		4.2E-09		3.8E-13				5.9E-09			
Endosulfan II	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Endosulfan sulfate	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Endrin	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Endrin aldehyde	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Endrin ketone	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Gamma-BHC (Lindane)	4.7E-01	1.3E+00	1.3E+00	NI	1	0.10		4.2E-09	5.4E-09	3.8E-13				5.9E-09	7.7E-09	1.3E-08	0.38
Heptachlor	5.2E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.7E-09	2.1E-08	4.3E-13	2.0E-12			6.6E-09	3.0E-08	5.1E-08	1.45
Heptachlor epoxide	8.2E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.4E-10	6.7E-09	6.8E-14	6.1E-13			1.0E-09	9.5E-09	1.6E-08	0.46
Methoxychlor	4.7E+00	NI	NI	NI	1	0.10		4.2E-08		3.8E-12				5.9E-08			
Toxaphene	4.7E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.2E-07	4.6E-07	3.8E-11	4.2E-11			5.9E-07	6.5E-07	1.1E-06	31.74
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.5E-07		1.3E-10				2.0E-06	3.5E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL102-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	6.2E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.6E-08	9.5E-07	5.1E-12	8.7E-11			7.9E-08	1.3E-06	2.3E-06	38.18
Alpha-BHC	5.1E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		4.5E-09	2.9E-08	4.2E-13	2.6E-12			6.4E-09	4.0E-08	6.9E-08	1.15
Beta-BHC	5.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.5E-09	8.2E-09	4.2E-13	7.5E-13			6.4E-09	1.2E-08	2.0E-08	0.33
4,4-DDD	3.3E-01	2.4E-01	2.4E-01	NI	1	0.10		3.0E-09	7.1E-10	2.7E-13				4.2E-09	1.0E-09	1.7E-09	0.03
4,4-DDE	2.2E-01	3.4E-01	3.4E-01	NI	1	0.10		2.0E-09	6.7E-10	1.8E-13				2.8E-09	9.5E-10	1.6E-09	0.03
4,4-DDT	1.1E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		9.9E-09	3.4E-09	9.1E-13	3.1E-13			1.4E-08	4.8E-09	8.1E-09	0.14
Delta-BHC	5.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.5E-09	8.2E-09	4.2E-13	7.5E-13			6.4E-09	1.2E-08	2.0E-08	0.33
Dieldrin	8.3E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.5E-08	1.2E-06	6.8E-12	1.1E-10			1.1E-07	1.7E-06	2.9E-06	48.11
Chlordane	4.4E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.0E-08	1.4E-08	3.6E-12	1.3E-12			5.6E-08	2.0E-08	3.3E-08	0.56
Endosulfan I	5.1E-01	NI	NI	NI	1	0.10		4.5E-09		4.2E-13				6.4E-09			
Endosulfan II	2.9E-01	NI	NI	NI	1	0.10		2.6E-09		2.4E-13				3.7E-09			
Endosulfan sulfate	1.1E-01	NI	NI	NI	1	0.10		9.9E-10		9.1E-14				1.4E-09			
Endrin	1.7E-01	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.2E-09			
Endrin aldehyde	1.1E-01	NI	NI	NI	1	0.10		9.9E-10		9.1E-14				1.4E-09			
Endrin ketone	2.9E-01	NI	NI	NI	1	0.10		2.6E-09		2.4E-13				3.7E-09			
Gamma-BHC (Lindane)	4.4E+00	1.3E+00	1.3E+00	NI	1	0.10		4.0E-08	5.1E-08	3.6E-12				5.6E-08	7.3E-08	1.2E-07	2.07
Heptachlor	3.9E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.5E-08	1.6E-07	3.2E-12	1.5E-11			5.0E-08	2.2E-07	3.8E-07	6.36
Heptachlor epoxide	1.6E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.4E-09	1.3E-08	1.3E-13	1.2E-12			2.0E-09	1.9E-08	3.2E-08	0.53
Methoxychlor	5.5E-01	NI	NI	NI	1	0.10		5.0E-09		4.5E-13				7.0E-09			
Toxaphene	5.5E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-08	5.4E-08	4.5E-12	5.0E-12			7.0E-08	7.7E-08	1.3E-07	2.19
DIOXIN																	
2,3,7,8-TCDD No sample collected		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									2.5E-06		2.2E-10				3.5E-06	6.0E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL102-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	2.7E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.4E-09	4.1E-08	2.2E-13	3.8E-12			3.4E-09	5.8E-08	1.0E-07	2.46
Alpha-BHC	5.5E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		5.0E-09	3.1E-08	4.5E-13	2.9E-12			7.0E-09	4.4E-08	7.5E-08	1.86
Beta-BHC	5.5E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-09	8.9E-09	4.5E-13	8.2E-13			7.0E-09	1.3E-08	2.2E-08	0.53
4,4-DDD	1.0E+00	2.4E-01	2.4E-01	NI	1	0.10		9.0E-09	2.2E-09	8.2E-13				1.3E-08	3.1E-09	5.2E-09	0.13
4,4-DDE	1.0E+00	3.4E-01	3.4E-01	NI	1	0.10		9.0E-09	3.1E-09	8.2E-13				1.3E-08	4.3E-09	7.4E-09	0.18
4,4-DDT	1.4E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.3E-09	4.3E-10	1.2E-13	3.9E-14			1.8E-09	6.1E-10	1.0E-09	0.03
Delta-BHC	5.5E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-09	8.9E-09	4.5E-13	8.2E-13			7.0E-09	1.3E-08	2.2E-08	0.53
Dieldrin	6.9E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.2E-08	9.9E-07	5.7E-12	9.1E-11			8.8E-08	1.4E-06	2.4E-06	59.27
Chlordane	7.7E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		6.9E-09	2.4E-09	6.3E-13	2.2E-13			9.8E-09	3.4E-09	5.9E-09	0.14
Endosulfan I	5.5E-01	NI	NI	NI	1	0.10		5.0E-09		4.5E-13				7.0E-09			
Endosulfan II	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Endosulfan sulfate	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Endrin	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Endrin aldehyde	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Endrin ketone	3.6E-01	NI	NI	NI	1	0.10		3.2E-09		3.0E-13				4.6E-09			
Gamma-BHC (Lindane)	5.5E-01	1.3E+00	1.3E+00	NI	1	0.10		5.0E-09	6.4E-09	4.5E-13				7.0E-09	9.1E-09	1.6E-08	0.38
Heptachlor	3.0E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.7E-09	1.2E-08	2.5E-13	1.1E-12			3.8E-09	1.7E-08	2.9E-08	0.72
Heptachlor epoxide	2.6E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.3E-09	2.1E-08	2.1E-13	1.9E-12			3.3E-09	3.0E-08	5.1E-08	1.27
Methoxychlor	5.5E+00	NI	NI	NI	1	0.10		5.0E-08		4.5E-12				7.0E-08			
Toxaphene	5.5E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-07	5.4E-07	4.5E-11	5.0E-11			7.0E-07	7.7E-07	1.3E-06	32.48
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-06		1.5E-10				2.4E-06	4.0E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL103-2

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	7.6E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.8E-08	1.2E-06	6.3E-12	1.1E-10			9.7E-08	1.6E-06	2.8E-06	17.22
Alpha-BHC	1.9E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.7E-08	1.1E-07	1.6E-12	9.9E-12			2.4E-08	1.5E-07	2.6E-07	1.60
Beta-BHC	1.9E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.7E-08	3.1E-08	1.6E-12	2.8E-12			2.4E-08	4.3E-08	7.4E-08	0.46
4,4-DDD	8.4E-01	2.4E-01	2.4E-01	NI	1	0.10		7.6E-09	1.8E-09	6.9E-13				1.1E-08	2.6E-09	4.4E-09	0.03
4,4-DDE	7.0E-01	3.4E-01	3.4E-01	NI	1	0.10		6.3E-09	2.1E-09	5.8E-13				8.9E-09	3.0E-09	5.2E-09	0.03
4,4-DDT	5.3E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.8E-08	1.6E-08	4.4E-12	1.5E-12			6.7E-08	2.3E-08	3.9E-08	0.24
Delta-BHC	1.9E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.7E-08	3.1E-08	1.6E-12	2.8E-12			2.4E-08	4.3E-08	7.4E-08	0.46
Dieldrin	2.3E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-07	3.3E-06	1.9E-11	3.0E-10			2.9E-07	4.7E-06	8.0E-06	49.05
Chlordane	7.8E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.0E-08	2.5E-08	6.4E-12	2.2E-12			9.9E-08	3.5E-08	5.9E-08	0.36
Endosulfan I	1.9E+00	NI	NI	NI	1	0.10		1.7E-08		1.6E-12				2.4E-08			
Endosulfan II	4.9E-01	NI	NI	NI	1	0.10		4.4E-09		4.0E-13				6.2E-09			
Endosulfan sulfate	3.8E+00	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
Endrin	3.8E+00	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
Endrin aldehyde	3.8E+00	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
Endrin ketone	7.8E-01	NI	NI	NI	1	0.10		7.0E-09		6.4E-13				9.9E-09			
Gamma-BHC (Lindane)	2.5E-01	1.3E+00	1.3E+00	NI	1	0.10		2.3E-09	2.9E-09	2.1E-13				3.2E-09	4.1E-09	7.1E-09	0.04
Heptachlor	3.7E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.3E-08	1.5E-07	3.0E-12	1.4E-11			4.7E-08	2.1E-07	3.6E-07	2.22
Heptachlor epoxide	3.7E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.3E-09	3.0E-08	3.0E-13	2.8E-12			4.7E-09	4.3E-08	7.3E-08	0.45
Methoxychlor	1.9E+01	NI	NI	NI	1	0.10		1.7E-07		1.6E-11				2.4E-07			
Toxaphene	*1.9E+02*	*1.1E+00*	*1.1E+00*	*1.1E+00*	*1*	*0.10*		*1.7E-06*	*1.9E-06*	*1.6E-10*	*1.7E-10*			*2.4E-06*	*2.7E-06*	*4.5E-06*	*27.85*
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									6.8E-06		6.2E-10				9.5E-06	1.6E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL103-4

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	6.3E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.7E-08	9.6E-07	5.2E-12	8.8E-11			8.0E-08	1.4E-06	2.3E-06	8.25
Alpha-BHC	2.3E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.0E-08	1.3E-07	1.9E-12	1.2E-11			2.9E-08	1.8E-07	3.1E-07	1.09
Beta-BHC	2.3E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-08	3.6E-08	1.9E-12	3.3E-12			2.9E-08	5.2E-08	8.8E-08	0.31
4,4-DDD	4.4E+00	2.4E-01	2.4E-01	NI	1	0.10		4.0E-08	9.5E-09	3.6E-12				5.6E-08	1.3E-08	2.3E-08	0.08
4,4-DDE	4.4E+00	3.4E-01	3.4E-01	NI	1	0.10		4.0E-08	1.3E-08	3.6E-12				5.6E-08	1.9E-08	3.2E-08	0.12
4,4-DDT	9.3E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		8.4E-08	2.8E-08	7.7E-12	2.6E-12			1.2E-07	4.0E-08	6.9E-08	0.24
Delta-BHC	2.3E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-08	3.6E-08	1.9E-12	3.3E-12			2.9E-08	5.2E-08	8.8E-08	0.31
Dieldrin	5.3E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.8E-07	7.6E-06	4.4E-11	7.0E-10			6.7E-07	1.1E-05	1.8E-05	65.32
Chlordane	6.8E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		6.1E-08	2.1E-08	5.6E-12	1.9E-12			8.6E-08	3.0E-08	5.1E-08	0.18
Endosulfan I	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Endosulfan II	4.4E+00	NI	NI	NI	1	0.10		4.0E-08		3.6E-12				5.6E-08			
Endosulfan sulfate	4.4E+00	NI	NI	NI	1	0.10		4.0E-08		3.6E-12				5.6E-08			
Endrin	4.4E+00	NI	NI	NI	1	0.10		4.0E-08		3.6E-12				5.6E-08			
Endrin aldehyde	4.4E+00	NI	NI	NI	1	0.10		4.0E-08		3.6E-12				5.6E-08			
Endrin ketone	4.4E+00	NI	NI	NI	1	0.10		4.0E-08		3.6E-12				5.6E-08			
Gamma-BHC (Lindane)	2.3E+00	1.3E+00	1.3E+00	NI	1	0.10		2.0E-08	2.6E-08	1.9E-12				2.9E-08	3.7E-08	6.4E-08	0.23
Heptachlor	9.3E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.4E-08	3.8E-07	7.7E-12	3.5E-11			1.2E-07	5.3E-07	9.1E-07	3.22
Heptachlor epoxide	2.3E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.0E-08	1.8E-07	1.9E-12	1.7E-11			2.9E-08	2.6E-07	4.4E-07	1.58
Methoxychlor	2.3E+01	NI	NI	NI	1	0.10		2.0E-07		1.9E-11				2.9E-07			
Toxaphene	2.3E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.0E-06	2.2E-06	1.9E-10	2.0E-10			2.9E-06	3.1E-06	5.4E-06	19.06
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.2E-05		1.1E-09				1.7E-05	2.8E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL104-2

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 (ABS)	Derm (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	4.3E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.9E-08	6.6E-07	3.5E-12	6.0E-11			5.5E-08	9.3E-07	1.6E-06	9.20
Alpha-BHC	2.2E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.0E-08	1.2E-07	1.8E-12	1.1E-11			2.8E-08	1.8E-07	3.0E-07	1.74
Beta-BHC	2.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-08	3.6E-08	1.8E-12	3.3E-12			2.8E-08	5.0E-08	8.6E-08	0.50
4,4-DDD	4.3E+00	2.4E-01	2.4E-01	NI	1	0.10		3.9E-08	9.3E-09	3.5E-12				5.5E-08	1.3E-08	2.2E-08	0.13
4,4-DDE	4.6E-01	3.4E-01	3.4E-01	NI	1	0.10		4.1E-09	1.4E-09	3.8E-13				5.9E-09	2.0E-09	3.4E-09	0.02
4,4-DDT	2.7E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.4E-08	8.3E-09	2.2E-12	7.6E-13			3.4E-08	1.2E-08	2.0E-08	0.12
Delta-BHC	2.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-08	3.6E-08	1.8E-12	3.3E-12			2.8E-08	5.0E-08	8.6E-08	0.50
Dieldrin	2.6E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-07	3.7E-06	2.1E-11	3.4E-10			3.3E-07	5.3E-06	9.0E-06	52.35
Chlordane	4.8E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.3E-08	1.5E-08	4.0E-12	1.4E-12			6.1E-08	2.1E-08	3.6E-08	0.21
Endosulfan I	2.2E+00	NI	NI	NI	1	0.10		2.0E-08		1.8E-12				2.8E-08			
Endosulfan II	4.3E+00	NI	NI	NI	1	0.10		3.9E-08		3.5E-12				5.5E-08			
Endosulfan sulfate	4.3E+00	NI	NI	NI	1	0.10		3.9E-08		3.5E-12				5.5E-08			
Endrin	4.3E+00	NI	NI	NI	1	0.10		3.9E-08		3.5E-12				5.5E-08			
Endrin aldehyde	4.3E+00	NI	NI	NI	1	0.10		3.9E-08		3.5E-12				5.5E-08			
Endrin ketone	1.4E+00	NI	NI	NI	1	0.10		1.3E-08		1.2E-12				1.8E-08			
Gamma-BHC (Lindane)	2.2E+00	1.3E+00	1.3E+00	NI	1	0.10		2.0E-08	2.6E-08	1.8E-12				2.8E-08	3.6E-08	6.2E-08	0.36
Heptachlor	3.6E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.2E-08	1.5E-07	3.0E-12	1.4E-11			4.6E-08	2.1E-07	3.5E-07	2.04
Heptachlor epoxide	1.8E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.6E-08	1.5E-07	1.5E-12	1.3E-11			2.3E-08	2.1E-07	3.6E-07	2.06
Methoxychlor	2.2E+01	NI	NI	NI	1	0.10		2.0E-07		1.8E-11				2.8E-07			
Toxaphene	2.2E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.0E-06	2.2E-06	1.8E-10	2.0E-10			2.8E-06	3.1E-06	5.3E-06	30.45
DIOXIN																	
2,3,7,8-TCDD	1.7E-05	1.5E+05	1.5E+05	1.5E+05	1	0.10		1.6E-13	2.3E-08	1.4E-17	2.2E-12			2.2E-13	3.3E-08	5.7E-08	0.33
Total Cancer Risk									7.2E-06		6.5E-10				1.0E-05	1.7E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL104-4

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 (AB	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		1.2E-09	2.0E-08	1.1E-13	1.8E-12			1.7E-09	2.8E-08	4.8E-08	29.48
Alpha-BHC	1.7E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.5E-11	9.4E-11	1.4E-15	8.6E-15			2.1E-11	1.3E-10	2.3E-10	0.14
Beta-BHC	1.7E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.5E-11	2.7E-11	1.4E-15	2.4E-15			2.1E-11	3.8E-11	6.5E-11	0.04
4,4-DDD	9.3E-03	2.4E-01	2.4E-01	NI	1	0.10		8.4E-11	2.0E-11	7.7E-15				1.2E-10	2.8E-11	4.8E-11	0.03
4,4-DDE	3.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.9E-11	9.8E-12	2.6E-15				4.1E-11	1.4E-11	2.4E-11	0.01
4,4-DDT	4.7E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.2E-11	1.4E-11	3.9E-15	1.3E-15			6.0E-11	2.0E-11	3.5E-11	0.02
Delta-BHC	1.7E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.5E-11	2.7E-11	1.4E-15	2.4E-15			2.1E-11	3.8E-11	6.5E-11	0.04
Dieldrin	3.1E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.8E-09	4.5E-08	2.6E-13	4.1E-12			3.9E-09	6.3E-08	1.1E-07	66.16
Chlordane	1.2E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.1E-09	3.7E-10	9.7E-14	3.4E-14			1.5E-09	5.3E-10	9.0E-10	0.55
Endosulfan I	1.7E-03	NI	NI	NI	1	0.10		1.5E-11		1.4E-15				2.1E-11			
Endosulfan II	4.7E-03	NI	NI	NI	1	0.10		4.2E-11		3.9E-15				6.0E-11			
Endosulfan sulfate	3.2E-03	NI	NI	NI	1	0.10		2.9E-11		2.6E-15				4.1E-11			
Endrin	3.2E-03	NI	NI	NI	1	0.10		2.9E-11		2.6E-15				4.1E-11			
Endrin aldehyde	3.2E-03	NI	NI	NI	1	0.10		2.9E-11		2.6E-15				4.1E-11			
Endrin ketone	1.6E-02	NI	NI	NI	1	0.10		1.4E-10		1.3E-14				2.0E-10			
Gamma-BHC (Lindane)	1.7E-03	1.3E+00	1.3E+00	NI	1	0.10		1.5E-11	1.9E-11	1.4E-15				2.1E-11	2.7E-11	4.7E-11	0.03
Heptachlor	1.7E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.5E-11	6.7E-11	1.4E-15	6.3E-15			2.1E-11	9.4E-11	1.6E-10	0.10
Heptachlor epoxide	8.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.2E-11	6.6E-10	6.6E-15	6.0E-14			1.0E-10	9.3E-10	1.6E-09	0.97
Methoxychlor	1.7E-02	NI	NI	NI	1	0.10		1.5E-10		1.4E-14				2.1E-10			
Toxaphene	1.7E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.5E-09	1.6E-09	1.4E-13	1.5E-13			2.1E-09	2.3E-09	3.9E-09	2.42
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No Sample Collected																	
Total Cancer Risk									6.7E-08		6.2E-12				9.5E-08	1.6E-07	100

ASSUMPTIONS

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL105-2

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	6.7E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.0E-08	1.0E-06	5.5E-12	9.4E-11			8.5E-08	1.4E-06	2.5E-06	0.24
Alpha-BHC	1.1E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-09	6.2E-08	9.1E-13	5.7E-12			1.4E-08	8.8E-08	1.5E-07	0.01
Beta-BHC	1.1E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-09	1.8E-08	9.1E-13	1.6E-12			1.4E-08	2.5E-08	4.3E-08	0.00
4,4-DDD	6.5E+00	2.4E-01	2.4E-01	NI	1	0.10		5.9E-08	1.4E-08	5.4E-12				8.3E-08	2.0E-08	3.4E-08	0.00
4,4-DDE	1.1E+00	3.4E-01	3.4E-01	NI	1	0.10		9.9E-09	3.4E-09	9.1E-13				1.4E-08	4.8E-09	8.1E-09	0.00
4,4-DDT	9.1E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		8.2E-09	2.8E-09	7.5E-13	2.5E-13			1.2E-08	3.9E-09	6.7E-09	0.00
Delta-BHC	1.1E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-09	1.8E-08	9.1E-13	1.6E-12			1.4E-08	2.5E-08	4.3E-08	0.00
Dieldrin	7.1E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.4E-08	1.0E-06	5.9E-12	9.4E-11			9.0E-08	1.4E-06	2.5E-06	0.23
Chlordane	2.3E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.1E-08	7.2E-09	1.9E-12	6.6E-13			2.9E-08	1.0E-08	1.7E-08	0.00
Endosulfan I	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endosulfan II	9.4E-01	NI	NI	NI	1	0.10		8.5E-09		7.7E-13				1.2E-08			
Endosulfan sulfate	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endrin	9.9E-01	NI	NI	NI	1	0.10		8.9E-09		8.2E-13				1.3E-08			
Endrin aldehyde	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endrin ketone	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Gamma-BHC (Lindane)	1.1E+00	1.3E+00	1.3E+00	NI	1	0.10		9.9E-09	1.3E-08	9.1E-13				1.4E-08	1.8E-08	3.1E-08	0.00
Heptachlor	1.1E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-09	4.5E-08	9.1E-13	4.2E-12			1.4E-08	6.3E-08	1.1E-07	0.01
Heptachlor epoxide	2.7E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.4E-09	2.2E-08	2.2E-13	2.0E-12			3.4E-09	3.1E-08	5.3E-08	0.01
Methoxychlor	1.1E+01	NI	NI	NI	1	0.10		9.9E-08		9.1E-12				1.4E-07			
Toxaphene	1.1E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-07	1.1E-06	9.1E-11	1.0E-10			1.4E-06	1.5E-06	2.6E-06	0.25
DIOXIN																	
2,3,7,8-TCDD	3.2E-01	1.5E+05	1.5E+05	1.5E+05	1	0.10		2.9E-09	4.3E-04	2.6E-13	4.0E-08			4.1E-09	6.1E-04	1.0E-03	99.23
Total Cancer Risk									4.4E-04		4.0E-08				6.2E-04	1.1E-03	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL105-4

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		1.7E+01	1.7E+01	1.7E+01	1	0.10											
Alpha-BHC		6.3E+00	6.3E+00	6.3E+00	1	0.10											
Beta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
4,4-DDD		2.4E-01	2.4E-01	NI	1	0.10											
4,4-DDE		3.4E-01	3.4E-01	NI	1	0.10											
4,4-DDT		3.4E-01	3.4E-01	3.4E-01	1	0.10											
Delta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
Dieldrin		1.6E+01	1.6E+01	1.6E+01	1	0.10											
Chlordane		3.5E-01	3.5E-01	3.5E-01	1	0.10											
Endosulfan I		NI	NI	NI	1	0.10											
Endosulfan II		NI	NI	NI	1	0.10											
Endosulfan sulfate		NI	NI	NI	1	0.10											
Endrin		NI	NI	NI	1	0.10											
Endrin aldehyde		NI	NI	NI	1	0.10											
Endrin ketone		NI	NI	NI	1	0.10											
Gamma-BHC (Lindane)		1.3E+00	1.3E+00	NI	1	0.10											
Heptachlor		4.5E+00	4.5E+00	4.6E+00	1	0.10											
Heptachlor epoxide		9.1E+00	9.1E+00	9.1E+00	1	0.10											
Methoxychlor		NI	NI	NI	1	0.10											
Toxaphene		1.1E+00	1.1E+00	1.1E+00	1	0.10											
DIOXIN																	
2,3,7,8-TCDD	8.3E-05	1.5E+05	1.5E+05	1.5E+05	1	0.10		7.4E-13	1.1E-07	6.8E-17	1.0E-11			1.1E-12	1.6E-07	2.7E-07	100.00
Total Cancer Risk									1.1E-07		1.0E-11				1.6E-07	2.7E-07	

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL106-2

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	3.5E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.2E-07	5.4E-06	2.9E-11	4.9E-10			4.5E-07	7.6E-06	1.3E-05	24.21
Alpha-BHC	9.5E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		8.6E-08	5.4E-07	7.8E-12	4.9E-11			1.2E-07	7.6E-07	1.3E-06	2.44
Beta-BHC	1.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-08	1.8E-07	9.1E-12	1.6E-11			1.4E-07	2.5E-07	4.3E-07	0.81
4,4-DDD	3.0E+01	2.4E-01	2.4E-01	NI	1	0.10		2.7E-07	6.5E-08	2.5E-11				3.8E-07	9.2E-08	1.6E-07	0.29
4,4-DDE	2.3E+00	3.4E-01	3.4E-01	NI	1	0.10		2.1E-08	7.0E-09	1.9E-12				2.9E-08	9.9E-09	1.7E-08	0.03
4,4-DDT	8.6E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		7.7E-08	2.6E-08	7.1E-12	2.4E-12			1.1E-07	3.7E-08	6.4E-08	0.12
Delta-BHC	9.5E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		8.6E-08	1.5E-07	7.8E-12	1.4E-11			1.2E-07	2.2E-07	3.7E-07	0.70
Dieldrin	1.8E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-07	2.6E-06	1.5E-11	2.4E-10			2.3E-07	3.7E-06	6.3E-06	11.72
Chlordane	3.9E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.5E-07	1.2E-07	3.2E-11	1.1E-11			5.0E-07	1.7E-07	3.0E-07	0.56
Endosulfan I	9.5E+00	NI	NI	NI	1	0.10		8.6E-08		7.8E-12				1.2E-07			
Endosulfan II	2.0E+00	NI	NI	NI	1	0.10		1.8E-08		1.6E-12				2.5E-08			
Endosulfan sulfate	1.9E+01	NI	NI	NI	1	0.10		1.7E-07		1.5E-11				2.4E-07			
Endrin	1.9E+01	NI	NI	NI	1	0.10		1.7E-07		1.5E-11				2.4E-07			
Endrin aldehyde	1.9E+01	NI	NI	NI	1	0.10		1.7E-07		1.5E-11				2.4E-07			
Endrin ketone	1.9E+01	NI	NI	NI	1	0.10		1.7E-07		1.5E-11				2.4E-07			
Gamma-BHC (Lindane)	1.5E+00	1.3E+00	1.3E+00	NI	1	0.10		1.4E-08	1.8E-08	1.2E-12				1.9E-08	2.5E-08	4.2E-08	0.08
Heptachlor	7.1E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.4E-07	2.9E-06	5.9E-11	2.7E-10			9.0E-07	4.1E-06	6.9E-06	13.00
Heptachlor epoxide	9.5E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.6E-08	7.8E-07	7.8E-12	7.1E-11			1.2E-07	1.1E-06	1.9E-06	3.52
Methoxychlor	9.5E+01	NI	NI	NI	1	0.10		8.6E-07		7.8E-11				1.2E-06			
Toxaphene	9.5E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.6E-06	9.4E-06	7.8E-10	6.6E-10			1.2E-05	1.3E-05	2.3E-05	42.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.2E-05		2.0E-09				3.1E-05	5.3E-05	100

ASSUMPTIONS

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL106-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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 (AFO)	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	2.5E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.3E-07	3.8E-06	2.1E-11	3.5E-10			3.2E-07	5.4E-06	9.2E-06	49.04
Alpha-BHC	2.2E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.0E-09	1.2E-08	1.8E-13	1.1E-12			2.8E-09	1.8E-08	3.0E-08	0.16
Beta-BHC	2.2E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-09	3.6E-09	1.8E-13	3.3E-13			2.8E-09	5.0E-09	8.6E-09	0.05
4,4-DDD	2.5E+01	2.4E-01	2.4E-01	NI	1	0.10		2.3E-07	5.4E-08	2.1E-11				3.2E-07	7.6E-08	1.3E-07	0.69
4,4-DDE	1.8E+00	3.4E-01	3.4E-01	NI	1	0.10		1.6E-08	5.5E-09	1.5E-12				2.3E-08	7.8E-09	1.3E-08	0.07
4,4-DDT	6.8E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		6.1E-08	2.1E-08	5.6E-12	1.9E-12			8.6E-08	2.9E-08	5.0E-08	0.27
Delta-BHC	2.2E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.0E-09	3.6E-09	1.8E-13	3.3E-13			2.8E-09	5.0E-09	8.6E-09	0.05
Dieldrin	1.7E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.5E-07	2.4E-06	1.4E-11	2.2E-10			2.2E-07	3.5E-06	5.9E-06	31.38
Chlordane	2.5E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.3E-07	7.9E-08	2.1E-11	7.2E-12			3.2E-07	1.1E-07	1.9E-07	1.01
Endosulfan I	2.2E-01	NI	NI	NI	1	0.10		2.0E-09		1.8E-13				2.8E-09			
Endosulfan II	8.6E-01	NI	NI	NI	1	0.10		7.7E-09		7.1E-13				1.1E-08			
Endosulfan sulfate	4.3E-01	NI	NI	NI	1	0.10		3.9E-09		3.5E-13				5.5E-09			
Endrin	7.9E-01	NI	NI	NI	1	0.10		7.1E-09		6.5E-13				1.0E-08			
Endrin aldehyde	4.3E-01	NI	NI	NI	1	0.10		3.9E-09		3.5E-13				5.5E-09			
Endrin ketone	4.9E-01	NI	NI	NI	1	0.10		4.4E-09		4.0E-13				6.2E-09			
Gamma-BHC (Lindane)	3.4E-01	1.3E+00	1.3E+00	NI	1	0.10		3.1E-09	4.0E-09	2.8E-13				4.3E-09	5.6E-09	9.8E-09	0.05
Heptachlor	2.7E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.4E-07	1.1E-06	2.2E-11	1.0E-10			3.4E-07	1.5E-06	2.6E-06	14.02
Heptachlor epoxide	4.1E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.7E-09	3.4E-08	3.4E-13	3.1E-12			5.2E-09	4.7E-08	8.1E-08	0.43
Methoxychlor	3.9E+00	NI	NI	NI	1	0.10		3.5E-08		3.2E-12				5.0E-08			
Toxaphene	2.2E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.0E-07	2.2E-07	1.8E-11	2.0E-11			2.8E-07	3.1E-07	5.3E-07	2.79
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									7.8E-06		7.1E-10				1.1E-05	1.9E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL107-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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 (GIABO)	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	4.3E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.9E-07	6.6E-06	3.5E-11	6.0E-10			5.5E-07	9.3E-06	1.6E-05	50.80
Alpha-BHC	2.2E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.9E-08	1.2E-07	1.8E-12	1.1E-11			2.7E-08	1.7E-07	2.9E-07	0.94
Beta-BHC	7.6E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		6.8E-08	1.2E-07	6.3E-12	1.1E-11			9.7E-08	1.7E-07	3.0E-07	0.95
4,4-DDD	3.1E+01	2.4E-01	2.4E-01	NI	1	0.10		2.8E-07	6.7E-08	2.6E-11				3.9E-07	9.5E-08	1.6E-07	0.52
4,4-DDE	1.3E+00	3.4E-01	3.4E-01	NI	1	0.10		1.2E-08	4.0E-09	1.1E-12				1.7E-08	5.6E-09	9.6E-09	0.03
4,4-DDT	5.3E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.8E-08	1.6E-08	4.4E-12	1.5E-12			6.7E-08	2.3E-08	3.9E-08	0.13
Delta-BHC	2.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-08	3.5E-08	1.8E-12	3.2E-12			2.7E-08	4.9E-08	8.4E-08	0.27
Dieldrin	1.8E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-07	2.6E-06	1.5E-11	2.4E-10			2.3E-07	3.7E-06	6.3E-06	20.01
Chlordane	4.9E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.4E-07	1.5E-07	4.0E-11	1.4E-11			6.2E-07	2.2E-07	3.7E-07	1.19
Endosulfan I	2.2E+00	NI	NI	NI	1	0.10		1.9E-08		1.8E-12				2.7E-08			
Endosulfan II	3.2E+00	NI	NI	NI	1	0.10		2.9E-08		2.6E-12				4.1E-08			
Endosulfan sulfate	4.2E-01	NI	NI	NI	1	0.10		3.8E-09		3.5E-13				5.3E-09			
Endrin	8.6E+00	NI	NI	NI	1	0.10		7.7E-08		7.1E-12				1.1E-07			
Endrin aldehyde	4.2E+00	NI	NI	NI	1	0.10		3.7E-08		3.4E-12				5.3E-08			
Endrin ketone	3.6E+00	NI	NI	NI	1	0.10		3.2E-08		3.0E-12				4.6E-08			
Gamma-BHC (Lindane)	9.2E-01	1.3E+00	1.3E+00	NI	1	0.10		8.3E-09	1.1E-08	7.6E-13				1.2E-08	1.5E-08	2.6E-08	0.08
Heptachlor	2.6E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.3E-07	1.1E-06	2.1E-11	9.9E-11			3.3E-07	1.5E-06	2.5E-06	8.13
Heptachlor epoxide	8.1E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.3E-09	6.6E-08	6.7E-13	6.1E-12			1.0E-08	9.4E-08	1.6E-07	0.51
Methoxychlor	2.2E+01	NI	NI	NI	1	0.10		1.9E-07		1.8E-11				2.7E-07			
Toxaphene	2.2E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.9E-06	2.1E-06	1.8E-10	1.9E-10			2.7E-06	3.0E-06	5.1E-06	16.44
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.3E-05		1.2E-09				1.8E-05	3.1E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL107-4

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	1.4E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.3E-07	2.1E-06	1.2E-11	2.0E-10			1.8E-07	3.0E-06	5.2E-06	53.73
Alpha-BHC	5.0E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		4.5E-10	2.8E-09	4.1E-14	2.6E-13			6.4E-10	4.0E-09	6.8E-09	0.07
Beta-BHC	5.0E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.5E-10	8.1E-10	4.1E-14	7.4E-14			6.4E-10	1.1E-09	2.0E-09	0.02
4,4-DDD	5.1E+00	2.4E-01	2.4E-01	NI	1	0.10		4.6E-08	1.1E-08	4.2E-12				6.5E-08	1.6E-08	2.7E-08	0.28
4,4-DDE	6.0E-01	3.4E-01	3.4E-01	NI	1	0.10		5.4E-09	1.8E-09	4.9E-13				7.6E-09	2.6E-09	4.4E-09	0.05
4,4-DDT	4.9E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.4E-08	1.5E-08	4.0E-12	1.4E-12			6.2E-08	2.1E-08	3.6E-08	0.38
Delta-BHC	8.1E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		7.3E-10	1.3E-09	6.7E-14	1.2E-13			1.0E-09	1.9E-09	3.2E-09	0.03
Dieldrin	8.1E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.3E-08	1.2E-06	6.7E-12	1.1E-10			1.0E-07	1.6E-06	2.8E-06	29.26
Chlordane	1.4E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.3E-07	4.5E-08	1.2E-11	4.1E-12			1.8E-07	6.3E-08	1.1E-07	1.12
Endosulfan I	5.0E-02	NI	NI	NI	1	0.10		4.5E-10		4.1E-14				6.4E-10			
Endosulfan II	6.5E-01	NI	NI	NI	1	0.10		5.9E-09		5.4E-13				8.3E-09			
Endosulfan sulfate	1.6E-01	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
Endrin	1.2E+00	NI	NI	NI	1	0.10		1.1E-08		9.9E-13				1.5E-08			
Endrin aldehyde	1.0E-01	NI	NI	NI	1	0.10		9.0E-10		8.2E-14				1.3E-09			
Endrin ketone	6.6E-01	NI	NI	NI	1	0.10		5.9E-09		5.4E-13				8.4E-09			
Gamma-BHC (Lindane)	1.5E-01	1.3E+00	1.3E+00	NI	1	0.10		1.4E-09	1.8E-09	1.2E-13				1.9E-09	2.5E-09	4.2E-09	0.04
Heptachlor	1.3E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.2E-07	5.3E-07	1.1E-11	4.9E-11			1.7E-07	7.4E-07	1.3E-06	13.21
Heptachlor epoxide	2.8E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.5E-09	2.3E-08	2.3E-13	2.1E-12			3.6E-09	3.2E-08	5.5E-08	0.58
Methoxychlor	5.0E-01	NI	NI	NI	1	0.10		4.5E-09		4.1E-13				6.4E-09			
Toxaphene	5.0E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.5E-08	5.0E-08	4.1E-12	4.5E-12			6.4E-08	7.0E-08	1.2E-07	1.24
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									4.0E-06		3.6E-10				5.6E-06	9.6E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL108-2

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 (AD		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	2.0E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-07	3.1E-06	1.6E-11	2.8E-10			2.5E-07	4.3E-06	7.4E-06	23.95
Alpha-BHC	4.2E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.7E-08	2.4E-07	3.4E-12	2.2E-11			5.3E-08	3.3E-07	5.7E-07	1.84
Beta-BHC	4.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.8E-08	6.8E-08	3.5E-12	6.2E-12			5.3E-08	9.6E-08	1.6E-07	0.53
4,4-DDD	6.6E+00	2.4E-01	2.4E-01	NI	1	0.10		5.9E-08	1.4E-08	5.4E-12				8.4E-08	2.0E-08	3.4E-08	0.11
4,4-DDE	1.1E+00	3.4E-01	3.4E-01	NI	1	0.10		9.9E-09	3.4E-09	9.1E-13				1.4E-08	4.8E-09	8.1E-09	0.03
4,4-DDT	7.2E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		6.5E-08	2.2E-08	5.9E-12	2.0E-12			9.2E-08	3.1E-08	5.3E-08	0.17
Delta-BHC	4.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.7E-08	6.7E-08	3.4E-12	6.2E-12			5.3E-08	9.5E-08	1.6E-07	0.53
Dieldrin	2.4E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.2E-07	3.5E-06	2.0E-11	3.2E-10			3.1E-07	4.9E-06	8.3E-06	27.05
Chlordane	2.7E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.4E-07	8.5E-08	2.2E-11	7.8E-12			3.4E-07	1.2E-07	2.1E-07	0.67
Endosulfan I	4.2E+00	NI	NI	NI	1	0.10		3.7E-08		3.4E-12				5.3E-08			
Endosulfan II	1.5E+00	NI	NI	NI	1	0.10		1.4E-08		1.2E-12				1.9E-08			
Endosulfan sulfate	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endrin	3.8E+00	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
Endrin aldehyde	8.5E-01	NI	NI	NI	1	0.10		7.7E-09		7.0E-13				1.1E-08			
Endrin ketone	1.4E+00	NI	NI	NI	1	0.10		1.3E-08		1.2E-12				1.8E-08			
Gamma-BHC (Lindane)	4.2E+00	1.3E+00	1.3E+00	NI	1	0.10		3.7E-08	4.9E-08	3.4E-12				5.3E-08	6.9E-08	1.2E-07	0.38
Heptachlor	3.8E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.4E-07	1.5E-06	3.1E-11	1.4E-10			4.8E-07	2.2E-06	3.7E-06	12.04
Heptachlor epoxide	8.5E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		7.7E-09	7.0E-08	7.0E-13	6.4E-12			1.1E-08	9.8E-08	1.7E-07	0.54
Methoxychlor	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Toxaphene	4.2E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.7E-06	4.1E-06	3.4E-10	3.8E-10			5.3E-06	5.8E-06	9.9E-06	32.15
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.3E-05		1.2E-09				1.8E-05	3.1E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL108-4

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	6.7E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.0E-07	1.0E-05	5.5E-11	9.4E-10			8.5E-07	1.4E-05	2.5E-05	63.10
Alpha-BHC	4.6E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		4.1E-09	2.6E-08	3.8E-13	2.4E-12			5.9E-09	3.7E-08	6.3E-08	0.16
Beta-BHC	4.6E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.1E-09	7.5E-09	3.8E-13	6.8E-13			5.9E-09	1.1E-08	1.8E-08	0.05
4,4-DDD	3.4E+00	2.4E-01	2.4E-01	NI	1	0.10		3.1E-08	7.3E-09	2.8E-12				4.3E-08	1.0E-08	1.8E-08	0.05
4,4-DDE	1.3E+00	3.4E-01	3.4E-01	NI	1	0.10		1.2E-08	4.0E-09	1.1E-12				1.7E-08	5.6E-09	9.6E-09	0.02
4,4-DDT	3.4E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		3.1E-08	1.0E-08	2.8E-12	9.5E-13			4.3E-08	1.5E-08	2.5E-08	0.06
Delta-BHC	4.6E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.1E-09	7.5E-09	3.8E-13	6.8E-13			5.9E-09	1.1E-08	1.8E-08	0.05
Dieldrin	3.0E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-07	4.3E-06	2.5E-11	4.0E-10			3.8E-07	6.1E-06	1.0E-05	26.59
Chlordane	3.2E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.9E-07	1.0E-07	2.6E-11	9.2E-12			4.1E-07	1.4E-07	2.4E-07	0.62
Endosulfan I	4.6E-01	NI	NI	NI	1	0.10		4.1E-09		3.8E-13				5.9E-09			
Endosulfan II	2.2E+00	NI	NI	NI	1	0.10		2.0E-08		1.8E-12				2.8E-08			
Endosulfan sulfate	9.7E-01	NI	NI	NI	1	0.10		8.7E-09		8.0E-13				1.2E-08			
Endrin	2.8E+00	NI	NI	NI	1	0.10		2.5E-08		2.3E-12				3.6E-08			
Endrin aldehyde	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Endrin ketone	9.0E-01	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Gamma-BHC (Lindane)	4.6E-01	1.3E+00	1.3E+00	NI	1	0.10		4.1E-09	5.4E-09	3.8E-13				5.9E-09	7.6E-09	1.3E-08	0.03
Heptachlor	2.5E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.3E-07	1.0E-06	2.1E-11	9.5E-11			3.2E-07	1.4E-06	2.4E-06	6.23
Heptachlor epoxide	4.6E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		4.1E-09	3.8E-08	3.8E-13	3.4E-12			5.9E-09	5.3E-08	9.1E-08	0.23
Methoxychlor	4.6E+00	NI	NI	NI	1	0.10		4.1E-08		3.8E-12				5.9E-08			
Toxaphene	4.6E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		4.1E-07	4.6E-07	3.8E-11	4.2E-11			5.9E-07	6.4E-07	1.1E-06	2.80
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.6E-05		1.5E-09				2.3E-05	3.9E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL109-2

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	3.3E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.0E-08	5.0E-07	2.7E-12	4.6E-11			4.2E-08	7.1E-07	1.2E-06	38.58
Alpha-BHC	2.7E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.4E-09	1.5E-08	2.2E-13	1.4E-12			3.4E-09	2.1E-08	3.6E-08	1.15
Beta-BHC	4.4E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		4.0E-09	7.1E-09	3.6E-13	6.5E-13			5.6E-09	1.0E-08	1.7E-08	0.54
4,4-DDD	1.9E-01	2.4E-01	2.4E-01	NI	1	0.10		1.7E-09	4.1E-10	1.6E-13				2.4E-09	5.8E-10	9.9E-10	0.03
4,4-DDE	7.5E-02	3.4E-01	3.4E-01	NI	1	0.10		6.8E-10	2.3E-10	6.2E-14				9.5E-10	3.2E-10	5.5E-10	0.02
4,4-DDT	1.6E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.4E-09	4.9E-10	1.3E-13	4.5E-14			2.0E-09	6.9E-10	1.2E-09	0.04
Delta-BHC	9.6E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		8.6E-10	1.6E-09	7.9E-14	1.4E-13			1.2E-09	2.2E-09	3.8E-09	0.12
Dieldrin	3.4E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.1E-08	4.9E-07	2.8E-12	4.5E-11			4.3E-08	6.9E-07	1.2E-06	37.41
Chlordane	1.8E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.6E-08	5.8E-09	1.5E-12	5.3E-13			2.3E-08	8.1E-09	1.4E-08	0.44
Endosulfan I	2.7E-01	NI	NI	NI	1	0.10		2.4E-09		2.2E-13				3.4E-09			
Endosulfan II	5.8E-02	NI	NI	NI	1	0.10		5.2E-10		4.8E-14				7.4E-10			
Endosulfan sulfate	5.0E-01	NI	NI	NI	1	0.10		4.5E-09		4.1E-13				6.4E-09			
Endrin	9.6E-02	NI	NI	NI	1	0.10		8.6E-10		7.9E-14				1.2E-09			
Endrin aldehyde	5.0E-01	NI	NI	NI	1	0.10		4.5E-09		4.1E-13				6.4E-09			
Endrin ketone	6.1E-01	NI	NI	NI	1	0.10		5.5E-09		5.0E-13				7.8E-09			
Gamma-BHC (Lindane)	2.7E-01	1.3E+00	1.3E+00	NI	1	0.10		2.4E-09	3.1E-09	2.2E-13				3.4E-09	4.4E-09	7.5E-09	0.24
Heptachlor	3.2E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.9E-09	1.3E-08	2.6E-13	1.2E-12			4.1E-09	1.8E-08	3.1E-08	0.99
Heptachlor epoxide	6.3E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.7E-10	5.2E-09	5.2E-14	4.7E-13			8.0E-10	7.3E-09	1.2E-08	0.39
Methoxychlor	2.7E+00	NI	NI	NI	1	0.10		2.4E-08		2.2E-12				3.4E-08			
Toxaphene	2.7E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.4E-07	2.6E-07	2.2E-11	2.4E-11			3.4E-07	3.7E-07	6.3E-07	20.05
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.3E-06		1.2E-10				1.8E-06	3.2E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL110-2

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	4.5E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.1E-07	6.9E-06	3.7E-11	6.3E-10			5.7E-07	9.7E-06	1.7E-05	65.89
Alpha-BHC	5.5E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		5.0E-09	3.1E-08	4.5E-13	2.9E-12			7.0E-09	4.4E-08	7.5E-08	0.30
Beta-BHC	5.5E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-09	8.9E-09	4.5E-13	8.2E-13			7.0E-09	1.3E-08	2.2E-08	0.09
4,4-DDD	2.0E+00	2.4E-01	2.4E-01	NI	1	0.10		1.8E-08	4.3E-09	1.6E-12				2.5E-08	6.1E-09	1.0E-08	0.04
4,4-DDE	1.1E+00	3.4E-01	3.4E-01	NI	1	0.10		9.5E-09	3.2E-09	8.7E-13				1.3E-08	4.5E-09	7.8E-09	0.03
4,4-DDT	1.2E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.1E-07	3.7E-08	9.9E-12	3.4E-12			1.5E-07	5.2E-08	8.9E-08	0.35
Delta-BHC	5.5E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-09	8.9E-09	4.5E-13	8.2E-13			7.0E-09	1.3E-08	2.2E-08	0.09
Dieldrin	1.5E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.4E-07	2.2E-06	1.2E-11	2.0E-10			1.9E-07	3.1E-06	5.2E-06	20.67
Chlordane	8.2E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.4E-08	2.6E-08	6.8E-12	2.4E-12			1.0E-07	3.7E-08	6.2E-08	0.25
Endosulfan I	5.5E-01	NI	NI	NI	1	0.10		5.0E-09		4.5E-13				7.0E-09			
Endosulfan II	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endosulfan sulfate	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endrin	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endrin aldehyde	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endrin ketone	1.2E+00	NI	NI	NI	1	0.10		1.1E-08		9.9E-13				1.5E-08			
Gamma-BHC (Lindane)	5.5E-01	1.3E+00	1.3E+00	NI	1	0.10		5.0E-09	6.4E-09	4.5E-13				7.0E-09	9.1E-09	1.6E-08	0.06
Heptachlor	1.7E+01	4.5E+00	4.5E+00	4.5E+00	1	0.10		1.5E-07	6.9E-07	1.4E-11	6.4E-11			2.2E-07	9.7E-07	1.7E-06	6.59
Heptachlor epoxide	5.5E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.0E-09	4.5E-08	4.5E-13	4.1E-12			7.0E-09	6.4E-08	1.1E-07	0.43
Methoxychlor	5.5E+00	NI	NI	NI	1	0.10		5.0E-08		4.5E-12				7.0E-08			
Toxaphene	5.5E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-07	5.4E-07	4.5E-11	5.0E-11			7.0E-07	7.7E-07	1.3E-06	5.21
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.0E-05		9.6E-10				1.5E-05	2.5E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL110-4

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	(SFO)	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	1.8E-01	1.7E+01	1.7E+01	1.7E+01	1		0.10		1.6E-09	2.8E-08	1.5E-13	2.5E-12			2.3E-09	3.9E-08	6.6E-08	12.11
Alpha-BHC	2.2E-02	6.3E+00	6.3E+00	6.3E+00	1		0.10		2.0E-10	1.2E-09	1.8E-14	1.1E-13			2.8E-10	1.8E-09	3.0E-09	0.55
Beta-BHC	3.3E-01	1.8E+00	1.8E+00	1.8E+00	1		0.10		3.0E-09	5.3E-09	2.7E-13	4.9E-13			4.2E-09	7.6E-09	1.3E-08	2.35
4,4-DDD	5.7E-02	2.4E-01	2.4E-01	NI	1		0.10		5.1E-10	1.2E-10	4.7E-14				7.2E-10	1.7E-10	3.0E-10	0.05
4,4-DDE	8.9E-02	3.4E-01	3.4E-01	NI	1		0.10		8.0E-10	2.7E-10	7.3E-14				1.1E-09	3.8E-10	6.6E-10	0.12
4,4-DDT	9.5E-02	3.4E-01	3.4E-01	3.4E-01	1		0.10		8.6E-10	2.9E-10	7.8E-14	2.7E-14			1.2E-09	4.1E-10	7.0E-10	0.13
Delta-BHC	7.4E-02	1.8E+00	1.8E+00	1.8E+00	1		0.10		6.7E-10	1.2E-09	6.1E-14	1.1E-13			9.4E-10	1.7E-09	2.9E-09	0.53
Dieldrin	1.2E+00	1.6E+01	1.6E+01	1.6E+01	1		0.10		1.1E-08	1.7E-07	9.9E-13	1.6E-11			1.5E-08	2.4E-07	4.2E-07	75.98
Chlordane	5.4E-01	3.5E-01	3.5E-01	3.5E-01	1		0.10		4.9E-09	1.7E-09	4.5E-13	1.6E-13			6.9E-09	2.4E-09	4.1E-09	0.75
Endosulfan I	7.5E-03	NI	NI	NI	1		0.10		6.8E-11		6.2E-15				9.5E-11			
Endosulfan II	1.5E-02	NI	NI	NI	1		0.10		1.3E-10		1.2E-14				1.8E-10			
Endosulfan sulfate	1.5E-02	NI	NI	NI	1		0.10		1.3E-10		1.2E-14				1.8E-10			
Endrin	2.0E-02	NI	NI	NI	1		0.10		1.8E-10		1.6E-14				2.5E-10			
Endrin aldehyde	1.5E-02	NI	NI	NI	1		0.10		1.3E-10		1.2E-14				1.8E-10			
Endrin ketone	3.9E-01	NI	NI	NI	1		0.10		3.5E-09		3.2E-13				5.0E-09			
Gamma-BHC (Lindane)	1.4E-02	1.3E+00	1.3E+00	NI	1		0.10		1.3E-10	1.6E-10	1.2E-14				1.8E-10	2.3E-10	4.0E-10	0.07
Heptachlor	7.5E-03	4.5E+00	4.5E+00	4.6E+00	1		0.10		6.8E-11	3.0E-10	6.2E-15	2.8E-14			9.5E-11	4.3E-10	7.3E-10	0.13
Heptachlor epoxide	1.1E-01	9.1E+00	9.1E+00	9.1E+00	1		0.10		9.9E-10	9.0E-09	9.1E-14	8.2E-13			1.4E-09	1.3E-08	2.2E-08	3.96
Methoxychlor	7.5E-02	NI	NI	NI	1		0.10		6.8E-10		6.2E-14				9.5E-10			
Toxaphene	7.5E-01	1.1E+00	1.1E+00	1.1E+00	1		0.10		6.8E-09	7.4E-09	6.2E-13	6.8E-13			9.5E-09	1.0E-08	1.8E-08	3.26
DIOXIN																		
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1		0.10											
No sample collected																		
Total Cancer Risk										2.3E-07		2.1E-11				3.2E-07	5.5E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL111-2

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	2.0E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-07	3.1E-06	1.6E-11	2.8E-10			2.5E-07	4.3E-06	7.4E-06	55.01
Alpha-BHC	1.1E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-09	6.2E-08	9.1E-13	5.7E-12			1.4E-08	8.8E-08	1.5E-07	1.12
Beta-BHC	1.1E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-09	1.8E-08	9.1E-13	1.6E-12			1.4E-08	2.5E-08	4.3E-08	0.32
4,4-DDD	1.4E+00	2.4E-01	2.4E-01	NI	1	0.10		1.3E-08	3.0E-09	1.2E-12				1.8E-08	4.3E-09	7.3E-09	0.05
4,4-DDE	2.9E-01	3.4E-01	3.4E-01	NI	1	0.10		2.6E-09	8.9E-10	2.4E-13				3.7E-09	1.3E-09	2.1E-09	0.02
4,4-DDT	2.1E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.9E-08	6.4E-09	1.7E-12	5.9E-13			2.7E-08	9.1E-09	1.6E-08	0.12
Delta-BHC	1.1E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-09	1.8E-08	9.1E-13	1.6E-12			1.4E-08	2.5E-08	4.3E-08	0.32
Dieldrin	5.6E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.0E-08	8.1E-07	4.6E-12	7.4E-11			7.1E-08	1.1E-06	1.9E-06	14.50
Chlordane	8.6E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.7E-08	2.7E-08	7.1E-12	2.5E-12			1.1E-07	3.8E-08	6.5E-08	0.49
Endosulfan I	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Endosulfan II	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endosulfan sulfate	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endrin	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endrin aldehyde	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Endrin ketone	4.4E-01	NI	NI	NI	1	0.10		4.0E-09		3.6E-13				5.6E-09			
Gamma-BHC (Lindane)	1.1E+00	1.3E+00	1.3E+00	NI	1	0.10		9.9E-09	1.3E-08	9.1E-13				1.4E-08	1.8E-08	3.1E-08	0.23
Heptachlor	1.1E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-08	4.5E-07	9.1E-12	4.2E-11			1.4E-07	6.3E-07	1.1E-06	8.01
Heptachlor epoxide	1.6E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.4E-09	1.3E-08	1.3E-13	1.2E-12			2.0E-09	1.9E-08	3.2E-08	0.24
Methoxychlor	1.1E+00	NI	NI	NI	1	0.10		9.9E-09		9.1E-13				1.4E-08			
Toxaphene	1.1E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-07	1.1E-06	9.1E-11	1.0E-10			1.4E-06	1.5E-06	2.6E-06	19.58
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.6E-06		5.1E-10				7.9E-06	1.3E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL111-4

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	2.7E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.4E-07	4.1E-06	2.2E-11	3.8E-10			3.4E-07	5.8E-06	1.0E-05	49.24
Alpha-BHC	1.7E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.5E-09	9.4E-09	1.4E-13	8.6E-13			2.1E-09	1.3E-08	2.3E-08	0.11
Beta-BHC	1.7E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.5E-09	2.7E-09	1.4E-13	2.4E-13			2.1E-09	3.8E-09	6.5E-09	0.03
4,4-DDD	3.8E+00	2.4E-01	2.4E-01	NI	1	0.10		3.4E-08	8.2E-09	3.1E-12				4.8E-08	1.2E-08	2.0E-08	0.10
4,4-DDE	1.3E+00	3.4E-01	3.4E-01	NI	1	0.10		1.2E-08	4.0E-09	1.1E-12				1.7E-08	5.6E-09	9.6E-09	0.05
4,4-DDT	1.2E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.1E-07	3.7E-08	9.9E-12	3.4E-12			1.5E-07	5.2E-08	8.9E-08	0.44
Delta-BHC	1.7E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.5E-09	2.8E-09	1.4E-13	2.5E-13			2.2E-09	3.9E-09	6.6E-09	0.03
Dieldrin	2.7E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.4E-07	3.9E-06	2.2E-11	3.6E-10			3.4E-07	5.5E-06	9.4E-06	46.35
Chlordane	1.3E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.1E-07	3.9E-08	1.0E-11	3.6E-12			1.6E-07	5.6E-08	9.5E-08	0.47
Endosulfan I	1.7E-01	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
Endosulfan II	3.2E-01	NI	NI	NI	1	0.10		2.9E-09		2.6E-13				4.1E-09			
Endosulfan sulfate	3.2E-01	NI	NI	NI	1	0.10		2.9E-09		2.6E-13				4.1E-09			
Endrin	2.2E+00	NI	NI	NI	1	0.10		2.0E-08		1.8E-12				2.8E-08			
Endrin aldehyde	4.1E-01	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Endrin ketone	1.3E+00	NI	NI	NI	1	0.10		1.2E-08		1.1E-12				1.7E-08			
Gamma-BHC (Lindane)	1.7E-01	1.3E+00	1.3E+00	NI	1	0.10		1.5E-09	1.9E-09	1.4E-13				2.1E-09	2.7E-09	4.7E-09	0.02
Heptachlor	1.9E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.7E-08	7.7E-08	1.6E-12	7.2E-12			2.4E-08	1.1E-07	1.9E-07	0.92
Heptachlor epoxide	3.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.7E-09	2.5E-08	2.5E-13	2.2E-12			3.8E-09	3.5E-08	5.9E-08	0.29
Methoxychlor	1.7E+00	NI	NI	NI	1	0.10		1.5E-08		1.4E-12				2.1E-08			
Toxaphene	1.7E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.5E-07	1.6E-07	1.4E-11	1.5E-11			2.1E-07	2.3E-07	3.9E-07	1.95
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									8.4E-06		7.7E-10				1.2E-05	2.0E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL112-2

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	2.2E+02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.0E-06	3.4E-05	1.8E-10	3.1E-09			2.8E-06	4.8E-05	8.1E-05	55.87
Alpha-BHC	2.1E+01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.8E-07	1.2E-06	1.7E-11	1.1E-10			2.6E-07	1.6E-06	2.8E-06	1.93
Beta-BHC	2.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.8E-07	3.3E-07	1.7E-11	3.0E-11			2.6E-07	4.7E-07	8.0E-07	0.55
4,4-DDD	4.0E+01	2.4E-01	2.4E-01	NI	1	0.10		3.6E-07	8.5E-08	3.3E-11				5.0E-07	1.2E-07	2.1E-07	0.14
4,4-DDE	4.0E+01	3.4E-01	3.4E-01	NI	1	0.10		3.6E-07	1.2E-07	3.3E-11				5.0E-07	1.7E-07	2.9E-07	0.20
4,4-DDT	4.9E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.4E-08	1.5E-08	4.0E-12	1.4E-12			6.2E-08	2.1E-08	3.6E-08	0.02
Delta-BHC	2.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.8E-07	3.3E-07	1.7E-11	3.0E-11			2.6E-07	4.7E-07	8.0E-07	0.55
Dieldrin	1.4E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.3E-07	2.0E-06	1.2E-11	1.8E-10			1.8E-07	2.8E-06	4.9E-06	3.35
Chlordane	5.9E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		5.3E-08	1.8E-08	4.8E-12	1.7E-12			7.4E-08	2.6E-08	4.4E-08	0.03
Endosulfan I	2.1E+01	NI	NI	NI	1	0.10		1.8E-07		1.7E-11				2.6E-07			
Endosulfan II	4.0E+01	NI	NI	NI	1	0.10		3.6E-07		3.3E-11				5.0E-07			
Endosulfan sulfate	*4.0E+01*	*NI*	*NI*	*NI*	1	*0.10*		3.6E-07		3.3E-11				5.0E-07			
Endrin	4.0E+01	NI	NI	NI	1	0.10		3.6E-07		3.3E-11				5.0E-07			
Endrin aldehyde	4.0E+01	NI	NI	NI	1	0.10		3.6E-07		3.3E-11				5.0E-07			
Endrin ketone	4.0E+01	NI	NI	NI	1	0.10		3.6E-07		3.3E-11				5.0E-07			
Gamma-BHC (Lindane)	2.1E+01	1.3E+00	1.3E+00	NI	1	0.10		1.8E-07	2.4E-07	1.7E-11				2.6E-07	3.4E-07	5.8E-07	0.40
Heptachlor	7.3E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.6E-08	3.0E-07	6.0E-12	2.8E-11			9.3E-08	4.2E-07	7.1E-07	0.49
Heptachlor epoxide	2.1E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-07	1.7E-06	1.7E-11	1.5E-10			2.6E-07	2.4E-06	4.1E-06	2.79
Methoxychlor	2.1E+02	NI	NI	NI	1	0.10		1.8E-06		1.7E-10				2.6E-06			
Toxaphene	2.1E+03	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.8E-05	2.0E-05	1.7E-09	1.9E-09			2.6E-05	2.9E-05	4.9E-05	33.68
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									6.0E-05		5.5E-09				8.5E-05	1.5E-04	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL112-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	3 8E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.4E-10	5 8E-09	3.1E-14	5.3E-13			4.8E-10	8.2E-09	1.4E-08	9.50
Alpha-BHC	3.2E-03	6 3E+00	6.3E+00	6.3E+00	1	0.10		2.8E-11	1.8E-10	2 6E-15	1.6E-14			4.0E-11	2.5E-10	4.3E-10	0.29
Beta-BHC	3.2E-03	1.8E+00	1 8E+00	1 8E+00	1	0.10		2.8E-11	5.1E-11	2.6E-15	4.7E-15			4.0E-11	7.2E-11	1.2E-10	0.08
4,4-DDD	2.1E-02	2 4E-01	2.4E-01	NI	1	0.10		1.9E-10	4.5E-11	1.7E-14				2.7E-10	6.4E-11	1.1E-10	0.07
4,4-DDE	1.6E-02	3.4E-01	3.4E-01	NI	1	0.10		1.4E-10	4.9E-11	1.3E-14				2.0E-10	6.9E-11	1.2E-10	0.08
4,4-DDT	2.9E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.6E-10	8 9E-11	2.4E-14	8 1E-15			3.7E-10	1.3E-10	2.1E-10	0.15
Delta-BHC	3 2E-03	1.8E+00	1.8E+00	1.8E+00	1	0 10		2.8E-11	5.1E-11	2 6E-15	4.7E-15			4.0E-11	7.2E-11	1.2E-10	0.08
Dieldrin	3 3E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		3 0E-09	4.8E-08	2.7E-13	4.4E-12			4.2E-09	6.7E-08	1.1E-07	77.68
Chlordane	1.0E-01	3 5E-01	3 5E-01	3 5E-01	1	0.10		9 1E-10	3.2E-10	8.3E-14	2.9E-14			1.3E-09	4.5E-10	7.7E-10	0.52
Endosulfan I	3.2E-03	NI	NI	NI	1	0.10		2.8E-11		2.6E-15				4.0E-11			
Endosulfan II	1.6E-02	NI	NI	NI	1	0.10		1.4E-10		1.3E-14				2.0E-10			
Endosulfan sulfate	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endrin	9 4E-03	NI	NI	NI	1	0.10		8 5E-11		7.7E-15				1.2E-10			
Endrin aldehyde	6.0E-03	NI	NI	NI	1	0.10		5.4E-11		4.9E-15				7.6E-11			
Endrin ketone	5.0E-02	NI	NI	NI	1	0.10		4.5E-10		4.1E-14				6.4E-10			
Gamma-BHC (Lindane)	3.2E-03	1.3E+00	1.3E+00	NI	1	0.10		2 8E-11	3.7E-11	2.6E-15				4.0E-11	5.2E-11	8.9E-11	0.06
Heptachlor	5.6E-02	4.5E+00	4.5E+00	4 6E+00	1	0 10		5.0E-10	2.3E-09	4.6E-14	2.1E-13			7.1E-10	3.2E-09	5.5E-09	3.71
Heptachlor epoxide	2.0E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-10	1.6E-09	1.6E-14	1.5E-13			2.5E-10	2.3E-09	4.0E-09	2.68
Methoxychlor	3.2E-02	NI	NI	NI	1	0.10		2.8E-10		2.6E-14				4.0E-10			
Toxaphene	3.2E-01	1.1E+00	1.1E+00	1 1E+00	1	0 10		2 8E-09	3.1E-09	2.6E-13	2.9E-13			4.0E-09	4.4E-09	7.5E-09	5.10
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1 5E+05	1	0 10											
No sample collected																	
Total Cancer Risk									6.1E-08		5.6E-12				8.6E-08	1.5E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL113-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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		1.7E+01	1.7E+01	1.7E+01	1	0.10											
Alpha-BHC		6.3E+00		6.3E+00													
Beta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
4,4-DDD		2.4E-01	2.4E-01	NI	1	0.10											
4,4-DDE		3.4E-01	3.4E-01	NI	1	0.10											
4,4-DDT		3.4E-01	3.4E-01	3.4E-01	1	0.10											
Delta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
Dieldrin		1.6E+01	1.6E+01	1.6E+01	1	0.10											
Chlordane		3.5E-01	3.5E-01	3.5E-01	1	0.10											
Endosulfan I		NI	NI	NI	1	0.10											
Endosulfan II		NI	NI	NI	1	0.10											
Endosulfan sulfate		NI	NI	NI	1	0.10											
Endrin		NI	NI	NI	1	0.10											
Endrin aldehyde		NI	NI	NI	1	0.10											
Endrin ketone		NI	NI	NI	1	0.10											
Gamma-BHC (Lindane)		1.3E+00	1.3E+00	NI	1	0.10											
Heptachlor		4.5E+00	4.5E+00	4.6E+00	1	0.10											
Heptachlor epoxide		9.1E+00	9.1E+00	9.1E+00	1	0.10											
Methoxychlor		NI	NI	NI													
Toxaphene		1.1E+00	1.1E+00	1.1E+00	1	0.10											
DIOXIN																	
2,3,7,8-TCDD	6.9E-03	1.5E+05	1.5E+05	1.5E+05	1	0.10		6.2E-11	9.3E-06	5.7E-15	8.5E-10			8.8E-11	1.3E-05	2.2E-05	100.000
Total Cancer Risk									9.3E-06		8.5E-10				1.3E-05	2.2E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL113-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	4.7E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.2E-07	7.2E-06	3.9E-11	6.6E-10			6.0E-07	1.0E-05	1.7E-05	60.62
Alpha-BHC	2.4E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.1E-08	1.3E-07	1.9E-12	1.2E-11			3.0E-08	1.9E-07	3.2E-07	1.12
Beta-BHC	2.4E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.1E-08	3.8E-08	1.9E-12	3.5E-12			3.0E-08	5.4E-08	9.2E-08	0.32
4,4-DDD	2.2E+00	2.4E-01	2.4E-01	NI	1	0.10		2.0E-08	4.8E-09	1.8E-12				2.8E-08	6.7E-09	1.1E-08	0.04
4,4-DDE	5.5E-01	3.4E-01	3.4E-01	NI	1	0.10		5.0E-09	1.7E-09	4.5E-13				7.0E-09	2.4E-09	4.1E-09	0.01
4,4-DDT	9.6E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		8.6E-08	2.9E-08	7.9E-12	2.7E-12			1.2E-07	4.2E-08	7.1E-08	0.25
Delta-BHC	2.4E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		2.1E-08	3.8E-08	1.9E-12	3.5E-12			3.0E-08	5.4E-08	9.2E-08	0.32
Dieldrin	9.5E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.6E-08	1.4E-06	7.8E-12	1.3E-10			1.2E-07	1.9E-06	3.3E-06	11.53
Chlordane	8.3E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.5E-08	2.6E-08	6.8E-12	2.4E-12			1.1E-07	3.7E-08	6.3E-08	0.22
Endosulfan I	2.4E+00	NI	NI	NI	1	0.10		2.1E-08		1.9E-12				3.0E-08			
Endosulfan II	4.5E+00	NI	NI	NI	1	0.10		4.1E-08		3.7E-12				5.7E-08			
Endosulfan sulfate	4.5E+00	NI	NI	NI	1	0.10		4.1E-08		3.7E-12				5.7E-08			
Endrin	4.5E+00	NI	NI	NI	1	0.10		4.1E-08		3.7E-12				5.7E-08			
Endrin aldehyde	4.5E+00	NI	NI	NI	1	0.10		4.1E-08		3.7E-12				5.7E-08			
Endrin ketone	7.1E-01	NI	NI	NI	1	0.10		6.4E-09		5.9E-13				9.0E-09			
Gamma-BHC (Lindane)	2.4E+00	1.3E+00	1.3E+00	NI	1	0.10		2.1E-08	2.7E-08	1.9E-12				3.0E-08	3.9E-08	6.6E-08	0.23
Heptachlor	1.2E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-07	4.9E-07	9.9E-12	4.5E-11			1.5E-07	6.9E-07	1.2E-06	4.10
Heptachlor epoxide	2.4E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.1E-08	1.9E-07	1.9E-12	1.8E-11			3.0E-08	2.7E-07	4.6E-07	1.62
Methoxychlor	2.4E+01	NI	NI	NI	1	0.10		2.1E-07		1.9E-11				3.0E-07			
Toxaphene	2.4E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		2.1E-06	2.3E-06	1.9E-10	2.1E-10			3.0E-06	3.3E-06	5.6E-06	19.61
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No Sample Collected																	
Total Cancer Risk									1.2E-05		1.1E-09				1.7E-05	2.9E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL113-6

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.9E-11	1.7E-09	9.1E-15	1.5E-13			1.4E-10	2.4E-09	4.1E-09	36.54
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	1.29
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.37
4,4-DDD	2.8E-03	2.4E-01	2.4E-01	NI	1	0.10		2.5E-11	6.0E-12	2.3E-15				*3.6E-11*	*8.5E-12*	*1.5E-11*	*0.13*
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.13
4,4-DDT	2.6E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.3E-10	8.0E-11	2.1E-14	7.3E-15			3.3E-10	1.1E-10	1.9E-10	1.73
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.37
Dieldrin	5.8E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.2E-11	8.4E-10	4.8E-15	7.6E-14			7.4E-11	1.2E-09	2.0E-09	18.13
Chlordane	1.2E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.0E-10	3.6E-11	9.5E-15	3.3E-15			*1.5E-10*	5.1E-11	*8.7E-11*	0.79
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				*2.5E-11*			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.27
Heptachlor	1.8E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.6E-10	7.3E-10	1.5E-14	6.8E-14			2.3E-10	1.0E-09	1.8E-09	15.83
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	1.87
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	22.57
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No Sample Collected																	
Total Cancer Risk									4.6E-09		4.2E-13				6.5E-09	1.1E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL114-2

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	6.9E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.2E-07	1.1E-05	5.7E-11	9.7E-10			8.8E-07	1.5E-05	2.5E-05	16.34
Alpha-BHC	1.4E+01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.3E-07	7.9E-07	1.2E-11	7.3E-11			1.8E-07	1.1E-06	1.9E-06	1.23
Beta-BHC	1.5E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.4E-07	2.4E-07	1.2E-11	2.2E-11			1.9E-07	3.4E-07	5.9E-07	0.38
4,4-DDD	6.6E+00	2.4E-01	2.4E-01	NI	1	0.10		5.9E-08	1.4E-08	5.4E-12				8.4E-08	2.0E-08	3.4E-08	0.02
4,4-DDE	2.7E+01	3.4E-01	3.4E-01	NI	1	0.10		2.4E-07	8.3E-08	2.2E-11				3.4E-07	1.2E-07	2.0E-07	0.13
4,4-DDT	3.3E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		3.0E-07	1.0E-07	2.7E-11	9.2E-12			4.2E-07	1.4E-07	2.4E-07	0.16
Delta-BHC	1.4E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.3E-07	2.3E-07	1.2E-11	2.1E-11			1.8E-07	3.2E-07	5.5E-07	0.35
Dieldrin	2.4E+02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.2E-06	3.5E-05	2.0E-10	3.2E-09			3.1E-06	4.9E-05	8.3E-05	53.50
Chlordane	1.3E+02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.2E-06	4.2E-07	1.1E-10	3.9E-11			1.7E-06	6.0E-07	1.0E-06	0.65
Endosulfan I	1.4E+01	NI	NI	NI	1	0.10		1.3E-07		1.2E-11				1.8E-07			
Endosulfan II	2.7E+01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.4E-07			
Endosulfan sulfate	2.7E+01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.4E-07			
Endrin	2.7E+01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.4E-07			
Endrin aldehyde	2.7E+01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.4E-07			
Endrin ketone	2.7E+01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.4E-07			
Gamma-BHC (Lindane)	1.4E+01	1.3E+00	1.3E+00	NI	1	0.10		1.3E-07	1.6E-07	1.2E-11				1.8E-07	2.3E-07	4.0E-07	0.25
Heptachlor	6.0E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		5.4E-07	2.4E-06	4.9E-11	2.3E-10			7.6E-07	3.4E-06	5.9E-06	3.76
Heptachlor epoxide	1.4E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.3E-07	1.1E-06	1.2E-11	1.0E-10			1.8E-07	1.6E-06	2.8E-06	1.77
Methoxychlor	1.4E+02	NI	NI	NI	1	0.10		1.3E-06		1.2E-10				1.8E-06			
Toxaphene	1.4E+03	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.3E-05	1.4E-05	1.2E-09	1.3E-09			1.8E-05	2.0E-05	3.3E-05	21.45
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									6.5E-05		5.9E-09				9.1E-05	1.6E-04	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL115-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	3.4E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.1E-09	5.2E-08	2.8E-13	4.8E-12			4.3E-09	7.4E-08	1.3E-07	49.74
Alpha-BHC	3.3E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.0E-10	1.9E-09	2.7E-14	1.7E-13			4.2E-10	2.6E-09	4.5E-09	1.79
Beta-BHC	5.9E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.3E-11	9.6E-11	4.9E-15	8.8E-15			7.5E-11	1.4E-10	2.3E-10	0.09
4,4-DDD	1.0E-02	2.4E-01	2.4E-01	NI	1	0.10		9.0E-11	2.2E-11	8.2E-15				1.3E-10	3.1E-11	5.2E-11	0.02
4,4-DDE	6.5E-02	3.4E-01	3.4E-01	NI	1	0.10		5.9E-10	2.0E-10	5.4E-14				8.3E-10	2.8E-10	4.8E-10	0.19
4,4-DDT	1.5E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.4E-10	4.6E-11	1.2E-14	4.2E-15			1.9E-10	6.5E-11	1.1E-10	0.04
Delta-BHC	3.3E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.0E-10	5.3E-10	2.7E-14	4.9E-14			4.2E-10	7.6E-10	1.3E-09	0.51
Dieldrin	8.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.7E-10	1.2E-08	7.0E-14	1.1E-12			1.1E-09	1.7E-08	3.0E-08	11.70
Chlordane	7.0E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		6.3E-10	2.2E-10	5.8E-14	2.0E-14			8.9E-10	3.1E-10	5.3E-10	0.21
Endosulfan I	3.3E-02	NI	NI	NI	1	0.10		3.0E-10		2.7E-14				4.2E-10			
Endosulfan II	6.5E-02	NI	NI	NI	1	0.10		5.9E-10		5.4E-14				8.3E-10			
Endosulfan sulfate	6.5E-02	NI	NI	NI	1	0.10		5.9E-10		5.4E-14				8.3E-10			
Endrin	6.5E-02	NI	NI	NI	1	0.10		5.9E-10		5.4E-14				8.3E-10			
Endrin aldehyde	6.5E-02	NI	NI	NI	1	0.10		5.9E-10		5.4E-14				8.3E-10			
Endrin ketone	6.5E-02	NI	NI	NI	1	0.10		5.9E-10		5.4E-14				8.3E-10			
Gamma-BHC (Lindane)	3.3E-02	1.3E+00	1.3E+00	NI	1	0.10		3.0E-10	3.9E-10	2.7E-14				4.2E-10	5.5E-10	9.3E-10	0.37
Heptachlor	3.9E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.5E-10	1.6E-09	3.2E-14	1.5E-13			5.0E-10	2.2E-09	3.8E-09	1.51
Heptachlor epoxide	3.3E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.0E-10	2.7E-09	2.7E-14	2.5E-13			4.2E-10	3.8E-09	6.5E-09	2.58
Methoxychlor	3.3E-01	NI	NI	NI	1	0.10		3.0E-09		2.7E-13				4.2E-09			
Toxaphene	3.3E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.0E-08	3.3E-08	2.7E-12	3.0E-12			4.2E-08	4.6E-08	7.9E-08	31.24
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.0E-07		9.5E-12				1.5E-07	2.5E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL116-5

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 2E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-10	1.8E-09	9 9E-15	1.7E-13			1.5E-10	2.6E-09	4.4E-09	48.01
Alpha-BHC	1 2E-03	6 3E+00	6.3E+00	6 3E+00	1	0.10		1.0E-11	6 5E-11	9.5E-16	6.0E-15			1.5E-11	9.2E-11	1.6E-10	1.71
Beta-BHC	1 2E-03	1 8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9 5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.49
4,4-DDD	3.0E-03	2 4E-01	2.4E-01	NI	1	0.10		2.7E-11	6.5E-12	2.5E-15				3.8E-11	9.2E-12	1.6E-11	0.17
4,4-DDE	2 2E-03	3.4E-01	3 4E-01	NI	1	0.10		2.0E-11	6.7E-12	1 8E-15				2.8E-11	9.5E-12	1 6E-11	0.18
4,4-DDT	2.2E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-11	6.7E-12	1 8E-15	6.2E-16			2.8E-11	9.5E-12	1.6E-11	0.18
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9 5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.49
Dieldrin	3.9E-03	1.6E+01	1.6E+01	1 6E+01	1	0.10		3.5E-11	5.6E-10	3.2E-15	5.1E-14			5.0E-11	7.9E-10	1.4E-09	14.69
Chlordane	3.6E-03	3.5E-01	3 5E-01	3 5E-01	1	0.10		3.2E-11	1.1E-11	2.9E-15	1.0E-15			4 5E-11	1.6E-11	2.7E-11	0.29
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1 0E-11		9.5E-16				1.5E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2 0E-11		1 8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2 0E-11		1 8E-15				2 8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2 2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1 3E+00	NI	1	0.10		1.0E-11	1.3E-11	9.5E-16				1 5E-11	1.9E-11	3.2E-11	0.35
Heptachlor	1 2E-03	4.5E+00	4 5E+00	4.6E+00	1	0.10		1.0E-11	4 7E-11	9.5E-16	4.4E-15			1.5E-11	6.6E-11	1.1E-10	1.22
Heptachlor epoxide	1.2E-03	9.1E+00	9 1E+00	9.1E+00	1	0.10		1.0E-11	9 4E-11	9 5E-16	8 6E-15			1.5E-11	1.3E-10	2.3E-10	2.46
Methoxychlor	1 2E-02	NI	NI	NI	1	0 10		1.0E-10		9.5E-15				1 5E-10			
Toxaphene	1 2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1 0E-09	1.1E-09	9 5E-14	1.0E-13			1 5E-09	1.6E-09	2.7E-09	29.77
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1 5E+05	1 5E+05	1	0 10											
No sample collected																	
Total Cancer Risk									3 8E-09		3 5E-13				5.4E-09	9.2E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL117-6

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 (fDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	5.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.1E-10	8.7E-09	4.7E-14	8.0E-13			7.2E-10	1.2E-08	2.1E-08	49.92
Alpha-BHC	4.4E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.9E-11	2.5E-10	3.6E-15	2.3E-14			5.5E-11	3.5E-10	6.0E-10	1.41
Beta-BHC	4.4E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.9E-11	7.0E-11	3.6E-15	6.5E-15			5.5E-11	1.0E-10	1.7E-10	0.40
4,4-DDD	8.5E-03	2.4E-01	2.4E-01	NI	1	0.10		7.7E-11	1.8E-11	7.0E-15				1.1E-10	2.6E-11	4.4E-11	0.11
4,4-DDE	8.5E-03	3.4E-01	3.4E-01	NI	1	0.10		7.7E-11	2.6E-11	7.0E-15				1.1E-10	3.7E-11	6.3E-11	0.15
4,4-DDT	8.5E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		7.7E-11	2.6E-11	7.0E-15	2.4E-15			1.1E-10	3.7E-11	6.3E-11	0.15
Delta-BHC	4.4E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.9E-11	7.0E-11	3.6E-15	6.5E-15			5.5E-11	1.0E-10	1.7E-10	0.40
Dieldrin	2.4E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.2E-10	3.5E-09	2.0E-14	3.2E-13			3.1E-10	4.9E-09	8.3E-09	19.78
Chlordane	3.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.7E-11	9.5E-12	2.5E-15	8.7E-16			3.8E-11	1.3E-11	2.3E-11	0.05
Endosulfan I	4.4E-03	NI	NI	NI	1	0.10		3.9E-11		3.6E-15				5.5E-11			
Endosulfan II	8.5E-03	NI	NI	NI	1	0.10		7.7E-11		7.0E-15				1.1E-10			
Endosulfan sulfate	8.5E-03	NI	NI	NI	1	0.10		7.7E-11		7.0E-15				1.1E-10			
Endrin	8.5E-03	NI	NI	NI	1	0.10		7.7E-11		7.0E-15				1.1E-10			
Endrin aldehyde	8.5E-03	NI	NI	NI	1	0.10		7.7E-11		7.0E-15				1.1E-10			
Endrin ketone	8.5E-03	NI	NI	NI	1	0.10		7.7E-11		7.0E-15				1.1E-10			
Gamma-BHC (Lindane)	4.4E-03	1.3E+00	1.3E+00	NI	1	0.10		3.9E-11	5.1E-11	3.6E-15				5.5E-11	7.2E-11	1.2E-10	0.29
Heptachlor	2.8E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.5E-11	1.1E-10	2.3E-15	1.1E-14			3.6E-11	1.6E-10	2.7E-10	0.65
Heptachlor epoxide	4.4E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.9E-11	3.6E-10	3.6E-15	3.3E-14			5.5E-11	5.0E-10	8.6E-10	2.04
Methoxychlor	4.4E-02	NI	NI	NI	1	0.10		3.9E-10		3.6E-14				5.5E-10			
Toxaphene	4.4E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.9E-09	4.3E-09	3.6E-13	3.9E-13			5.5E-09	6.1E-09	1.0E-08	24.65
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-08		1.6E-12				2.5E-08	4.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL118-2

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	2.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-10	3.1E-09	1.6E-14	2.8E-13			2.5E-10	4.3E-09	7.4E-09	60.44
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	1.18
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.34
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.4E-12	1.7E-15				2.6E-11	6.3E-12	1.1E-11	0.09
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.3E-12	1.7E-15				2.6E-11	8.9E-12	1.5E-11	0.12
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.3E-12	1.7E-15	5.7E-16			2.6E-11	8.9E-12	1.5E-11	0.12
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.34
Dieldrin	4.9E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.4E-11	7.1E-10	4.0E-15	6.5E-14			6.2E-11	1.0E-09	1.7E-09	13.94
Chlordane	2.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.9E-11	6.6E-12	1.7E-15	6.1E-16			2.7E-11	9.3E-12	1.6E-11	0.13
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.24
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	0.84
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	1.70
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	20.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.1E-09		4.6E-13				7.2E-09	1.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
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: SL119-2

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	3 0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.7E-10	4 6E-09	2.5E-14	4.2E-13			3.8E-10	6.5E-09	1.1E-08	50.22
Alpha-BHC	1 1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9 9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	0.68
Beta-BHC	1.1E-03	1 8E+00	1 8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.19
4,4-DDD	2.7E-03	2.4E-01	2 4E-01	NI	1	0.10		2.4E-11	5.8E-12	2.2E-15				3.4E-11	8.2E-12	1 4E-11	0.06
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.9E-11	6.4E-12	1.7E-15				2.7E-11	9.1E-12	1.6E-11	0.07
4,4-DDT	6.4E-03	3.4E-01	3.4E-01	3 4E-01	1	0.10		5.8E-11	2.0E-11	5.3E-15	1.8E-15			8.1E-11	2.8E-11	4.7E-11	0.21
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.19
Dieldrin	2.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.0E-10	3.2E-09	1 8E-14	2.9E-13			2.8E-10	4.5E-09	7.6E-09	34.66
Chlordane	5.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.5E-11	1.6E-11	4.1E-15	1.4E-15			6.4E-11	2.2E-11	3.8E-11	0.17
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.14
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9 9E-12	4.5E-11	9.1E-16	4.2E-15			1.4E-11	6.3E-11	1.1E-10	0.49
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9 9E-12	9.0E-11	9.1E-16	8.2E-15			1.4E-11	1.3E-10	2.2E-10	0.99
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	11.91
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									9 1E-09		8.3E-13				1.3E-08	2.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
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: SL120-2

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		4.5E-11	7.7E-10	4.1E-15	7.0E-14			6.4E-11	1.1E-09	1.8E-09	31.40
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	2.44
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.70
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.3E-12	1.6E-15				2.5E-11	6.1E-12	1.0E-11	0.18
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.25
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.25
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.70
Dieldrin	2.6E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-11	3.7E-10	2.1E-15	3.4E-14			3.3E-11	5.3E-10	9.0E-10	15.37
Chlordane	2.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.9E-11	6.6E-12	1.7E-15	6.1E-16			2.7E-11	9.3E-12	1.6E-11	0.27
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.50
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	1.75
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	3.53
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	42.66
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.4E-09		2.2E-13				3.4E-09	5.9E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL121-1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, f/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.6E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-09	2.4E-08	1.3E-13	2.2E-12			2.0E-09	3.5E-08	5.9E-08	49.86
Alpha-BHC	1.2E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.1E-10	6.8E-10	9.9E-15	6.2E-14			1.5E-10	9.6E-10	1.6E-09	1.39
Beta-BHC	1.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-10	1.9E-10	9.9E-15	1.8E-14			1.5E-10	2.7E-10	4.7E-10	0.40
4,4-DDD	2.3E-02	2.4E-01	2.4E-01	NI	1	0.10		2.1E-10	5.0E-11	1.9E-14				2.9E-10	7.0E-11	1.2E-10	0.10
4,4-DDE	2.3E-02	3.4E-01	3.4E-01	NI	1	0.10		2.1E-10	7.0E-11	1.9E-14				2.9E-10	9.9E-11	1.7E-10	0.14
4,4-DDT	2.5E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.3E-11	7.7E-12	2.1E-15	7.0E-16			3.2E-11	1.1E-11	1.8E-11	0.02
Delta-BHC	1.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-10	1.9E-10	9.9E-15	1.8E-14			1.5E-10	2.7E-10	4.7E-10	0.40
Dieldrin	6.9E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.2E-10	9.9E-09	5.7E-14	9.1E-13			8.8E-10	1.4E-08	2.4E-08	20.24
Chlordane	1.0E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.0E-11	3.2E-11	8.2E-15	2.9E-15			1.3E-10	4.5E-11	7.6E-11	0.06
Endosulfan I	1.3E-03	NI	NI	NI	1	0.10		1.2E-11		1.1E-15				1.7E-11			
Endosulfan II	2.3E-02	NI	NI	NI	1	0.10		2.1E-10		1.9E-14				2.9E-10			
Endosulfan sulfate	2.3E-02	NI	NI	NI	1	0.10		2.1E-10		1.9E-14				2.9E-10			
Endrin	2.3E-02	NI	NI	NI	1	0.10		2.1E-10		1.9E-14				2.9E-10			
Endrin aldehyde	2.3E-02	NI	NI	NI	1	0.10		2.1E-10		1.9E-14				2.9E-10			
Endrin ketone	4.8E-03	NI	NI	NI	1	0.10		4.3E-11		4.0E-15				6.1E-11			
Gamma-BHC (Lindane)	1.2E-02	1.3E+00	1.3E+00	NI	1	0.10		1.1E-10	1.4E-10	9.9E-15				1.5E-10	2.0E-10	3.4E-10	0.29
Heptachlor	1.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-11	4.5E-10	9.1E-15	4.2E-14			1.4E-10	6.3E-10	1.1E-09	0.91
Heptachlor epoxide	1.2E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-10	9.8E-10	9.9E-15	9.0E-14			1.5E-10	1.4E-09	2.4E-09	2.00
Methoxychlor	1.2E-01	NI	NI	NI	1	0.10		1.1E-09		9.9E-14				1.5E-09			
Toxaphene	1.2E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.1E-08	1.2E-08	9.9E-13	1.1E-12			1.5E-08	1.7E-08	2.9E-08	24.20
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									4.9E-08		4.5E-12				6.9E-08	1.2E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL122-5

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	7.6E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.8E-10	1.2E-08	6.3E-14	1.1E-12			9.7E-10	1.6E-08	2.8E-08	56.88
Alpha-BHC	5.5E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		5.0E-11	3.1E-10	4.5E-15	2.9E-14			7.0E-11	4.4E-10	7.5E-10	1.53
Beta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.44
4,4-DDD	1.1E-02	2.4E-01	2.4E-01	NI	1	0.10		9.9E-11	2.4E-11	9.1E-15				1.4E-10	3.4E-11	5.7E-11	0.12
4,4-DDE	1.1E-02	3.4E-01	3.4E-01	NI	1	0.10		9.9E-11	3.4E-11	9.1E-15				1.4E-10	4.8E-11	8.1E-11	0.16
4,4-DDT	1.1E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		9.9E-11	3.4E-11	9.1E-15	3.1E-15			1.4E-10	4.8E-11	8.1E-11	0.16
Delta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.44
Dieldrin	1.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.4E-10	2.2E-09	1.2E-14	2.0E-13			1.9E-10	3.1E-09	5.2E-09	10.57
Chlordane	1.1E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.9E-11	3.5E-11	9.1E-15	3.2E-15			1.4E-10	4.9E-11	8.4E-11	0.17
Endosulfan I	2.1E-02	NI	NI	NI	1	0.10		1.9E-10		1.7E-14				2.7E-10			
Endosulfan II	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endosulfan sulfate	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endrin	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endrin aldehyde	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endrin ketone	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Gamma-BHC (Lindane)	5.5E-03	1.3E+00	1.3E+00	NI	1	0.10		5.0E-11	6.4E-11	4.5E-15				7.0E-11	9.1E-11	1.6E-10	0.31
Heptachlor	2.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.8E-11	8.1E-11	1.6E-15	7.6E-15			2.5E-11	1.1E-10	2.0E-10	0.40
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.0E-11	4.5E-10	4.5E-15	4.1E-14			7.0E-11	6.4E-10	1.1E-09	2.20
Methoxychlor	5.5E-02	NI	NI	NI	1	0.10		5.0E-10		4.5E-14				7.0E-10			
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-09	5.4E-09	4.5E-13	5.0E-13			7.0E-09	7.7E-09	1.3E-08	26.63
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.0E-08		1.9E-12				2.9E-08	4.9E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL123-5

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	4.4E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.0E-10	6.7E-09	3.6E-14	6.2E-13			5.6E-10	9.5E-09	1.6E-08	51.06
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-11	6.5E-11	9.5E-16	6.0E-15			1.5E-11	9.2E-11	1.6E-10	0.49
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.14
4,4-DDD	2.2E-03	2.4E-01	2.4E-01	NI	1	0.10		2.0E-11	4.8E-12	1.8E-15				2.8E-11	6.7E-12	1.1E-11	0.04
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.05
4,4-DDT	2.2E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-11	6.7E-12	1.8E-15	6.2E-16			2.8E-11	9.5E-12	1.6E-11	0.05
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.14
Dieldrin	2.3E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-10	3.3E-09	1.9E-14	3.0E-13			2.9E-10	4.7E-09	8.0E-09	25.12
Chlordane	3.7E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.3E-11	1.1E-11	3.0E-15	1.1E-15			4.6E-11	1.6E-11	2.8E-11	0.09
Endosulfan I	1.8E-03	NI	NI	NI	1	0.10		1.6E-11		1.5E-15				2.3E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.0E-11	1.3E-11	9.5E-16				1.5E-11	1.9E-11	3.2E-11	0.10
Heptachlor	3.5E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.2E-11	1.4E-10	2.9E-15	1.3E-14			4.5E-11	2.0E-10	3.4E-10	1.06
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-11	9.4E-11	9.5E-16	8.6E-15			1.5E-11	1.3E-10	2.3E-10	0.71
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.0E-10		9.5E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-09	1.1E-09	9.5E-14	1.0E-13			1.5E-09	1.6E-09	2.7E-09	8.64
DIOXIN																	
2,3,7,8-TCDD	1.2E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		1.1E-14	1.6E-09	9.9E-19	1.5E-13			1.5E-14	2.3E-09	3.9E-09	12.29
Total Cancer Risk									1.3E-08		1.2E-12				1.9E-08	3.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL124-5

		Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF),	Dermal Absorption		Volatile Inhalation from soil dust		Volatile Inhalation from volatiles		Ingestion		Total Risk	Risk Percentage
	Concentration in soil (CS),	Oral Slope	Dermal Slope	Inhalation Slope				Amount Absorbed (IDD),	Lifetime Risks (CRD)	Amount Inhaled (IDIS)	Lifetime Risks (CRIS)	Amount Inhaled (IDIV)	Lifetime Risks (CRIV)	Amount Ingested (IDIG)	Lifetime Risks (CRIG)		
Aldrin	2.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-10	3.1E-09	1.6E-14	2.8E-13			2.5E-10	4.3E-09	7.4E-09	34.60
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-11	6.5E-11	9.5E-16	6.0E-15			1.5E-11	9.2E-11	1.6E-10	0.74
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.21
4,4-DDD	2.2E-03	2.4E-01	2.4E-01	NI	1	0.10		2.0E-11	4.8E-12	1.8E-15				2.8E-11	6.7E-12	1.1E-11	0.05
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.08
4,4-DDT	2.2E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-11	6.7E-12	1.8E-15	6.2E-16			2.8E-11	9.5E-12	1.6E-11	0.08
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.21
Dieldrin	1.9E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.6E-14	2.5E-13			2.4E-10	3.9E-09	6.6E-09	30.94
Chlordane	4.3E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.9E-11	1.4E-11	3.5E-15	1.2E-15			5.5E-11	1.9E-11	3.3E-11	0.15
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1.0E-11		9.5E-16				1.5E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.0E-11	1.3E-11	9.5E-16				1.5E-11	1.9E-11	3.2E-11	0.15
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.0E-11	4.7E-11	9.5E-16	4.4E-15			1.5E-11	6.6E-11	1.1E-10	0.53
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-11	9.4E-11	9.5E-16	8.6E-15			1.5E-11	1.3E-10	2.3E-10	1.07
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.0E-10		9.5E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-09	1.1E-09	9.5E-14	1.0E-13			1.5E-09	1.6E-09	2.7E-09	12.67
DIOXIN																	
2,3,7,8-TCDD	1.2E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		1.1E-14	1.6E-09	9.9E-19	1.5E-13			1.5E-14	2.3E-09	3.9E-09	18.32
No sample collected																	
Total Cancer Risk									8.8E-09		8.1E-13				1.2E-08	2.1E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL125-5

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)	Drm (AI	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	9.0E-01	1.7E+01	1.7E+01	1.7E+01		0.10		8.1E-09	1.4E-07	7.4E-13	1.3E-11			1.1E-08	1.9E-07	3.3E-07	45.91
Alpha-BHC	1.2E-01	6.3E+00	6.3E+00	6.3E+00		0.10		1.0E-09	6.5E-09	9.5E-14	6.0E-13			1.5E-09	9.2E-09	1.6E-08	2.17
Beta-BHC	1.2E-01	1.8E+00	1.8E+00	1.8E+00		0.10		1.0E-09	1.9E-09	9.5E-14	1.7E-13			1.5E-09	2.6E-09	4.5E-09	0.62
4,4-DDD	2.2E-01	2.4E-01	2.4E-01	NI		0.10		2.0E-09	4.8E-10	1.8E-13				2.8E-09	6.7E-10	1.1E-09	0.16
4,4-DDE	2.2E-01	3.4E-01	3.4E-01	NI		0.10		2.0E-09	6.7E-10	1.8E-13				2.8E-09	9.5E-10	1.6E-09	0.22
4,4-DDT	2.2E-01	3.4E-01	3.4E-01	3.4E-01		0.10		2.0E-09	6.7E-10	1.8E-13	6.2E-14			2.8E-09	9.5E-10	1.6E-09	0.22
Delta-BHC	1.2E-01	1.8E+00	1.8E+00	1.8E+00		0.10		1.0E-09	1.9E-09	9.5E-14	1.7E-13			1.5E-09	2.6E-09	4.5E-09	0.62
Dieldrin	1.4E-01	1.6E+01	1.6E+01	1.6E+01		0.10		1.3E-09	2.0E-08	1.2E-13	1.8E-12			1.8E-09	2.8E-08	4.9E-08	6.72
Chlordane	2.3E-01	3.5E-01	3.5E-01	3.5E-01		0.10		2.1E-09	7.2E-10	1.9E-13	6.6E-14			2.9E-09	1.0E-09	1.7E-09	0.24
Endosulfan I	1.2E-01	NI	NI	NI		0.10		1.0E-09		9.5E-14				1.5E-09			
Endosulfan II	2.2E-01	NI	NI	NI		0.10		2.0E-09		1.8E-13				2.8E-09			
Endosulfan sulfate	2.2E-01	NI	NI	NI		0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin	2.2E-01	NI	NI	NI		0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin aldehyde	2.2E-01	NI	NI	NI		0.10		2.0E-09		1.8E-13				2.8E-09			
Endrin ketone	2.2E-01	NI	NI	NI		0.10		2.0E-09		1.8E-13				2.8E-09			
Gamma-BHC (Lindane)	1.2E-01	1.3E+00	1.3E+00	NI		0.10		1.0E-09	1.3E-09	9.5E-14				1.5E-09	1.9E-09	3.2E-09	0.45
Heptachlor	1.2E-01	4.5E+00	4.5E+00	4.6E+00		0.10		1.0E-09	4.7E-09	9.5E-14	4.4E-13			1.5E-09	6.6E-09	1.1E-08	1.55
Heptachlor epoxide	1.2E-01	9.1E+00	9.1E+00	9.1E+00		0.10		1.0E-09	9.4E-09	9.5E-14	8.6E-13			1.5E-09	1.3E-08	2.3E-08	3.14
Methoxychlor	1.2E+00	NI	NI	NI		0.10		1.0E-08		9.5E-13				1.5E-08			
Toxaphene	1.2E+01	1.1E+00	1.1E+00	1.1E+00		0.10		1.0E-07	1.1E-07	9.5E-12	1.0E-11			1.5E-07	1.6E-07	2.7E-07	37.96
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05		0.10											
No sample collected																	
Total Cancer Risk									3.0E-07		2.7E-11				4.2E-07	7.2E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL126-4

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	3.6E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.2E-10	5.5E-09	3.0E-14	5.0E-13			4.6E-10	7.8E-09	1.3E-08	53.26
Alpha-BHC	2.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.9E-11	1.2E-10	1.8E-15	1.1E-14			2.7E-11	1.7E-10	2.9E-10	1.18
Beta-BHC	2.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-11	3.5E-11	1.8E-15	3.2E-15			2.7E-11	4.9E-11	8.4E-11	0.34
4,4-DDD	4.8E-03	2.4E-01	2.4E-01	NI	1	0.10		4.3E-11	1.0E-11	4.0E-15				6.1E-11	1.5E-11	2.5E-11	0.10
4,4-DDE	4.2E-03	3.4E-01	3.4E-01	NI	1	0.10		3.8E-11	1.3E-11	3.5E-15				5.3E-11	1.8E-11	3.1E-11	0.12
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.9E-11	6.4E-12	1.7E-15	5.9E-16			2.7E-11	9.1E-12	1.6E-11	0.06
Delta-BHC	2.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-11	3.5E-11	1.8E-15	3.2E-15			2.7E-11	4.9E-11	8.4E-11	0.34
Dieldrin	1.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.4E-10	2.2E-09	1.2E-14	2.0E-13			1.9E-10	3.1E-09	5.2E-09	20.89
Chlordane	1.0E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.4E-11	3.3E-11	8.6E-15	3.0E-15			1.3E-10	4.6E-11	7.9E-11	0.32
Endosulfan I	2.2E-03	NI	NI	NI	1	0.10		1.9E-11		1.8E-15				2.7E-11			
Endosulfan II	4.2E-03	NI	NI	NI	1	0.10		3.8E-11		3.5E-15				5.3E-11			
Endosulfan sulfate	4.2E-03	NI	NI	NI	1	0.10		3.8E-11		3.5E-15				5.3E-11			
Endrin	4.2E-03	NI	NI	NI	1	0.10		3.8E-11		3.5E-15				5.3E-11			
Endrin aldehyde	4.2E-03	NI	NI	NI	1	0.10		3.8E-11		3.5E-15				5.3E-11			
Endrin ketone	4.2E-03	NI	NI	NI	1	0.10		3.8E-11		3.5E-15				5.3E-11			
Gamma-BHC (Lindane)	2.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.9E-11	2.5E-11	1.8E-15				2.7E-11	3.6E-11	6.1E-11	0.24
Heptachlor	2.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.0E-11	8.9E-11	1.8E-15	8.3E-15			2.8E-11	1.3E-10	2.2E-10	0.86
Heptachlor epoxide	2.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.9E-11	1.8E-10	1.8E-15	1.6E-14			2.7E-11	2.5E-10	4.2E-10	1.70
Methoxychlor	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Toxaphene	2.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.9E-09	2.1E-09	1.8E-13	1.9E-13			2.7E-09	3.0E-09	5.1E-09	20.58
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.0E-08		9.4E-13				1.5E-08	2.5E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL127-5

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion 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		9.5E-12	1.6E-10	8.7E-16	1.5E-14			1.3E-11	2.3E-10	3.9E-10	3.06
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	1.13
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.32
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.4E-12	1.7E-15				2.6E-11	6.3E-12	1.1E-11	0.08
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.3E-12	1.7E-15				2.6E-11	8.9E-12	1.5E-11	0.12
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.3E-12	1.7E-15	5.7E-16			2.6E-11	8.9E-12	1.5E-11	0.12
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.32
Dieldrin	2.9E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.6E-11	4.2E-10	2.4E-15	3.8E-14			3.7E-11	5.9E-10	1.0E-09	7.95
Chlordane	2.5E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-11	7.7E-12	2.0E-15	7.1E-16			3.1E-11	1.1E-11	1.9E-11	0.15
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.23
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	0.81
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	1.64
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	19.79
DIOXIN																	
2,3,7,8-TCDD	2.5E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		2.3E-14	3.4E-09	2.1E-18	3.1E-13			3.2E-14	4.8E-09	8.1E-09	64.26
Total Cancer Risk									5.3E-09		4.8E-13				7.4E-09	1.3E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL128-7

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 (fDD), 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 (fDIG) (mg/kg-d)	Lifetime Risks (CRIG) (unitless)		
PESTICIDES/PCBs																	
Aldrin	5.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.6E-11	7.8E-10	4.2E-15	7.1E-14			6.5E-11	1.1E-09	1.9E-09	33.81
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	2.46
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.70
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.18
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.26
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.26
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.70
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.9E-10	1.6E-15	2.6E-14			2.5E-11	4.1E-10	7.0E-10	12.48
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.27
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.51
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-12	4.5E-11	9.1E-16	4.2E-15			1.4E-11	6.3E-11	1.1E-10	1.93
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	3.55
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	42.89
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.3E-09		2.1E-13				3.3E-09	5.6E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL129-5

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	2.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-10	3.1E-09	1.6E-14	2.8E-13			2.5E-10	4.3E-09	7.4E-09	0.78
Alpha-BHC	5.5E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		5.0E-11	3.1E-10	4.5E-15	2.9E-14			7.0E-11	4.4E-10	7.5E-10	0.08
Beta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.02
4,4-DDD	1.0E-02	2.4E-01	2.4E-01	NI	1	0.10		9.0E-11	2.2E-11	8.2E-15				1.3E-10	3.1E-11	5.2E-11	0.01
4,4-DDE	1.8E-02	3.4E-01	3.4E-01	NI	1	0.10		1.6E-10	5.5E-11	1.5E-14				2.3E-10	7.8E-11	1.3E-10	0.01
4,4-DDT	5.9E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.3E-10	1.8E-10	4.9E-14	1.7E-14			7.5E-10	2.6E-10	4.4E-10	0.05
Delta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.02
Dieldrin	9.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.6E-10	1.4E-08	7.8E-14	1.3E-12			1.2E-09	1.9E-08	3.3E-08	3.51
Chlordane	1.4E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.2E-09	4.3E-10	1.1E-13	4.0E-14			1.7E-09	6.1E-10	1.0E-09	0.11
Endosulfan I	5.5E-03	NI	NI	NI	1	0.10		5.0E-11		4.5E-15				7.0E-11			
Endosulfan II	7.8E-03	NI	NI	NI	1	0.10		7.0E-11		6.4E-15				9.9E-11			
Endosulfan sulfate	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin aldehyde	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin ketone	6.4E-03	NI	NI	NI	1	0.10		5.8E-11		5.3E-15				8.1E-11			
Gamma-BHC (Lindane)	5.5E-03	1.3E+00	1.3E+00	NI	1	0.10		5.0E-11	6.4E-11	4.5E-15				7.0E-11	9.1E-11	1.6E-10	0.02
Heptachlor	4.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.7E-10	1.7E-09	3.4E-14	1.6E-13			5.2E-10	2.3E-09	4.0E-09	0.43
Heptachlor epoxide	6.4E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.8E-11	5.2E-10	5.3E-15	4.8E-14			8.1E-11	7.4E-10	1.3E-09	0.13
Methoxychlor	5.5E-02	NI	NI	NI	1	0.10		5.0E-10		4.5E-14				7.0E-10			
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-09	5.4E-09	4.5E-13	5.0E-13			7.0E-09	7.7E-09	1.3E-08	1.40
DIOXIN																	
2,3,7,8-TCDD	2.7E-04	1.5E+05	1.5E+05	1.5E+05	1	0.10		2.4E-12	3.6E-07	2.2E-16	3.3E-11			3.4E-12	5.2E-07	8.8E-07	93.43
Total Cancer Risk									3.9E-07		3.6E-11				5.5E-07	9.4E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL130-2

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	1.2E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-11	1.8E-10	9.9E-16	1.7E-14			1.5E-11	2.6E-10	4.4E-10	9.06
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.1E-11	6.8E-11	9.9E-16	6.2E-15			1.5E-11	9.6E-11	1.6E-10	3.36
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	1.9E-11	9.9E-16	1.8E-15			1.5E-11	2.7E-11	4.7E-11	0.96
4,4-DDD	2.3E-03	2.4E-01	2.4E-01	NI	1	0.10		2.1E-11	5.0E-12	1.9E-15				2.9E-11	7.0E-12	1.2E-11	0.25
4,4-DDE	2.3E-03	3.4E-01	3.4E-01	NI	1	0.10		2.1E-11	7.0E-12	1.9E-15				2.9E-11	9.9E-12	1.7E-11	0.35
4,4-DDT	2.3E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.1E-11	7.0E-12	1.9E-15	6.4E-16			2.9E-11	9.9E-12	1.7E-11	0.35
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	1.9E-11	9.9E-16	1.8E-15			1.5E-11	2.7E-11	4.7E-11	0.96
Dieldrin	*2.3E-03*	*1.6E+01*	*1.6E+01*	*1.6E+01*	*1*	*0.10*		*2.1E-11*	*3.3E-10*	*1.9E-15*	*3.0E-14*			*2.9E-11*	*4.7E-10*	*8.0E-10*	*16.35*
Chlordane	2.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-11	7.6E-12	2.0E-15	6.9E-16			3.1E-11	1.1E-11	1.8E-11	0.37
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1.1E-11		9.9E-16				1.5E-11			
Endosulfan II	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endosulfan sulfate	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin aldehyde	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin ketone	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.1E-11	1.4E-11	9.9E-16				1.5E-11	2.0E-11	3.4E-11	0.69
Heptachlor	1.9E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.7E-11	7.7E-11	1.6E-15	7.2E-15			2.4E-11	1.1E-10	1.9E-10	3.80
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-11	9.8E-11	9.9E-16	9.0E-15			1.5E-11	1.4E-10	2.4E-10	4.85
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.1E-10		9.9E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.1E-09	1.2E-09	9.9E-14	1.1E-13			1.5E-09	1.7E-09	2.9E-09	58.65
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									2.0E-09		1.8E-13				2.9E-09	4.9E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL131-2

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	2.1E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.9E-09	3.2E-08	1.7E-13	2.9E-12			2.7E-09	4.5E-08	7.8E-08	46.83
Alpha-BHC	2.2E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.9E-10	1.2E-09	1.8E-14	1.1E-13			2.7E-10	1.7E-09	2.9E-09	1.78
Beta-BHC	2.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-10	3.5E-10	1.8E-14	3.2E-14			2.7E-10	4.9E-10	8.4E-10	0.51
4,4-DDD	1.2E-02	2.4E-01	2.4E-01	NI	1	0.10		1.1E-10	2.6E-11	9.9E-15				1.5E-10	3.7E-11	6.3E-11	0.04
4,4-DDE	5.1E-03	3.4E 01	3.4E-01	NI	1	0.10		4.6E-11	1.6E-11	4.2E-15				6.5E-11	2.2E-11	3.8E-11	0.02
4,4-DDT	6.5E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.9E-11	2.0E-11	5.4E-15	1.8E-15			8.3E-11	2.8E-11	4.8E-11	0.03
Delta-BHC	2.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-10	3.5E-10	1.8E-14	3.2E-14			2.7E-10	4.9E-10	8.4E-10	0.51
Dieldrin	7.5E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.8E-10	1.1E-08	6.2E-14	9.9E-13			9.5E-10	1.5E-08	2.6E-08	15.74
Chlordane	7.9E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.1E-10	2.5E-10	6.5E-14	2.3E-14			1.0E-09	3.5E-10	6.0E-10	0.36
Endosulfan I	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Endosulfan II	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Endosulfan sulfate	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Endrin	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Endrin aldehyde	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Endrin ketone	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Gamma-BHC (Lindane)	2.2E-02	1.3E+00	1.3E+00	NI	1	0.10		1.9E-10	2.5E-10	1.8E-14				2.7E-10	3.6E-10	6.1E-10	0.37
Heptachlor	4.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.6E-11	1.6E-10	3.3E-15	1.5E-14			5.1E-11	2.3E-10	3.9E-10	0.24
Heptachlor epoxide	2.2E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.9E-10	1.8E-09	1.8E-14	1.6E-13			2.7E-10	2.5E-09	4.2E-09	2.57
Methoxychlor	2.2E-01	NI	NI	NI	1	0.10		1.9E-09		1.8E-13				2.7E-09			
Toxaphene	2.2E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.9E-08	2.1E-08	1.8E-12	1.9E-12			2.7E-08	3.0E-08	5.1E-08	31.02
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									6.9E-08		6.3E-12				9.7E-08	1.7E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL132-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.12
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.38
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.3E-12	1.6E-15				2.5E-11	6.1E-12	1.0E-11	0.26
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.9E-10	1.6E-15	2.6E-14			2.5E-11	4.1E-10	7.0E-10	17.17
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.36
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.41
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.88
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.03
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL133-2

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	2.5E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.3E-11	3.8E-10	2.1E-15	3.5E-14			3.2E-11	5.4E-10	9.2E-10	4.02
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.60
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.17
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.04
4,4-DDE	*2.0E-03*	*3.4E-01*	*3.4E-01*	*NI*	*1*	*0.10*		*1.8E-11*	*6.0E-12*	*1.6E-15*				*2.5E-11*	*8.4E-12*	*1.4E-11*	*0.06*
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.06
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.17
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	2.95
Chlordane	2.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-11	7.6E-12	2.0E-15	6.9E-16			3.1E-11	1.1E-11	1.8E-11	0.08
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.12
Heptachlor	2.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.0E-11	8.9E-11	1.8E-15	8.3E-15			2.8E-11	1.3E-10	2.2E-10	0.94
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	0.86
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	10.40
DIOXIN																	
2,3,7,8-TCDD	5.6E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		5.0E-14	7.6E-09	4.6E-18	6.9E-13			7.1E-14	1.1E-08	1.8E-08	79.53
Total Cancer Risk									9.5E-09		8.7E-13				1.3E-08	2.3E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS:

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL134-2

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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.38
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL135-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	8.54
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.16
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.24
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.33
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.33
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
Dieldrin	2.8E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.5E-11	4.0E-10	2.3E-15	3.7E-14			3.6E-11	5.7E-10	9.7E-10	22.50
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.35
Endosulfan I	1.4E-03	NI	NI	NI	1	0.10		1.3E-11		1.2E-15				1.8E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.65
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.26
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.57
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	55.25
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.8E-09		1.6E-13				2.5E-09	4.3E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL136-2

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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	1.57
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.58
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.17
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.04
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.06
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.06
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.17
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	2.87
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.06
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.12
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	0.41
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	0.84
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	10.13
DIOXIN																	
2,3,7,8-TCDD	6.0E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		5.4E-14	8.1E-09	4.9E-18	7.4E-13			7.6E-14	1.1E-08	2.0E-08	82.91
Total Cancer Risk									9.8E-09		8.9E-13				1.4E-08	2.4E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL137-2

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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.35
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.38
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL138-1

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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.38
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL139-1

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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.38
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD No sample collected		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL140-1

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 (A	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion 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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.38
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL141-1

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	2.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.9E-10	3.2E-09	1.7E-14	2.9E-13			2.7E-10	4.5E-09	7.8E-09	43.48
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.77
Beta-BHC	2.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.8E-11	3.2E-11	1.6E-15	3.0E-15			2.5E-11	4.6E-11	7.8E-11	0.44
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.06
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.9E-11	6.4E-12	1.7E-15				2.7E-11	9.1E-12	1.6E-11	0.09
4,4-DDT	7.8E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		7.0E-11	2.4E-11	6.4E-15	2.2E-15			9.9E-11	3.4E-11	5.8E-11	0.32
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.22
Dieldrin	2.0E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-10	2.9E-09	1.6E-14	2.6E-13			2.5E-10	4.1E-09	7.0E-09	38.97
Chlordane	1.1E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.5E-11	3.3E-11	8.7E-15	3.1E-15			1.3E-10	4.7E-11	8.1E-11	0.45
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.16
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	0.55
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	1.11
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	13.40
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									7.4E-09		6.7E-13				1.0E-08	1.8E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL142-2

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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	8.54
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.17
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
4,4-DDD	1.5E-02	2.4E-01	2.4E-01	NI	1	0.10		1.4E-10	3.2E-11	1.2E-14				1.9E-10	4.6E-11	7.8E-11	1.81
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.33
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.33
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.90
Dieldrin	2.6E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-11	3.7E-10	2.1E-15	3.4E-14			3.3E-11	5.3E-10	9.0E-10	20.90
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.35
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.65
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.26
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.57
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	55.27
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.8E-09		1.6E-13				2.5E-09	4.3E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL143-2

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion 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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.36
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL144-2

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		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.04
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.35
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.96
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.35
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.35
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.96
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.9E-11	3.0E-10	1.7E-15	2.8E-14			2.7E-11	4.3E-10	7.3E-10	17.87
Chlordane	2.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-11	7.6E-12	2.0E-15	6.9E-16			3.1E-11	1.1E-11	1.8E-11	0.45
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.69
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.39
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.84
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	58.50
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.1E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL145-2

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	1.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-12	1.5E-10	8.2E-16	1.4E-14			1.3E-11	2.2E-10	3.7E-10	9.16
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	3.40
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.2E-12	1.6E-15				2.5E-11	6.0E-12	1.0E-11	0.25
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.0E-12	1.6E-15				2.5E-11	8.4E-12	1.4E-11	0.36
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.0E-12	1.6E-15	5.5E-16			2.5E-11	8.4E-12	1.4E-11	0.36
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.97
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	16.82
Chlordane	2.0E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-11	6.3E-12	1.6E-15	5.8E-16			2.5E-11	8.9E-12	1.5E-11	0.36
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.70
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	2.43
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	4.91
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	59.30
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-09		1.5E-13				2.4E-09	4.0E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL146-1

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion 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		9.5E-12	1.6E-10	8.7E-16	1.5E-14			1.3E-11	2.3E-10	3.9E-10	8.33
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	3.09
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.88
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.4E-12	1.7E-15				2.6E-11	6.3E-12	1.1E-11	0.23
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.3E-12	1.7E-15				2.6E-11	8.9E-12	1.5E-11	0.33
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.3E-12	1.7E-15	5.7E-16			2.6E-11	8.9E-12	1.5E-11	0.33
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.88
Dieldrin	2.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	3.0E-10	1.7E-15	2.7E-14			2.6E-11	4.2E-10	7.1E-10	15.30
Chlordane	*2.1E-03*	*3.5E-01*	*3.5E-01*	*3.5E-01*	1	*0.10*		*1.9E-11*	*6.6E-12*	*1.7E-15*	*6.1E-16*			*2.7E-11*	*9.3E-12*	*1.6E-11*	*0.34*
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.8E-11		1.7E-15				2.6E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.64
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	2.20
Heptachlor epoxide	3.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.9E-11	2.6E-10	2.6E-15	2.4E-14			4.1E-11	3.7E-10	6.3E-10	13.58
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	53.88
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.9E-09		1.7E-13				2.7E-09	4.7E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL147-2

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.7E-10	4.6E-09	2.5E-14	4.2E-13			3.6E-10	6.5E-09	1.1E-08	11.78
Alpha-BHC	1.2E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-10	6.5E-10	9.5E-15	6.0E-14			1.5E-10	9.2E-10	1.6E-09	1.67
Beta-BHC	1.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-10	1.9E-10	9.5E-15	1.7E-14			1.5E-10	2.6E-10	4.5E-10	0.48
4,4-DDD	6.0E-02	2.4E-01	2.4E-01	NI	1	0.10		5.4E-10	1.3E-10	4.9E-14				7.6E-10	1.8E-10	3.1E-10	0.33
4,4-DDE	4.9E-03	3.4E-01	3.4E-01	NI	1	0.10		4.4E-11	1.5E-11	4.0E-15				6.2E-11	2.1E-11	3.6E-11	0.04
4,4-DDT	4.7E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.2E-11	1.4E-11	3.9E-15	1.3E-15			6.0E-11	2.0E-11	3.5E-11	0.04
Delta-BHC	1.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-10	1.9E-10	9.5E-15	1.7E-14			1.5E-10	2.6E-10	4.5E-10	0.48
Dieldrin	1.4E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.3E-09	2.0E-08	1.2E-13	1.8E-12			1.8E-09	2.8E-08	4.9E-08	51.74
Chlordane	2.1E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.9E-10	6.7E-11	1.7E-14	6.1E-15			2.7E-10	9.4E-11	1.6E-10	0.17
Endosulfan I	3.6E-03	NI	NI	NI	1	0.10		3.2E-11		3.0E-15				4.6E-11			
Endosulfan II	3.1E-03	NI	NI	NI	1	0.10		2.8E-11		2.6E-15				3.9E-11			
Endosulfan sulfate	2.3E-02	NI	NI	NI	1	0.10		2.0E-10		1.9E-14				2.9E-10			
Endrin	2.3E-02	NI	NI	NI	1	0.10		2.0E-10		1.9E-14				2.9E-10			
Endrin aldehyde	2.3E-02	NI	NI	NI	1	0.10		2.0E-10		1.9E-14				2.9E-10			
Endrin ketone	2.3E-02	NI	NI	NI	1	0.10		2.0E-10		1.9E-14				2.9E-10			
Gamma-BHC (Lindane)	1.2E-02	1.3E+00	1.3E+00	NI	1	0.10		1.0E-10	1.3E-10	9.5E-15				1.5E-10	1.9E-10	3.2E-10	0.35
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-11	4.9E-11	9.9E-16	4.5E-15			1.5E-11	6.9E-11	1.2E-10	0.12
Heptachlor epoxide	1.7E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.5E-10	1.4E-09	1.4E-14	1.3E-13			2.2E-10	2.0E-09	3.4E-09	3.57
Methoxychlor	1.2E-01	NI	NI	NI	1	0.10		1.0E-09		9.5E-14				1.5E-09			
Toxaphene	1.2E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-08	1.1E-08	9.5E-13	1.0E-12			1.5E-08	1.6E-08	2.7E-08	29.22
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									3.9E-08		3.5E-12				5.5E-08	9.4E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL149-2

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	1.4E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.3E-11	2.1E-10	1.2E-15	2.0E-14			1.8E-11	3.0E-10	5.2E-10	10.71
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-11	6.5E-11	9.5E-16	6.0E-15			1.5E-11	9.2E-11	1.6E-10	3.26
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.93
4,4-DDD	2.0E-02	2.4E-01	2.4E-01	NI	1	0.10		1.8E-10	4.3E-11	1.6E-14				2.5E-10	6.1E-11	1.0E-10	2.16
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.34
4,4-DDT	2.2E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-11	6.7E-12	1.8E-15	6.2E-16			2.8E-11	9.5E-12	1.6E-11	0.34
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.93
Dieldrin	2.2E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.0E-11	3.2E-10	1.8E-15	2.9E-14			2.8E-11	4.5E-10	7.6E-10	15.85
Chlordane	5.2E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.7E-11	1.6E-11	4.3E-15	1.5E-15			6.6E-11	2.3E-11	4.0E-11	0.82
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1.0E-11		9.5E-16				1.5E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.0E-11	1.3E-11	9.5E-16				1.5E-11	1.9E-11	3.2E-11	0.67
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.0E-11	4.7E-11	9.5E-16	4.4E-15			1.5E-11	6.6E-11	1.1E-10	2.33
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-11	9.4E-11	9.5E-16	8.6E-15			1.5E-11	1.3E-10	2.3E-10	4.71
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.0E-10		9.5E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-09	1.1E-09	9.5E-14	1.0E-13			1.5E-09	1.6E-09	2.7E-09	56.95
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.0E-09		1.8E-13				2.8E-09	4.8E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL150-1

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	6.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.0E-11	1.0E-09	5.5E-15	9.4E-14			8.5E-11	1.4E-09	2.5E-09	19.78
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-11	6.5E-11	9.5E-16	6.0E-15			1.5E-11	9.2E-11	1.6E-10	1.26
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.36
4,4-DDD	2.2E-03	2.4E-01	2.4E-01	NI	1	0.10		2.0E-11	4.8E-12	1.8E-15				2.8E-11	6.7E-12	1.1E-11	0.09
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.13
4,4-DDT	5.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.5E-11	1.5E-11	4.1E-15	1.4E-15			6.4E-11	2.2E-11	3.7E-11	0.30
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-11	1.9E-11	9.5E-16	1.7E-15			1.5E-11	2.6E-11	4.5E-11	0.36
Dieldrin	1.8E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.6E-09	1.5E-14	2.4E-13			2.3E-10	3.7E-09	6.3E-09	50.01
Chlordane	9.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		8.2E-11	2.9E-11	7.5E-15	2.6E-15			1.2E-10	4.1E-11	6.9E-11	0.55
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1.0E-11		9.5E-16				1.5E-11			
Endosulfan II	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin ketone	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.0E-11	1.3E-11	9.5E-16				1.5E-11	1.9E-11	3.2E-11	0.26
Heptachlor	4.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.6E-11	1.6E-10	3.3E-15	1.5E-14			5.1E-11	2.3E-10	3.9E-10	3.13
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-11	9.4E-11	9.5E-16	8.6E-15			1.5E-11	1.3E-10	2.3E-10	1.82
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.0E-10		9.5E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-09	1.1E-09	9.5E-14	1.0E-13			1.5E-09	1.6E-09	2.7E-09	21.97
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.2E-09		4.7E-13				7.3E-09	1.3E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL151-2

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	Derm (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	2.5E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.3E-10	3.8E-09	2.1E-14	3.5E-13			3.2E-10	5.4E-09	9.2E-09	61.14
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.91
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.26
4,4-DDD	4.2E-03	2.4E-01	2.4E-01	NI	1	0.10		3.8E-11	9.1E-12	3.5E-15				5.3E-11	1.3E-11	2.2E-11	0.15
4,4-DDE	6.6E-03	3.4E-01	3.4E-01	NI	1	0.10		5.9E-11	2.0E-11	5.4E-15				8.4E-11	2.9E-11	4.9E-11	0.32
4,4-DDT	5.9E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.3E-11	1.8E-11	4.9E-15	1.7E-15			7.5E-11	2.6E-11	4.4E-11	0.29
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.26
Dieldrin	6.7E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		6.0E-11	9.6E-10	5.5E-15	8.8E-14			8.5E-11	1.4E-09	2.3E-09	15.42
Chlordane	8.7E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		7.8E-11	2.7E-11	7.2E-15	2.5E-15			1.1E-10	3.9E-11	6.6E-11	0.44
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	1.9E-03	NI	NI	NI	1	0.10		1.7E-11		1.6E-15				2.4E-11			
Endosulfan sulfate	1.9E-03	NI	NI	NI	1	0.10		1.7E-11		1.6E-15				2.4E-11			
Endrin	1.9E-03	NI	NI	NI	1	0.10		1.7E-11		1.6E-15				2.4E-11			
Endrin aldehyde	1.9E-03	NI	NI	NI	1	0.10		1.7E-11		1.6E-15				2.4E-11			
Endrin ketone	1.9E-03	NI	NI	NI	1	0.10		1.7E-11		1.6E-15				2.4E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.19
Heptachlor	5.4E-03	4.5E+00	4.5E+00	4.5E+00	1	0.10		4.9E-11	2.2E-10	4.5E-15	2.0E-14			6.9E-11	3.1E-10	5.3E-10	3.50
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	1.31
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	15.82
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									6.3E-09		5.7E-13				8.8E-09	1.5E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL152-2

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	3.7E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.3E-11	5.7E-10	3.0E-15	5.2E-14			4.7E-11	8.0E-10	1.4E-09	26.28
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	2.76
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.79
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.3E-12	1.6E-15				2.5E-11	6.1E-12	1.0E-11	0.20
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.28
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.28
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.79
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.9E-10	1.6E-15	2.6E-14			2.5E-11	4.1E-10	7.0E-10	13.37
Chlordane	3.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.7E-11	9.6E-12	2.5E-15	8.8E-16			3.9E-11	1.4E-11	2.3E-11	0.45
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.57
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.5E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	1.97
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	3.99
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	48.26
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.2E-09		2.0E-13				3.0E-09	5.2E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL153-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors 1/(mg/kg-d) Oral Slope Factor (SFO)	Dermal Slope Factor (SFD)	Inhalation Factor (SFI)	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 Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion 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		1.9E-07	3.2E-06	1.7E-11	2.9E-10			2.7E-07	4.5E-06	7.8E-06	61.37
Alpha-BHC	9.0E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		8.1E-09	5.1E-08	7.4E-13	4.7E-12			1.1E-06	7.2E-06	1.2E-07	0.97
Beta-BHC	9.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		8.1E-09	1.5E-08	7.4E-13	1.3E-12			1.1E-06	2.1E-06	3.5E-06	0.28
4,4-DDD	2.3E+00	2.4E-01	2.4E-01		1	0.10		2.1E-08	5.0E-09	1.9E-12				2.9E-06	7.0E-09	1.2E-08	0.09
4,4-DDE	2.3E-01	3.4E-01	3.4E-01		1	0.10		2.1E-09	7.0E-10	1.9E-13				2.9E-09	9.9E-10	1.7E-09	0.01
4,4-DDT	3.6E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		3.2E-08	1.1E-08	3.0E-12	1.0E-12			4.6E-06	1.6E-06	2.7E-06	0.21
Delta-BHC	9.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		8.1E-09	1.5E-08	7.4E-13	1.3E-12			1.1E-06	2.1E-06	3.5E-06	0.28
Dieldrin	3.0E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-08	4.3E-07	2.5E-12	4.0E-11			3.8E-06	6.1E-07	1.0E-05	8.25
Chlordane	1.0E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.4E-08	3.3E-08	8.6E-12	3.0E-12			1.3E-07	4.6E-08	7.9E-08	0.63
Endosulfan I	9.0E-01	NI	NI		1	0.10		8.1E-09		7.4E-13				1.1E-06			
Endosulfan II	2.6E-01	NI	NI		1	0.10		2.3E-09		2.1E-13				3.3E-09			
Endosulfan sulfate	1.8E+00	NI	NI		1	0.10		1.6E-08		1.4E-12				2.2E-06			
Endrin	1.8E+00	NI	NI		1	0.10		1.6E-08		1.4E-12				2.2E-06			
Endrin aldehyde	1.8E+00	NI	NI		1	0.10		1.6E-08		1.4E-12				2.2E-06			
Endrin ketone	4.0E-01	NI	NI		1	0.10		3.6E-09		3.3E-13				5.1E-09			
Gamma-BHC (Lindane)	9.0E-01	1.3E+00	1.3E+00		1	0.10		8.1E-09	1.1E-08	7.4E-13				1.1E-06	1.5E-06	2.5E-06	0.20
Heptachlor	1.2E+01	4.5E+00	4.5E+00	4.5E+00	1	0.10		1.1E-07	4.9E-07	9.9E-12	4.5E-11			1.5E-07	6.9E-07	1.2E-06	9.28
Heptachlor epoxide	9.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		8.1E-09	7.4E-08	7.4E-13	6.7E-12			1.1E-06	1.0E-07	1.8E-07	1.41
Methoxychlor	9.0E+00	NI	NI	NI	1	0.10		8.1E-08		7.4E-12				1.1E-07			
Toxaphene	9.0E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		8.1E-07	8.9E-07	7.4E-11	8.2E-11			1.1E-06	1.3E-06	2.2E-06	17.02
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.2E-06		4.8E-10				7.4E-06	1.3E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL153-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors 1/(mg/kg-d) Oral Slope Factor (SFO)	Cancer Potency Factors 1/(mg/kg-d) Dermal Slope Factor (SFD)	Cancer Potency Factors 1/(mg/kg-d) Inhalation Slope Factor (SFI)	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 Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS) (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV) (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG) (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-10	2.6E-09	1.4E-14	2.4E-13			2.2E-10	3.7E-09	6.3E-09	45.10
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	1.08
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.31
4,4-DDD	4.3E-03	2.4E-01	2.4E-01	[illegible]	1	0.10		3.9E-11	9.3E-12	3.5E-15				5.5E-11	1.3E-11	2.2E-11	0.16
4,4-DDE	6.6E-03	3.4E-01	3.4E-01	[illegible]	1	0.10		5.9E-11	2.0E-11	5.4E-15				8.4E-11	2.9E-11	4.9E-11	0.35
4,4-DDT	2.0E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-10	6.1E-11	1.6E-14	5.6E-15			2.5E-10	8.6E-11	1.5E-10	1.06
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.31
Dieldrin	1.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.9E-11	1.6E-09	9.1E-15	1.5E-13			1.4E-10	2.2E-09	3.8E-09	27.47
Chlordane	7.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		6.7E-11	2.3E-11	6.1E-15	2.1E-15			9.4E-11	3.3E-11	5.6E-11	0.40
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.22
Heptachlor	4.4E-03	4.5E+00	4.5E+00	4.5E+00	1	0.10		4.0E-11	1.8E-10	3.6E-15	1.7E-14			5.6E-11	2.5E-10	4.3E-10	3.09
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-12	9.0E-11	9.1E-16	8.2E-15			1.4E-11	1.3E-10	2.2E-10	1.56
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	18.88
DIOXIN																	
2,3,7,8-TCDD No sample collected		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									5.8E-09		5.2E-13				8.2E-09	1.4E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 CODCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL154-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factors, unitless		Volatilization Factor (VF), m³/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 (AO)	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	2.3E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.1E-10	3.5E-09	1.9E-14	3.2E-13			2.9E-10	5.0E-09	8.5E-09	69.36
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	1.12
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.32
4,4-DDD	5.6E-03	2.4E-01	2.4E-01	NI	1	0.10		5.0E-11	1.2E-11	4.6E-15				7.1E-11	1.7E-11	2.9E-11	0.24
4,4-DDE	2.8E-03	3.4E-01	3.4E-01	NI	1	0.10		2.5E-11	8.6E-12	2.3E-15				3.6E-11	1.2E-11	2.1E-11	0.17
4,4-DDT	2.3E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.1E-11	7.0E-12	1.9E-15	6.4E-16			2.9E-11	9.9E-12	1.7E-11	0.14
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.32
Dieldrin	2.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.8E-11	2.8E-10	1.6E-15	2.6E-14			2.5E-11	4.0E-10	6.8E-10	5.53
Chlordane	2.6E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.3E-11	8.2E-12	2.1E-15	7.5E-16			3.3E-11	1.2E-11	2.0E-11	0.16
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.23
Heptachlor	1.6E-03	4.5E+00	4.5E+00	4.5E+00	1	0.10		1.4E-11	6.5E-11	1.3E-15	6.1E-15			2.0E-11	9.2E-11	1.6E-10	1.28
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	1.61
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	19.51
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.1E-09		4.6E-13				7.2E-09	1.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL155-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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 (ABS)	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	6.7E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.0E-10	1.0E-08	5.5E-14	9.4E-13			8.5E-10	1.4E-08	2.5E-08	3.87
Alpha-BHC	7.0E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		6.3E-10	4.0E-09	5.8E-14	3.6E-13			8.9E-10	5.6E-09	9.8E-09	1.50
Beta-BHC	7.0E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		6.3E-10	1.1E-09	5.8E-14	1.0E-13			8.9E-10	1.6E-09	2.7E-09	0.43
4,4-DDD	9.7E-02	2.4E-01	2.4E-01	NI	1	0.10		8.7E-10	2.1E-10	8.0E-14				1.2E-09	3.0E-10	5.1E-10	0.08
4,4-DDE	5.8E-02	3.4E-01	3.4E-01	NI	1	0.10		5.2E-10	1.8E-10	4.8E-14				7.4E-10	2.5E-10	4.3E-10	0.07
4,4-DDT	5.5E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.0E-09	1.7E-09	4.5E-13	1.5E-13			7.0E-09	2.4E-09	4.1E-09	0.63
Delta-BHC	7.0E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		6.3E-10	1.1E-09	5.8E-14	1.0E-13			8.9E-10	1.6E-09	2.7E-09	0.43
Dieldrin	1.1E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.9E-09	1.6E-07	9.1E-13	1.5E-11			1.4E-08	2.2E-07	3.8E-07	59.75
Chlordane	1.2E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.1E-08	3.8E-09	1.0E-12	3.5E-13			1.5E-08	5.4E-09	9.2E-09	1.44
Endosulfan I	7.0E-02	NI	NI	NI	1	0.10		6.3E-10		5.8E-14				8.9E-10			
Endosulfan II	1.1E-01	NI	NI	NI	1	0.10		9.9E-10		9.1E-14				1.4E-09			
Endosulfan sulfate	1.4E-01	NI	NI	NI	1	0.10		1.2E-09		1.1E-13				1.7E-09			
Endrin	1.5E-02	NI	NI	NI	1	0.10		1.4E-10		1.2E-14				1.9E-10			
Endrin aldehyde	1.4E-01	NI	NI	NI	1	0.10		1.2E-09		1.1E-13				1.7E-09			
Endrin ketone	4.7E-02	NI	NI	NI	1	0.10		4.2E-10		3.9E-14				6.0E-10			
Gamma-BHC (Lindane)	7.0E-02	1.3E+00	1.3E+00	NI	1	0.10		6.3E-10	8.2E-10	5.8E-14				8.9E-10	1.2E-09	2.0E-09	0.31
Heptachlor	2.3E-01	4.5E+00	4.5E+00	4.5E+00	1	0.10		2.1E-09	9.3E-09	1.9E-13	8.7E-13			2.9E-09	1.3E-08	2.2E-08	3.51
Heptachlor epoxide	6.0E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.4E-10	4.9E-09	4.9E-14	4.5E-13			7.6E-10	6.9E-09	1.2E-08	1.85
Methoxychlor	7.0E-01	NI	NI	NI	1	0.10		6.3E-09		5.8E-13				8.9E-09			
Toxaphene	7.0E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		6.3E-08	6.9E-08	5.8E-12	6.3E-12			8.9E-08	9.8E-08	1.7E-07	26.14
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.7E-07		2.4E-11				3.7E-07	6.4E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL156-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	7.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.4E-11	1.1E-09	5.9E-15	9.9E-14			9.0E-11	1.5E-09	2.6E-09	12.31
Alpha-BHC	1.3E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.2E-11	7.4E-11	1.1E-15	6.7E-15			1.7E-11	1.0E-10	1.8E-10	0.84
Beta-BHC	1.3E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.2E-11	2.1E-11	1.1E-15	1.9E-15			1.7E-11	3.0E-11	5.1E-11	0.24
4,4-DDD	2.5E-03	2.4E-01	2.4E-01	NI	1	0.10		2.3E-11	5.4E-12	2.1E-15				3.2E-11	7.6E-12	1.3E-11	0.06
4,4-DDE	2.5E-03	3.4E-01	3.4E-01	NI	1	0.10		2.3E-11	7.7E-12	2.1E-15				3.2E-11	1.1E-11	1.8E-11	0.09
4,4-DDT	5.7E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		5.1E-11	1.7E-11	4.7E-15	1.6E-15			7.2E-11	2.5E-11	4.2E-11	0.20
Delta-BHC	1.3E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.2E-11	2.1E-11	1.1E-15	1.9E-15			1.7E-11	3.0E-11	5.1E-11	0.24
Dieldrin	4.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		3.7E-10	5.9E-09	3.4E-14	5.4E-13			5.2E-10	8.3E-09	1.4E-08	66.92
Chlordane	2.5E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-10	7.8E-11	2.0E-14	7.2E-15			3.2E-10	1.1E-10	1.9E-10	0.89
Endosulfan I	1.3E-03	NI	NI	NI	1	0.10		1.2E-11		1.1E-15				1.7E-11			
Endosulfan II	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Endosulfan sulfate	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Endrin	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Endrin aldehyde	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Endrin ketone	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Gamma-BHC (Lindane)	1.3E-03	1.3E+00	1.3E+00	NI	1	0.10		1.2E-11	1.5E-11	1.1E-15				1.7E-11	2.1E-11	3.7E-11	0.17
Heptachlor	4.9E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.4E-11	2.0E-10	4.0E-15	1.9E-14			6.2E-11	2.8E-10	4.8E-10	2.25
Heptachlor epoxide	1.3E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.2E-11	1.1E-10	1.1E-15	9.7E-15			1.7E-11	1.5E-10	2.6E-10	1.21
Methoxychlor	1.3E-02	NI	NI	NI	1	0.10		1.2E-10		1.1E-14				1.7E-10			
Toxaphene	1.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.2E-09	1.3E-09	1.1E-13	1.2E-13			1.7E-09	1.8E-09	3.1E-09	14.59
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									8.8E-09		8.1E-13				1.2E-08	2.1E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL157-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.3E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-11	1.9E-10	1.0E-15	1.8E-14			1.6E-11	2.7E-10	4.6E-10	8.76
Alpha-BHC	1.3E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.1E-11	7.1E-11	1.0E-15	6.5E-15			1.6E-11	1.0E-10	1.7E-10	3.25
Beta-BHC	1.3E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	2.0E-11	1.0E-15	1.9E-15			1.6E-11	2.9E-11	4.9E-11	0.93
4,4-DDD	2.5E-03	2.4E-01	2.4E-01	NI	1	0.10		2.2E-11	5.3E-12	2.0E-15				3.1E-11	7.5E-12	1.3E-11	0.24
4,4-DDE	2.5E-03	3.4E-01	3.4E-01	NI	1	0.10		2.2E-11	7.5E-12	2.0E-15				3.1E-11	1.1E-11	1.8E-11	0.34
4,4-DDT	2.5E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.2E-11	7.5E-12	2.0E-15	6.9E-16			3.1E-11	1.1E-11	1.8E-11	0.34
Delta-BHC	1.3E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	2.0E-11	1.0E-15	1.9E-15			1.6E-11	2.9E-11	4.9E-11	0.93
Dieldrin	3.1E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.8E-11	4.5E-10	2.6E-15	4.1E-14			3.9E-11	6.3E-10	1.1E-09	20.46
Chlordane	2.5E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.3E-11	7.9E-12	2.1E-15	7.2E-16			3.2E-11	1.1E-11	1.9E-11	0.36
Endosulfan I	1.3E-03	NI	NI	NI	1	0.10		1.1E-11		1.0E-15				1.6E-11			
Endosulfan II	2.5E-03	NI	NI	NI	1	0.10		2.2E-11		2.0E-15				3.1E-11			
Endosulfan sulfate	2.5E-03	NI	NI	NI	1	0.10		2.2E-11		2.0E-15				3.1E-11			
Endrin	2.5E-03	NI	NI	NI	1	0.10		2.2E-11		2.0E-15				3.1E-11			
Endrin aldehyde	2.5E-03	NI	NI	NI	1	0.10		2.2E-11		2.0E-15				3.1E-11			
Endrin ketone	2.5E-03	NI	NI	NI	1	0.10		2.2E-11		2.0E-15				3.1E-11			
Gamma-BHC (Lindane)	1.3E-03	1.3E+00	1.3E+00	NI	1	0.10		1.1E-11	1.5E-11	1.0E-15				1.6E-11	2.1E-11	3.5E-11	0.67
Heptachlor	1.3E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-11	5.1E-11	1.0E-15	4.7E-15			1.6E-11	7.2E-11	1.2E-10	2.32
Heptachlor epoxide	1.3E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-11	1.0E-10	1.0E-15	9.4E-15			1.6E-11	1.4E-10	2.5E-10	4.69
Methoxychlor	1.3E-02	NI	NI	NI	1	0.10		1.1E-10		1.0E-14				1.6E-10			
Toxaphene	1.3E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.1E-09	1.2E-09	1.0E-13	1.1E-13			1.6E-09	1.7E-09	3.0E-09	56.71
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.2E-09		2.0E-13				3.1E-09	5.3E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL158-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	3.6E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.2E-11	5.5E-10	3.0E-15	5.0E-14			4.6E-11	7.8E-10	1.3E-09	0.50
Alpha-BHC	1.3E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.2E-10	7.4E-10	1.1E-14	6.7E-14			1.7E-10	1.0E-09	1.8E-09	0.67
Beta-BHC	1.3E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.2E-10	2.1E-10	1.1E-14	1.9E-14			1.7E-10	3.0E-10	5.1E-10	0.19
4,4-DDD	2.7E-02	2.4E-01	2.4E-01	NI	1	0.10		2.4E-10	5.8E-11	2.2E-14				3.4E-10	8.2E-11	1.4E-10	0.05
4,4-DDE	8.4E-03	3.4E-01	3.4E-01	NI	1	0.10		7.6E-11	2.6E-11	6.9E-15				1.1E-10	3.6E-11	6.2E-11	0.02
4,4-DDT	6.8E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		6.1E-10	2.1E-10	5.6E-14	1.9E-14			8.6E-10	2.9E-10	5.0E-10	0.19
Delta-BHC	1.3E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.2E-10	2.1E-10	1.1E-14	1.9E-14			1.7E-10	3.0E-10	5.1E-10	0.19
Dieldrin	6.2E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.6E-09	8.9E-08	5.1E-13	8.2E-12			7.9E-09	1.3E-07	2.2E-07	81.26
Chlordane	2.2E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.0E-09	7.0E-10	1.8E-13	6.4E-14			2.8E-09	9.8E-10	1.7E-09	0.63
Endosulfan I	1.3E-02	NI	NI	NI	1	0.10		1.2E-10		1.1E-14				1.7E-10			
Endosulfan II	6.6E-03	NI	NI	NI	1	0.10		5.9E-11		5.4E-15				8.4E-11			
Endosulfan sulfate	2.5E-02	NI	NI	NI	1	0.10		2.3E-10		2.1E-14				3.2E-10			
Endrin	3.9E-03	NI	NI	NI	1	0.10		3.5E-11		3.2E-15				5.0E-11			
Endrin aldehyde	2.5E-02	NI	NI	NI	1	0.10		2.3E-10		2.1E-14				3.2E-10			
Endrin ketone	2.0E-02	NI	NI	NI	1	0.10		1.8E-10		1.6E-14				2.5E-10			
Gamma-BHC (Lindane)	1.3E-02	1.3E+00	1.3E+00	NI	1	0.10		1.2E-10	1.5E-10	1.1E-14				1.7E-10	2.1E-10	3.7E-10	0.14
Heptachlor	6.3E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		5.7E-10	2.6E-09	5.2E-14	2.4E-13			8.0E-10	3.6E-09	6.2E-09	2.32
Heptachlor epoxide	2.8E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.5E-10	2.3E-09	2.3E-14	2.1E-13			3.6E-10	3.2E-09	5.5E-09	2.09
Methoxychlor	3.3E-02	NI	NI	NI	1	0.10		3.0E-10		2.7E-14				4.2E-10			
Toxaphene	1.3E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.2E-08	1.3E-08	1.1E-12	1.2E-12			1.7E-08	1.8E-08	3.1E-08	11.72
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.1E-07		1.0E-11				1.6E-07	2.7E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL159-1

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.5E+02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-06	2.3E-05	1.2E-10	2.1E-09			1.9E-06	3.2E-05	5.5E-05	43.34
Alpha-BHC	2.2E+01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.9E-07	1.2E-06	1.8E-11	1.1E-10			2.7E-07	1.7E-06	2.9E-06	2.30
Beta-BHC	9.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		8.3E-08	1.5E-07	7.6E-12	1.4E-11			1.2E-07	2.1E-07	3.6E-07	0.28
4,4-DDD	2.0E+01	2.4E-01	2.4E-01	NI	1	0.10		1.8E-07	4.3E-08	1.6E-11				2.5E-07	6.1E-08	1.0E-07	0.08
4,4-DDE	4.2E+01	3.4E-01	3.4E-01	NI	1	0.10		3.7E-07	1.3E-07	3.4E-11				5.3E-07	1.8E-07	3.1E-07	0.24
4,4-DDT	1.4E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.3E-07	4.3E-08	1.2E-11	3.9E-12			1.8E-07	6.1E-08	1.0E-07	0.08
Delta-BHC	2.2E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-07	3.5E-07	1.8E-11	3.2E-11			2.7E-07	4.9E-07	8.4E-07	0.66
Dieldrin	3.0E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.7E-07	4.3E-06	2.5E-11	4.0E-10			3.8E-07	6.1E-06	1.0E-05	8.16
Chlordane	4.8E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.3E-07	1.5E-07	3.9E-11	1.4E-11			6.0E-07	2.1E-07	3.6E-07	0.28
Endosulfan I	2.2E+01	NI	NI	NI	1	0.10		1.9E-07		1.8E-11				2.7E-07			
Endosulfan II	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Endosulfan sulfate	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Endrin	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Endrin aldehyde	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Endrin ketone	4.2E+01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.3E-07			
Gamma-BHC (Lindane)	2.2E+01	1.3E+00	1.3E+00	NI	1	0.10		1.9E-07	2.5E-07	1.8E-11				2.7E-07	3.6E-07	6.1E-07	0.47
Heptachlor	7.7E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.9E-08	3.1E-07	6.3E-12	2.9E-11			9.8E-08	4.4E-07	7.5E-07	0.59
Heptachlor epoxide	2.2E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.9E-07	1.8E-06	1.8E-11	1.6E-10			2.7E-07	2.5E-06	4.2E-06	3.32
Methoxychlor	2.2E+02	NI	NI	NI	1	0.10		1.9E-06		1.8E-10				2.7E-06			
Toxaphene	2.2E+03	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.9E-05	2.1E-05	1.8E-09	1.9E-09			2.7E-05	3.0E-05	5.1E-05	40.19
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									5.3E-05		4.8E-09				7.5E-05	1.3E-04	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL160-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	5.8E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		5.2E-11	8.9E-10	4.8E-15	8.1E-14			7.4E-11	1.3E-09	2.1E-09	0.08
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.01
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.00
4,4-DDD	1.5E-02	2.4E-01	2.4E-01	NI	1	0.10		1.4E-10	3.2E-11	1.2E-14				1.9E-10	4.6E-11	7.8E-11	0.00
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.00
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.00
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.00
Dieldrin	6.0E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.4E-11	8.6E-10	4.9E-15	7.9E-14			7.6E-11	1.2E-09	2.1E-09	0.08
Chlordane	6.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		5.8E-11	2.0E-11	5.3E-15	1.8E-15			8.1E-11	2.8E-11	4.9E-11	0.00
Endosulfan I	1.5E-03	NI	NI	NI	1	0.10		1.4E-11		1.2E-15				1.9E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	4.4E-03	NI	NI	NI	1	0.10		4.0E-11		3.6E-15				5.6E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.00
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	0.00
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	0.01
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	0.09
DIOXIN																	
2,3,7,8-TCDD	8.2E-04	1.5E+05	1.5E+05	1.5E+05	1	0.10		7.4E-12	1.1E-06	6.8E-16	1.0E-10			1.0E-11	1.6E-06	2.7E-06	99.73
Total Cancer Risk									1.1E-06		1.0E-10				1.6E-06	2.7E-06	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL161-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.0E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-10	1.5E-08	8.2E-14	1.4E-12			1.3E-09	2.2E-08	3.7E-08	8.96
Alpha-BHC	2.5E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		2.3E-10	1.4E-09	2.1E-14	1.3E-13			3.2E-10	2.0E-09	3.4E-09	0.83
Beta-BHC	1.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-10	1.6E-09	8.2E-14	1.5E-13			1.3E-09	2.3E-09	3.9E-09	0.95
4,4-DDD	2.0E-01	2.4E-01	2.4E-01	NI	1	0.10		1.8E-09	4.3E-10	1.6E-13				2.5E-09	6.1E-10	1.0E-09	0.25
4,4-DDE	2.0E-01	3.4E-01	3.4E-01	NI	1	0.10		1.8E-09	6.1E-10	1.6E-13				2.5E-09	8.6E-10	1.5E-09	0.36
4,4-DDT	2.0E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-09	6.1E-10	1.6E-13	5.6E-14			2.5E-09	8.6E-10	1.5E-09	0.36
Delta-BHC	1.0E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-10	1.6E-09	8.2E-14	1.5E-13			1.3E-09	2.3E-09	3.9E-09	0.95
Dieldrin	2.6E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-09	3.7E-08	2.1E-13	3.4E-12			3.3E-09	5.3E-08	9.0E-08	21.93
Chlordane	9.3E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		8.4E-10	2.9E-10	7.7E-14	2.7E-14			1.2E-09	4.1E-10	7.1E-10	0.17
Endosulfan I	1.0E-01	NI	NI	NI	1	0.10		9.0E-10		8.2E-14				1.3E-09			
Endosulfan II	7.5E-02	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Endosulfan sulfate	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Endrin	5.3E-01	NI	NI	NI	1	0.10		4.8E-09		4.4E-13				6.7E-09			
Endrin aldehyde	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Endrin ketone	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Gamma-BHC (Lindane)	1.3E-02	1.3E+00	1.3E+00	NI	1	0.10		1.2E-10	1.5E-10	1.1E-14				1.7E-10	2.1E-10	3.7E-10	0.09
Heptachlor	1.0E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-10	4.1E-09	8.2E-14	3.8E-13			1.3E-09	5.7E-09	9.8E-09	2.37
Heptachlor epoxide	1.0E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-10	8.2E-09	8.2E-14	7.5E-13			1.3E-09	1.2E-08	2.0E-08	4.80
Methoxychlor	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Toxaphene	1.0E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-08	9.9E-08	8.2E-12	9.1E-12			1.3E-07	1.4E-07	2.4E-07	57.96
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.7E-07		1.6E-11				2.4E-07	4.1E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL162-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.8E+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.6E-08	2.8E-07	1.5E-12	2.5E-11			2.3E-08	3.9E-07	6.6E-07	0.24
Alpha-BHC	1.1E+01	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-08	6.2E-07	9.1E-12	5.7E-11			1.4E-07	8.8E-07	1.5E-06	0.54
Beta-BHC	1.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-08	1.8E-07	9.1E-12	1.6E-11			1.4E-07	2.5E-07	4.3E-07	0.15
4,4-DDD	1.5E+02	2.4E-01	2.4E-01	NI	1	0.10		1.4E-06	3.2E-07	1.2E-10				1.9E-06	4.6E-07	7.8E-07	0.28
4,4-DDE	4.7E+00	3.4E-01	3.4E-01	NI	1	0.10		4.2E-08	1.4E-08	3.9E-12				6.0E-08	2.0E-08	3.5E-08	0.01
4,4-DDT	2.8E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.5E-08	8.6E-09	2.3E-12	7.8E-13			3.6E-08	1.2E-08	2.1E-08	0.01
Delta-BHC	1.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-08	1.8E-07	9.1E-12	1.6E-11			1.4E-07	2.5E-07	4.3E-07	0.15
Dieldrin	2.5E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-07	3.6E-06	2.1E-11	3.3E-10			3.2E-07	5.1E-06	8.7E-06	3.10
Chlordane	4.7E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.2E-08	1.5E-08	3.9E-12	1.4E-12			6.0E-08	2.1E-08	3.6E-08	0.01
Endosulfan I	1.1E+01	NI	NI	NI	1	0.10		9.9E-08		9.1E-12				1.4E-07			
Endosulfan II	7.7E+00	NI	NI	NI	1	0.10		6.9E-08		6.3E-12				9.8E-08			
Endosulfan sulfate	2.2E+01	NI	NI	NI	1	0.10		2.0E-07		1.8E-11				2.8E-07			
Endrin	2.2E+01	NI	NI	NI	1	0.10		2.0E-07		1.8E-11				2.8E-07			
Endrin aldehyde	2.7E+00	NI	NI	NI	1	0.10		2.4E-08		2.2E-12				3.4E-08			
Endrin ketone	2.2E+01	NI	NI	NI	1	0.10		2.0E-07		1.8E-11				2.8E-07			
Gamma-BHC (Lindane)	1.1E+01	1.3E+00	1.3E+00	NI	1	0.10		9.9E-08	1.3E-07	9.1E-12				1.4E-07	1.8E-07	3.1E-07	0.11
Heptachlor	1.1E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-08	4.5E-07	9.1E-12	4.2E-11			1.4E-07	6.3E-07	1.1E-06	0.38
Heptachlor epoxide	1.1E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-08	9.0E-07	9.1E-12	8.2E-11			1.4E-07	1.3E-06	2.2E-06	0.78
Methoxychlor	1.1E+02	NI	NI	NI	1	0.10		9.9E-07		9.1E-11				1.4E-06			
Toxaphene	1.1E+03	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-06	1.1E-05	9.1E-10	1.0E-09			1.4E-05	1.5E-05	2.6E-05	9.38
DIOXIN																	
2,3,7,8-TCDD	7.3E-02	1.5E+05	1.5E+05	1.5E+05	1	0.10		6.6E-10	9.9E-05	6.0E-14	9.0E-09			9.3E-10	1.4E-04	2.4E-04	84.86
Total Cancer Risk									1.2E-04		1.1E-08				1.6E-04	2.8E-04	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL162-6

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	4.2E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.7E-10	6.3E-09	3.4E-14	5.8E-13			5.3E-10	9.0E-09	1.5E-08	28.56
Alpha-BHC	4.2E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.7E-10	2.4E-09	3.4E-14	2.2E-13			5.3E-10	3.3E-09	5.7E-09	10.58
Beta-BHC	4.2E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.7E-10	6.7E-10	3.4E-14	6.2E-14			5.3E-10	9.5E-10	1.6E-09	3.02
4,4-DDD	3.5E-01	2.4E-01	2.4E-01	NI	1	0.10		3.2E-09	7.6E-10	2.9E-13				4.5E-09	1.1E-09	1.8E-09	3.40
4,4-DDE	9.7E-03	3.4E-01	3.4E-01	NI	1	0.10		8.7E-11	3.0E-11	8.0E-15				1.2E-10	4.2E-11	7.2E-11	0.13
4,4-DDT	8.0E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		7.2E-10	2.4E-10	6.6E-14	2.2E-14			1.0E-09	3.5E-10	5.9E-10	1.10
Delta-BHC	4.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.7E-11	6.7E-11	3.4E-15	6.2E-15			5.3E-11	9.5E-11	1.6E-10	0.30
Dieldrin	4.9E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		4.4E-10	7.1E-09	4.0E-14	6.5E-13			6.2E-10	1.0E-08	1.7E-08	31.74
Chlordane	1.2E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.1E-10	3.8E-11	9.9E-15	3.5E-15			1.5E-10	5.3E-11	9.1E-11	0.17
Endosulfan I	4.2E-03	NI	NI	NI	1	0.10		3.7E-11		3.4E-15				5.3E-11			
Endosulfan II	1.3E-02	NI	NI	NI	1	0.10		1.2E-10		1.1E-14				1.7E-10			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	3.9E-02	NI	NI	NI	1	0.10		3.5E-10		3.2E-14				5.0E-10			
Endrin aldehyde	8.0E-03	NI	NI	NI	1	0.10		7.2E-11		6.6E-15				1.0E-10			
Endrin ketone	8.0E-03	NI	NI	NI	1	0.10		7.2E-11		6.6E-15				1.0E-10			
Gamma-BHC (Lindane)	4.2E-03	1.3E+00	1.3E+00	NI	1	0.10		3.7E-11	4.9E-11	3.4E-15				5.3E-11	6.9E-11	1.2E-10	0.22
Heptachlor	4.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		3.7E-11	1.7E-10	3.4E-15	1.6E-14			5.3E-11	2.4E-10	4.1E-10	0.76
Heptachlor epoxide	4.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.7E-11	3.4E-10	3.4E-15	3.1E-14			5.3E-11	4.8E-10	8.2E-10	1.53
Methoxychlor	4.2E-02	NI	NI	NI	1	0.10		3.7E-10		3.4E-14				5.3E-10			
Toxaphene	4.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.7E-09	4.1E-09	3.4E-13	3.8E-13			5.3E-09	5.8E-09	9.9E-09	18.48
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.2E-08		2.0E-12				3.1E-08	5.4E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL163-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	4.3E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.9E-09	6.6E-08	3.5E-13	6.0E-12			5.5E-09	9.3E-08	1.6E-07	65.82
Alpha-BHC	3.5E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.2E-11	2.0E-10	2.9E-15	1.8E-14			4.5E-11	2.8E-10	4.8E-10	0.20
Beta-BHC	3.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.2E-11	5.7E-11	2.9E-15	5.2E-15			4.5E-11	8.0E-11	1.4E-10	0.06
4,4-DDD	8.4E-02	2.4E-01	2.4E-01	NI	1	0.10		7.6E-10	1.8E-10	6.9E-14				1.1E-09	2.6E-10	4.4E-10	0.18
4,4-DDE	1.8E-02	3.4E-01	3.4E-01	NI	1	0.10		1.6E-10	5.5E-11	1.5E-14				2.3E-10	7.8E-11	1.3E-10	0.06
4,4-DDT	3.1E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.8E-10	9.5E-11	2.6E-14	8.7E-15			3.9E-10	1.3E-10	2.3E-10	0.09
Delta-BHC	3.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.2E-11	5.7E-11	2.9E-15	5.2E-15			4.5E-11	8.0E-11	1.4E-10	0.06
Dieldrin	1.1E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.9E-10	1.6E-08	9.1E-14	1.5E-12			1.4E-09	2.2E-08	3.8E-08	15.85
Chlordane	3.3E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.0E-09	1.0E-09	2.7E-13	9.6E-14			4.2E-09	1.5E-09	2.5E-09	1.05
Endosulfan I	3.5E-03	NI	NI	NI	1	0.10		3.2E-11		2.9E-15				4.5E-11			
Endosulfan II	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endosulfan sulfate	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin aldehyde	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Endrin ketone	7.0E-03	NI	NI	NI	1	0.10		6.3E-11		5.8E-15				8.9E-11			
Gamma-BHC (Lindane)	3.5E-03	1.3E+00	1.3E+00	NI	1	0.10		3.2E-11	4.1E-11	2.9E-15				4.5E-11	5.8E-11	9.9E-11	0.04
Heptachlor	3.1E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.8E-09	1.3E-08	2.6E-13	1.2E-12			3.9E-09	1.8E-08	3.0E-08	12.56
Heptachlor epoxide	7.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		6.3E-11	5.7E-10	5.8E-15	5.2E-14			8.9E-11	8.1E-10	1.4E-09	0.57
Methoxychlor	3.5E-02	NI	NI	NI	1	0.10		3.2E-10		2.9E-14				4.5E-10			
Toxaphene	3.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.2E-09	3.5E-09	2.9E-13	3.2E-13			4.5E-09	4.9E-09	8.4E-09	3.47
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.0E-07		9.2E-12				1.4E-07	2.4E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL164-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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 (ABS)	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	2.7E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.4E-07	4.1E-06	2.2E-11	3.8E-10			3.4E-07	5.8E-06	1.0E-05	19.21
Alpha-BHC	3.5E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.1E-09	2.0E-08	2.8E-13	1.8E-12			4.4E-09	2.8E-08	4.7E-08	0.09
Beta-BHC	3.5E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.1E-09	5.6E-09	2.8E-13	5.1E-13			4.4E-09	7.9E-09	1.3E-08	0.03
4,4-DDD	2.3E+00	2.4E-01	2.4E-01	NI	1	0.10		2.1E-08	5.0E-09	1.9E-12				2.9E-08	7.0E-09	1.2E-08	0.02
4,4-DDE	2.9E+00	3.4E-01	3.4E-01	NI	1	0.10		2.6E-08	8.9E-09	2.4E-12				3.7E-08	1.3E-08	2.1E-08	0.04
4,4-DDT	1.4E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.3E-07	4.3E-08	1.2E-11	3.9E-12			1.8E-07	6.1E-08	1.0E-07	0.20
Delta-BHC	1.3E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.2E-08	2.1E-08	1.1E-12	1.9E-12			1.7E-08	3.0E-08	5.1E-08	0.10
Dieldrin	1.1E+02	1.6E+01	1.6E+01	1.6E+01	1	0.10		9.9E-07	1.6E-05	9.1E-11	1.5E-09			1.4E-06	2.2E-05	3.8E-05	73.66
Chlordane	3.5E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.1E-07	1.1E-07	2.8E-11	1.0E-11			4.4E-07	1.5E-07	2.6E-07	0.51
Endosulfan I	3.5E-01	NI	NI	NI	1	0.10		3.1E-09		2.8E-13				4.4E-09			
Endosulfan II	9.9E-01	NI	NI	NI	1	0.10		8.9E-09		8.2E-13				1.3E-08			
Endosulfan sulfate	6.5E-01	NI	NI	NI	1	0.10		5.9E-09		5.4E-13				8.3E-09			
Endrin	1.0E+00	NI	NI	NI	1	0.10		9.0E-09		8.2E-13				1.3E-08			
Endrin aldehyde	6.5E-01	NI	NI	NI	1	0.10		5.9E-09		5.4E-13				8.3E-09			
Endrin ketone	5.3E+00	NI	NI	NI	1	0.10		4.8E-08		4.4E-12				6.7E-08			
Gamma-BHC (Lindane)	4.7E-01	1.3E+00	1.3E+00	NI	1	0.10		4.2E-09	5.5E-09	3.9E-13				6.0E-09	7.8E-09	1.3E-08	0.03
Heptachlor	2.0E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.8E-07	8.1E-07	1.6E-11	7.6E-11			2.5E-07	1.1E-06	2.0E-06	3.77
Heptachlor epoxide	2.0E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-08	1.6E-07	1.6E-12	1.5E-11			2.5E-08	2.3E-07	4.0E-07	0.76
Methoxychlor	3.5E+00	NI	NI	NI	1	0.10		3.1E-08		2.8E-12				4.4E-08			
Toxaphene	3.5E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.1E-07	3.4E-07	2.8E-11	3.1E-11			4.4E-07	4.8E-07	8.2E-07	1.59
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.2E-05		2.0E-09				3.0E-05	5.2E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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 SL165-2

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 (GIO)	Dermal (ABS)	Volatilization factor (VF), m³/kg	Dermal Absorption Amount Absorbed (IDD), mg/kg-d	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.7E+02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.5E-06	2.6E-05	1.4E-10	2.4E-09			2.2E-06	3.7E-05	6.3E-05	21.17
Alpha-BHC	1.1E+01	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-08	6.2E-07	9.1E-12	5.7E-11			1.4E-07	8.8E-07	1.5E-06	0.51
Beta-BHC	1.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-08	1.8E-07	9.1E-12	1.6E-11			1.4E-07	2.5E-07	4.3E-07	0.15
4,4-DDD	3.1E+01	2.4E-01	2.4E-01	NI	1	0.10		2.8E-07	6.7E-08	2.6E-11				3.9E-07	9.5E-08	1.6E-07	0.05
4,4-DDE	2.1E+01	3.4E-01	3.4E-01	NI	1	0.10		1.9E-07	6.4E-08	1.7E-11				2.7E-07	9.1E-08	1.6E-07	0.05
4,4-DDT	9.2E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		8.3E-07	2.8E-07	7.6E-11	2.6E-11			1.2E-06	4.0E-07	6.8E-07	0.23
Delta-BHC	1.1E+01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-08	1.8E-07	9.1E-12	1.6E-11			1.4E-07	2.5E-07	4.3E-07	0.15
Dieldrin	3.1E+02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.8E-06	4.5E-05	2.6E-10	4.1E-09			3.9E-06	6.3E-05	1.1E-04	36.33
Chlordane	5.3E+02	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.7E-06	1.7E-06	4.3E-10	1.5E-10			6.7E-06	2.3E-06	4.0E-06	1.35
Endosulfan I	1.1E+01	NI	NI	NI	1	0.10		9.9E-08		9.1E-12				1.4E-07			
Endosulfan II	2.1E+01	NI	NI	NI	1	0.10		1.9E-07		1.7E-11				2.7E-07			
Endosulfan sulfate	2.1E+01	NI	NI	NI	1	0.10		1.9E-07		1.7E-11				2.7E-07			
Endrin	2.1E+01	NI	NI	NI	1	0.10		1.9E-07		1.7E-11				2.7E-07			
Endrin aldehyde	2.1E+01	NI	NI	NI	1	0.10		1.9E-07		1.7E-11				2.7E-07			
Endrin ketone	2.1E+01	NI	NI	NI	1	0.10		1.9E-07		1.7E-11				2.7E-07			
Gamma-BHC (Lindane)	1.1E+01	1.3E+00	1.3E+00	NI	1	0.10		9.9E-08	1.3E-07	9.1E-12				1.4E-07	1.8E-07	3.1E-07	0.10
Heptachlor	9.2E+02	4.5E+00	4.5E+00	4.6E+00	1	0.10		8.3E-06	3.7E-05	7.6E-10	3.5E-09			1.2E-05	5.3E-05	9.0E-05	30.32
Heptachlor epoxide	1.1E+01	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-08	9.0E-07	9.1E-12	8.2E-11			1.4E-07	1.3E-06	2.2E-06	0.73
Methoxychlor	1.1E+02	NI	NI	NI	1	0.10		9.9E-07		9.1E-11				1.4E-06			
Toxaphene	1.1E+03	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-06	1.1E-05	9.1E-10	1.0E-09			1.4E-05	1.5E-05	2.6E-05	8.86
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.2E-04		1.1E-08				1.7E-04	3.0E-04	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL166-2

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+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		2.6E-07	4.4E-06	2.4E-11	4.1E-10			3.7E-07	6.3E-06	1.1E-05	10.19
Alpha-BHC	7.0E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		6.3E-08	4.0E-07	5.8E-12	3.6E-11			8.9E-08	5.6E-07	9.6E-07	0.91
Beta-BHC	7.0E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		6.3E-08	1.1E-07	5.8E-12	1.0E-11			8.9E-08	1.6E-07	2.7E-07	0.26
4,4-DDD	8.4E+01	2.4E-01	2.4E-01	NI	1	0.10		7.6E-07	1.8E-07	6.9E-11				1.1E-06	2.6E-07	4.4E-07	0.42
4,4-DDE	4.3E+01	3.4E-01	3.4E-01	NI	1	0.10		3.9E-07	1.3E-07	3.5E-11				5.5E-07	1.9E-07	3.2E-07	0.30
4,4-DDT	1.9E+03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.7E-05	5.8E-06	1.6E-09	5.3E-10			2.4E-05	8.2E-06	1.4E-05	13.35
Delta-BHC	7.0E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		6.3E-08	1.1E-07	5.8E-12	1.0E-11			8.9E-08	1.6E-07	2.7E-07	0.26
Dieldrin	1.6E+02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.4E-06	2.3E-05	1.3E-10	2.1E-09			2.0E-06	3.3E-05	5.6E-05	52.91
Chlordane	1.4E+02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.3E-06	4.4E-07	1.1E-10	4.0E-11			1.8E-06	6.2E-07	1.1E-06	1.01
Endosulfan I	7.0E+00	NI	NI	NI	1	0.10		6.3E-08		5.8E-12				8.9E-08			
Endosulfan II	1.7E+01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.2E-07			
Endosulfan sulfate	1.4E+01	NI	NI	NI	1	0.10		1.2E-07		1.1E-11				1.7E-07			
Endrin	1.4E+01	NI	NI	NI	1	0.10		1.2E-07		1.1E-11				1.7E-07			
Endrin aldehyde	1.4E+01	NI	NI	NI	1	0.10		1.2E-07		1.1E-11				1.7E-07			
Endrin ketone	1.4E+01	NI	NI	NI	1	0.10		1.2E-07		1.1E-11				1.7E-07			
Gamma-BHC (Lindane)	7.0E+00	1.3E+00	1.3E+00	NI	1	0.10		6.3E-08	8.2E-08	5.8E-12				8.9E-08	1.2E-07	2.0E-07	0.19
Heptachlor	3.2E+01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.9E-07	1.3E-06	2.6E-11	1.2E-10			4.1E-07	1.8E-06	3.1E-06	2.98
Heptachlor epoxide	7.0E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		6.3E-08	5.7E-07	5.8E-12	5.2E-11			8.9E-08	8.1E-07	1.4E-06	1.32
Methoxychlor	7.0E+01	NI	NI	NI	1	0.10		6.3E-07		5.8E-11				8.9E-07			
Toxaphene	7.0E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		6.3E-06	6.9E-06	5.8E-10	6.3E-10			8.9E-06	9.8E-06	1.7E-05	15.91
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									*4.4E-05*		*4.0E-09*				*6.2E-05*	*1.1E-04*	*100*

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL167-2

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-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.5E-09	1.3E-07	6.8E-13	1.2E-11			1.1E-08	1.8E-07	3.1E-07	67.85
Alpha-BHC	1.1E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-11	6.2E-10	9.1E-15	5.7E-14			1.4E-10	8.8E-10	1.5E-09	0.33
Beta-BHC	1.1E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-11	1.8E-10	9.1E-15	1.6E-14			1.4E-10	2.5E-10	4.3E-10	0.10
4,4-DDD	6.3E-01	2.4E-01	2.4E-01	NI	1	0.10		5.7E-09	1.4E-09	5.2E-13				8.0E-09	1.9E-09	3.3E-09	0.73
4,4-DDE	2.2E-02	3.4E-01	3.4E-01	NI	1	0.10		1.9E-10	6.6E-11	1.8E-14				2.7E-10	9.3E-11	1.6E-10	0.04
4,4-DDT	1.9E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.7E-08	5.8E-09	1.6E-12	5.3E-13			2.4E-08	8.2E-09	1.4E-08	3.11
Delta-BHC	1.1E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-11	1.8E-10	9.1E-15	1.6E-14			1.4E-10	2.5E-10	4.3E-10	0.10
Dieldrin	2.5E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-09	3.6E-08	2.1E-13	3.3E-12			3.2E-09	5.1E-08	8.7E-08	19.24
Chlordane	3.4E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.1E-09	1.1E-09	2.8E-13	9.8E-14			4.3E-09	1.5E-09	2.6E-09	0.57
Endosulfan I	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endosulfan II	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Endosulfan sulfate	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Endrin	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Endrin aldehyde	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Endrin ketone	2.2E-02	NI	NI	NI	1	0.10		1.9E-10		1.8E-14				2.7E-10			
Gamma-BHC (Lindane)	1.1E-02	1.3E+00	1.3E+00	NI	1	0.10		9.9E-11	1.3E-10	9.1E-15				1.4E-10	1.8E-10	3.1E-10	0.07
Heptachlor	7.3E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.6E-10	3.0E-09	6.0E-14	2.8E-13			9.3E-10	4.2E-09	7.1E-09	1.58
Heptachlor epoxide	1.1E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-11	9.0E-10	9.1E-15	8.2E-14			1.4E-10	1.3E-09	2.2E-09	0.48
Methoxychlor	1.1E-01	NI	NI	NI	1	0.10		9.9E-10		9.1E-14				1.4E-09			
Toxaphene	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-09	1.1E-08	9.1E-13	1.0E-12			1.4E-08	1.5E-08	2.6E-08	5.82
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.9E-07		1.7E-11				2.6E-07	4.5E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL168-2

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	1.5E+02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-06	2.3E-05	1.2E-10	2.1E-09			1.9E-06	3.2E-05	5.5E-05	92.93
Alpha-BHC	1.2E+00	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.0E-08	6.5E-08	9.5E-13	6.0E-12			1.5E-08	9.2E-08	1.6E-07	0.26
Beta-BHC	1.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-08	1.9E-08	9.5E-13	1.7E-12			1.5E-08	2.6E-08	4.5E-08	0.08
4,4-DDD	2.3E+00	2.4E-01	2.4E-01	NI	1	0.10		2.0E-08	4.9E-09	1.9E-12				2.9E-08	6.9E-09	1.2E-08	0.02
4,4-DDE	2.3E+00	3.4E-01	3.4E-01	NI	1	0.10		2.0E-08	6.9E-09	1.9E-12				2.9E-08	9.7E-09	1.7E-08	0.03
4,4-DDT	2.3E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.0E-08	6.9E-09	1.9E-12	6.3E-13			2.9E-08	9.7E-09	1.7E-08	0.03
Delta-BHC	1.2E+00	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.0E-08	1.9E-08	9.5E-13	1.7E-12			1.5E-08	2.6E-08	4.5E-08	0.08
Dieldrin	2.3E+00	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.0E-08	3.2E-07	1.9E-12	3.0E-11			2.9E-08	4.6E-07	7.8E-07	1.31
Chlordane	2.3E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.1E-08	7.2E-09	1.9E-12	6.6E-13			2.9E-08	1.0E-08	1.7E-08	0.03
Endosulfan I	1.2E+00	NI	NI	NI	1	0.10		1.0E-08		9.5E-13				1.5E-08			
Endosulfan II	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Endosulfan sulfate	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Endrin	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Endrin aldehyde	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Endrin ketone	2.3E+00	NI	NI	NI	1	0.10		2.0E-08		1.9E-12				2.9E-08			
Gamma-BHC (Lindane)	1.2E+00	1.3E+00	1.3E+00	NI	1	0.10		1.0E-08	1.3E-08	9.5E-13				1.5E-08	1.9E-08	3.2E-08	0.05
Heptachlor	1.2E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.0E-08	4.7E-08	9.5E-13	4.4E-12			1.5E-08	6.6E-08	1.1E-07	0.19
Heptachlor epoxide	1.2E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.0E-08	9.4E-08	9.5E-13	8.6E-12			1.5E-08	1.3E-07	2.3E-07	0.38
Methoxychlor	1.2E+01	NI	NI	NI	1	0.10		1.0E-07		9.5E-12				1.5E-07			
Toxaphene	1.2E+02	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.0E-06	1.1E-06	9.5E-11	1.0E-10			1.5E-06	1.6E-08	2.7E-06	4.61
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.5E-05		2.3E-09				3.5E-05	6.0E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL168-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.2E-01	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-09	1.8E-08	9.9E-14	1.7E-12			1.5E-09	2.6E-08	4.4E-08	80.45
Alpha-BHC	1.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.0E-12	5.7E-11	8.2E-16	5.2E-15			1.3E-11	8.0E-11	1.4E-10	0.25
Beta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.07
4,4-DDD	2.0E-03	2.4E-01	2.4E-01	NI	1	0.10		1.8E-11	4.3E-12	1.6E-15				2.5E-11	6.1E-12	1.0E-11	0.02
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.03
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.03
Delta-BHC	1.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.0E-12	1.6E-11	8.2E-16	1.5E-15			1.3E-11	2.3E-11	3.9E-11	0.07
Dieldrin	2.2E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.0E-10	3.2E-09	1.8E-14	2.9E-13			2.8E-10	4.5E-09	7.6E-09	13.88
Chlordane	2.0E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.8E-10	6.3E-11	1.6E-14	5.8E-15			2.5E-10	8.9E-11	1.5E-10	0.28
Endosulfan I	1.0E-03	NI	NI	NI	1	0.10		9.0E-12		8.2E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.5E-03	NI	NI	NI	1	0.10		2.3E-11		2.1E-15				3.2E-11			
Gamma-BHC (Lindane)	1.0E-03	1.3E+00	1.3E+00	NI	1	0.10		9.0E-12	1.2E-11	8.2E-16				1.3E-11	1.7E-11	2.8E-11	0.05
Heptachlor	1.0E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.0E-12	4.1E-11	8.2E-16	3.8E-15			1.3E-11	5.7E-11	9.8E-11	0.18
Heptachlor epoxide	1.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.0E-12	8.2E-11	8.2E-16	7.5E-15			1.3E-11	1.2E-10	2.0E-10	0.36
Methoxychlor	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Toxaphene	1.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.0E-10	9.9E-10	8.2E-14	9.1E-14			1.3E-09	1.4E-09	2.4E-09	4.34
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.3E-08		2.1E-12				3.2E-08	5.5E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL169-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.5E-10	1.1E-08	5.9E-14	1.0E-12			9.2E-10	1.6E-08	2.7E-08	71.07
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	0.40
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.11
4,4-DDD	4.3E-03	2.4E-01	2.4E-01	NI	1	0.10		3.9E-11	9.3E-12	3.5E-15				5.5E-11	1.3E-11	2.2E-11	0.06
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.9E-11	6.4E-12	1.7E-15				2.7E-11	9.1E-12	1.6E-11	0.04
4,4-DDT	1.5E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.4E-10	4.6E-11	1.2E-14	4.2E-15			1.9E-10	6.5E-11	1.1E-10	0.30
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.11
Dieldrin	1.9E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.7E-10	2.7E-09	1.6E-14	2.5E-13			2.4E-10	3.9E-09	6.6E-09	17.65
Chlordane	3.3E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.0E-10	1.0E-10	2.7E-14	9.6E-15			4.2E-10	1.5E-10	2.5E-10	0.67
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.08
Heptachlor	4.6E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.1E-11	1.9E-10	3.8E-15	1.7E-14			5.9E-11	2.6E-10	4.5E-10	1.20
Heptachlor epoxide	2.4E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		2.2E-11	2.0E-10	2.0E-15	1.8E-14			3.1E-11	2.8E-10	4.7E-10	1.27
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	7.03
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.6E-08		1.4E-12				2.2E-08	3.7E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL170-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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+00	1.7E+01	1.7E+01	1.7E+01	1	0.10		6.5E-08	1.1E-06	5.9E-12	1.0E-10			9.2E-08	1.6E-06	2.7E-06	22.49
Alpha-BHC	1.1E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-10	6.0E-09	8.7E-14	5.5E-13			1.3E-09	8.4E-09	1.4E-08	0.12
Beta-BHC	1.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-10	1.7E-09	8.7E-14	1.6E-13			1.3E-09	2.4E-08	4.1E-09	0.03
4,4-DDD	7.0E-01	2.4E-01	2.4E-01	NI	1	0.10		6.3E-09	1.5E-09	5.8E-13				8.9E-09	2.1E-09	3.6E-09	0.03
4,4-DDE	8.7E-01	3.4E-01	3.4E-01	NI	1	0.10		7.8E-09	2.7E-09	7.2E-13				1.1E-08	3.8E-09	6.4E-09	0.05
4,4-DDT	7.1E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		6.4E-08	2.2E-08	5.9E-12	2.0E-12			9.0E-08	3.1E-08	5.2E-08	0.44
Delta-BHC	1.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-10	1.7E-09	8.7E-14	1.6E-13			1.3E-09	2.4E-09	4.1E-09	0.03
Dieldrin	2.4E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.2E-07	3.5E-06	2.0E-11	3.2E-10			3.1E-07	4.9E-06	8.3E-06	70.54
Chlordane	5.0E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		4.5E-08	1.6E-08	4.1E-12	1.4E-12			6.4E-08	2.2E-08	3.8E-08	0.32
Endosulfan I	1.1E-01	NI	NI	NI	1	0.10		9.5E-10		8.7E-14				1.3E-09			
Endosulfan II	3.2E-01	NI	NI	NI	1	0.10		2.9E-09		2.6E-13				4.1E-09			
Endosulfan sulfate	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Endrin	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Endrin aldehyde	2.0E-01	NI	NI	NI	1	0.10		1.8E-09		1.6E-13				2.5E-09			
Endrin ketone	5.9E-01	NI	NI	NI	1	0.10		5.3E-09		4.9E-13				7.5E-09			
Gamma-BHC (Lindane)	1.1E-01	1.3E+00	1.3E+00	NI	1	0.10		9.5E-10	1.2E-09	8.7E-14				1.3E-09	1.7E-09	3.0E-09	0.03
Heptachlor	3.2E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.9E-08	1.3E-07	2.6E-12	1.2E-11			4.1E-08	1.8E-07	3.1E-07	2.65
Heptachlor epoxide	6.8E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		6.1E-09	5.6E-08	5.6E-13	5.1E-12			8.6E-09	7.9E-08	1.3E-07	1.14
Methoxychlor	1.8E+01	NI	NI	NI	1	0.10		1.6E-07		1.5E-11				2.3E-07			
Toxaphene	1.1E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-08	1.0E-07	8.7E-12	9.5E-12			1.3E-07	1.5E-07	2.5E-07	2.12
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									4.9E-06		4.5E-10				6.9E-06	1.2E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL170-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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		1.7E+01	1.7E+01	1.7E+01	1	0.10											
Alpha-BHC		6.3E+00	6.3E+00	6.3E+00	1	0.10											
Beta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
4,4-DDD		2.4E-01	2.4E-01	NI	1	0.10											
4,4-DDE		3.4E-01	3.4E-01	NI	1	0.10											
4,4-DDT		3.4E-01	3.4E-01	3.4E-01	1	0.10											
Delta-BHC		1.8E+00	1.8E+00	1.8E+00	1	0.10											
Dieldrin		1.6E+01	1.6E+01	1.6E+01	1	0.10											
Chlordane		3.5E-01	3.5E-01	3.5E-01	1	0.10											
Endosulfan I		NI	NI	NI	1	0.10											
Endosulfan II		NI	NI	NI	1	0.10											
Endosulfan sulfate		NI	NI	NI	1	0.10											
Endrin		NI	NI	NI	1	0.10											
Endrin aldehyde		NI	NI	NI	1	0.10											
Endrin ketone		NI	NI	NI	1	0.10											
Gamma-BHC (Lindane)		1.3E+00	1.3E+00	NI	1	0.10											
Heptachlor		4.5E+00	4.5E+00	4.6E+00	1	0.10											
Heptachlor epoxide		9.1E+00	9.1E+00	9.1E+00	1	0.10											
Methoxychlor		NI	NI	NI	1	0.10											
Toxaphene		1.1E+00	1.1E+00	1.1E+00	1	0.10											
DIOXIN																	
2,3,7,8-TCDD	3.66E-06	1.5E+05	1.5E+05	1.5E+05	1	0.10		3.3E-14	4.9E-09	3.0E-18	4.5E-13			4.7E-14	7.0E-09	1.2E-08	100.00
Total Cancer Risk									4.9E-09		4.5E-13				7.0E-09	1.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL171-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption Factor, unitless		Volatilization factor (VF), m³/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	4.1E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		3.7E-07	6.3E-06	3.4E-11	5.7E-10			5.2E-07	8.9E-06	1.5E-05	67.53
Alpha-BHC	4.3E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		3.8E-09	2.4E-08	3.5E-13	2.2E-12			5.4E-09	3.4E-08	5.8E-08	0.26
Beta-BHC	4.3E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.8E-09	6.9E-09	3.5E-13	6.3E-13			5.4E-09	9.7E-09	1.7E-08	0.07
4,4-DDD	8.0E-01	2.4E-01	2.4E-01	NI	1	0.10		7.2E-09	1.7E-09	6.6E-13				1.0E-08	2.4E-09	4.2E-09	0.02
4,4-DDE	8.0E-01	3.4E-01	3.4E-01	NI	1	0.10		7.2E-09	2.4E-09	6.6E-13				1.0E-08	3.5E-09	5.9E-09	0.03
4,4-DDT	1.3E+00	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.2E-08	4.0E-09	1.1E-12	3.6E-13			1.7E-08	5.6E-09	9.6E-09	0.04
Delta-BHC	4.3E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		3.8E-09	6.9E-09	3.5E-13	6.3E-13			5.4E-09	9.7E-09	1.7E-08	0.07
Dieldrin	1.5E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.4E-07	2.2E-06	1.2E-11	2.0E-10			1.9E-07	3.1E-06	5.2E-06	23.25
Chlordane	3.8E+00	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.4E-08	1.2E-08	3.1E-12	1.1E-12			4.8E-08	1.7E-08	2.9E-08	0.13
Endosulfan I	4.3E-01	NI	NI	NI	1	0.10		3.8E-09		3.5E-13				5.4E-09			
Endosulfan II	8.0E-01	NI	NI	NI	1	0.10		7.2E-09		6.6E-13				1.0E-08			
Endosulfan sulfate	8.0E-01	NI	NI	NI	1	0.10		7.2E-09		6.6E-13				1.0E-08			
Endrin	8.0E-01	NI	NI	NI	1	0.10		7.2E-09		6.6E-13				1.0E-08			
Endrin aldehyde	8.0E-01	NI	NI	NI	1	0.10		7.2E-09		6.6E-13				1.0E-08			
Endrin ketone	8.0E-01	NI	NI	NI	1	0.10		7.2E-09		6.6E-13				1.0E-08			
Gamma-BHC (Lindane)	1.2E+01	1.3E+00	1.3E+00	NI	1	0.10		1.1E-07	1.4E-07	9.9E-12				1.5E-07	2.0E-07	3.4E-07	1.51
Heptachlor	5.0E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		4.5E-08	2.0E-07	4.1E-12	1.9E-11			6.4E-08	2.9E-07	4.9E-07	2.18
Heptachlor epoxide	4.3E-01	9.1E+00	9.1E+00	9.1E+00	1	0.10		3.8E-09	3.5E-08	3.5E-13	3.2E-12			5.4E-09	4.9E-08	8.4E-08	0.37
Methoxychlor	4.3E+00	NI	NI	NI	1	0.10		3.8E-08		3.5E-12				5.4E-08			
Toxaphene	4.3E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		3.8E-07	4.2E-07	3.5E-11	3.9E-11			5.4E-07	5.9E-07	1.0E-06	4.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									9.3E-06		8.4E-10				1.3E-05	2.2E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL171-4

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	5.0E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		4.5E-10	7.7E-09	4.1E-14	7.0E-13			6.4E-10	1.1E-08	1.8E-08	17.54
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	0.14
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.04
4,4-DDD	9.7E-03	2.4E-01	2.4E-01	NI	1	0.10		8.7E-11	2.1E-11	8.0E-15				1.2E-10	3.0E-11	5.1E-11	0.05
4,4-DDE	2.2E-03	3.4E-01	3.4E-01	NI	1	0.10		2.0E-11	6.7E-12	1.8E-15				2.8E-11	9.5E-12	1.6E-11	0.02
4,4-DDT	4.0E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		3.6E-10	1.2E-10	3.3E-14	1.1E-14			5.1E-10	1.7E-10	3.0E-10	0.28
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.04
Dieldrin	2.3E-01	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.1E-09	3.3E-08	1.9E-13	3.0E-12			2.9E-09	4.7E-08	8.0E-08	75.95
Chlordane	3.4E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.1E-10	1.1E-10	2.8E-14	9.8E-15			4.3E-10	1.5E-10	2.6E-10	0.25
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	3.5E-03	NI	NI	NI	1	0.10		3.2E-11		2.9E-15				4.5E-11			
Endosulfan sulfate	2.2E-03	NI	NI	NI	1	0.10		1.9E-11		1.8E-15				2.7E-11			
Endrin	2.2E-03	NI	NI	NI	1	0.10		2.0E-11		1.8E-15				2.8E-11			
Endrin aldehyde	2.2E-03	NI	NI	NI	1	0.10		1.9E-11		1.8E-15				2.7E-11			
Endrin ketone	3.2E-02	NI	NI	NI	1	0.10		2.9E-10		2.6E-14				4.1E-10			
Gamma-BHC (Lindane)	3.9E-03	1.3E+00	1.3E+00	NI	1	0.10		3.5E-11	4.6E-11	3.2E-15				5.0E-11	6.4E-11	1.1E-10	0.10
Heptachlor	2.0E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.8E-10	8.1E-10	1.6E-14	7.6E-14			2.5E-10	1.1E-09	2.0E-09	1.86
Heptachlor epoxide	6.6E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.9E-11	5.4E-10	5.4E-15	4.9E-14			8.4E-11	7.6E-10	1.3E-09	1.24
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	2.50
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									4.4E-08		4.0E-12				6.2E-08	1.1E-07	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL172-2

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	1.0E+01	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.0E-08	1.5E-06	8.2E-12	1.4E-10			1.3E-07	2.2E-06	3.7E-06	11.25
Alpha-BHC	2.1E-01	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.9E-09	1.2E-08	1.7E-13	1.1E-12			2.7E-09	1.7E-08	2.9E-08	0.09
Beta-BHC	2.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-09	3.4E-09	1.7E-13	3.1E-13			2.7E-09	4.8E-09	8.2E-09	0.03
4,4-DDD	1.0E+00	2.4E-01	2.4E-01	NI	1	0.10		9.0E-09	2.2E-09	8.2E-13				1.3E-08	3.1E-09	5.2E-09	0.02
4,4-DDE	1.7E+00	3.4E-01	3.4E-01	NI	1	0.10		1.5E-08	5.2E-09	1.4E-12				2.2E-08	7.4E-09	1.3E-08	0.04
4,4-DDT	1.2E+01	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.1E-07	3.7E-08	9.9E-12	3.4E-12			1.5E-07	5.2E-08	8.9E-08	0.27
Delta-BHC	2.1E-01	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.9E-09	3.4E-09	1.7E-13	3.1E-13			2.7E-09	4.8E-09	8.2E-09	0.03
Dieldrin	7.8E+01	1.6E+01	1.6E+01	1.6E+01	1	0.10		7.0E-07	1.1E-05	6.4E-11	1.0E-09			9.9E-07	1.6E-05	2.7E-05	82.62
Chlordane	1.1E+01	3.5E-01	3.5E-01	3.5E-01	1	0.10		9.8E-08	3.4E-08	9.0E-12	3.1E-12			1.4E-07	4.9E-08	8.3E-08	0.25
Endosulfan I	2.1E-01	NI	NI	NI	1	0.10		1.9E-09		1.7E-13				2.7E-09			
Endosulfan II	8.5E-01	NI	NI	NI	1	0.10		7.7E-09		7.0E-13				1.1E-08			
Endosulfan sulfate	4.1E-01	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Endrin	4.6E-01	NI	NI	NI	1	0.10		4.1E-09		3.8E-13				5.9E-09			
Endrin aldehyde	4.1E-01	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Endrin ketone	2.8E+00	NI	NI	NI	1	0.10		2.5E-08		2.3E-12				3.6E-08			
Gamma-BHC (Lindane)	6.9E-01	1.3E+00	1.3E+00	NI	1	0.10		6.2E-09	8.1E-09	5.7E-13				8.8E-09	1.1E-08	1.9E-08	0.06
Heptachlor	8.8E+00	4.5E+00	4.5E+00	4.6E+00	1	0.10		7.9E-08	3.6E-07	7.3E-12	3.3E-11			1.1E-07	5.0E-07	8.6E-07	2.62
Heptachlor epoxide	2.0E+00	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-08	1.6E-07	1.6E-12	1.5E-11			2.5E-08	2.3E-07	4.0E-07	1.20
Methoxychlor	2.1E+00	NI	NI	NI	1	0.10		1.9E-08		1.7E-12				2.7E-08			
Toxaphene	2.1E+01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.9E-07	2.1E-07	1.7E-11	1.9E-11			2.7E-07	2.9E-07	5.0E-07	1.53
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.4E-05		1.2E-09				1.9E-05	3.3E-05	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL172-4

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	Dermal Absorption Lifetime Risks (CRD) (unitless)	Volatile Inhalation from soil dust Amount Inhaled (IDIS), (mg/kg-d)	Volatile Inhalation from soil dust Lifetime Risks (CRIS) (unitless)	Volatile Inhalation from volatiles Amount Inhaled (IDIV), (mg/kg-d)	Volatile Inhalation from volatiles Lifetime Risks (CRIV) (unitless)	Ingestion Amount Ingested (IDIG), (mg/kg-d)	Ingestion Lifetime Risks (CRIG) (unitless)	Total Risk	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.0E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.8E-11	3.1E-10	1.6E-15	2.8E-14			2.5E-11	4.3E-10	7.4E-10	11.86
Alpha-BHC	1.2E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.1E-11	6.8E-11	9.9E-16	6.2E-15			1.5E-11	9.6E-11	1.6E-10	2.64
Beta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	1.9E-11	9.9E-16	1.8E-15			1.5E-11	2.7E-11	4.7E-11	0.75
4,4-DDD	2.3E-03	2.4E-01	2.4E-01	NI	1	0.10		2.1E-11	5.0E-12	1.9E-15				2.9E-11	7.0E-12	1.2E-11	0.19
4,4-DDE	2.3E-03	3.4E-01	3.4E-01	NI	1	0.10		2.1E-11	7.0E-12	1.9E-15				2.9E-11	9.9E-12	1.7E-11	0.27
4,4-DDT	2.3E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.1E-11	7.0E-12	1.9E-15	6.4E-16			2.9E-11	9.9E-12	1.7E-11	0.27
Delta-BHC	1.2E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.1E-11	1.9E-11	9.9E-16	1.8E-15			1.5E-11	2.7E-11	4.7E-11	0.75
Dieldrin	5.5E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.0E-11	7.9E-10	4.5E-15	7.3E-14			7.0E-11	1.1E-09	1.9E-09	30.69
Chlordane	2.4E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-11	7.6E-12	2.0E-15	6.9E-16			3.1E-11	1.1E-11	1.8E-11	0.29
Endosulfan I	1.2E-03	NI	NI	NI	1	0.10		1.1E-11		9.9E-16				1.5E-11			
Endosulfan II	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endosulfan sulfate	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin aldehyde	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Endrin ketone	2.3E-03	NI	NI	NI	1	0.10		2.1E-11		1.9E-15				2.9E-11			
Gamma-BHC (Lindane)	1.2E-03	1.3E+00	1.3E+00	NI	1	0.10		1.1E-11	1.4E-11	9.9E-16				1.5E-11	2.0E-11	3.4E-11	0.54
Heptachlor	1.2E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.1E-11	4.9E-11	9.9E-16	4.5E-15			1.5E-11	6.9E-11	1.2E-10	1.88
Heptachlor epoxide	1.2E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.1E-11	9.8E-11	9.9E-16	9.0E-15			1.5E-11	1.4E-10	2.4E-10	3.81
Methoxychlor	1.2E-02	NI	NI	NI	1	0.10		1.1E-10		9.9E-15				1.5E-10			
Toxaphene	1.2E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.1E-09	1.2E-09	9.9E-14	1.1E-13			1.5E-09	1.7E-09	2.9E-09	46.04
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.6E-09		2.3E-13				3.6E-09	6.2E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
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: SL173-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.1E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.9E-12	1.7E-10	9.1E-16	1.5E-14			1.4E-11	2.4E-10	4.1E-10	8.65
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	3.21
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.92
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.9E-11	4.5E-12	1.7E-15				2.7E-11	6.4E-12	1.1E-11	0.23
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.9E-11	6.4E-12	1.7E-15				2.7E-11	9.1E-12	1.6E-11	0.33
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.9E-11	6.4E-12	1.7E-15	5.9E-16			2.7E-11	9.1E-12	1.6E-11	0.33
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.92
Dieldrin	2.9E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.6E-11	4.2E-10	2.4E-15	3.8E-14			3.7E-11	5.9E-10	1.0E-09	21.47
Chlordane	2.2E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.0E-11	6.9E-12	1.8E-15	6.3E-16			2.8E-11	9.8E-12	1.7E-11	0.36
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.66
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-12	4.5E-11	9.1E-16	4.2E-15			1.4E-11	6.3E-11	1.1E-10	2.29
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-12	9.0E-11	9.1E-16	8.2E-15			1.4E-11	1.3E-10	2.2E-10	4.63
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	56.00
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									1.9E-09		1.8E-13				2.7E-09	4.7E-09	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL174-2

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	1.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		9.9E-11	1.7E-09	9.1E-15	1.5E-13			1.4E-10	2.4E-09	4.1E-09	5.40
Alpha-BHC	1.1E-02	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-11	6.2E-10	9.1E-15	5.7E-14			1.4E-10	8.8E-10	1.5E-09	2.00
Beta-BHC	1.1E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-11	1.8E-10	9.1E-15	1.6E-14			1.4E-10	2.5E-10	4.3E-10	0.57
4,4-DDD	7.9E-01	2.4E-01	2.4E-01	NI	1	0.10		7.1E-09	1.7E-09	6.5E-13				1.0E-08	2.4E-09	4.1E-09	5.47
4,4-DDE	2.1E-02	3.4E-01	3.4E-01	NI	1	0.10		1.9E-10	6.4E-11	1.7E-14				2.7E-10	9.1E-11	1.6E-10	0.21
4,4-DDT	5.1E-02	3.4E-01	3.4E-01	3.4E-01	1	0.10		4.6E-10	1.6E-10	4.2E-14	1.4E-14			6.5E-10	2.2E-10	3.8E-10	0.50
Delta-BHC	1.1E-02	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-11	1.8E-10	9.1E-15	1.6E-14			1.4E-10	2.5E-10	4.3E-10	0.57
Dieldrin	9.1E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		8.2E-10	1.3E-08	7.5E-14	1.2E-12			1.2E-09	1.9E-08	3.2E-08	42.01
Chlordane	3.6E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.2E-09	1.1E-09	3.0E-13	1.0E-13			4.6E-09	1.6E-09	2.7E-09	3.64
Endosulfan I	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Endosulfan II	1.8E-01	NI	NI	NI	1	0.10		1.6E-09		1.5E-13				2.3E-09			
Endosulfan sulfate	2.5E-02	NI	NI	NI	1	0.10		2.3E-10		2.1E-14				3.2E-10			
Endrin	7.1E-02	NI	NI	NI	1	0.10		6.4E-10		5.9E-14				9.0E-10			
Endrin aldehyde	2.1E-02	NI	NI	NI	1	0.10		1.9E-10		1.7E-14				2.7E-10			
Endrin ketone	2.1E-02	NI	NI	NI	1	0.10		1.9E-10		1.7E-14				2.7E-10			
Gamma-BHC (Lindane)	1.1E-02	1.3E+00	1.3E+00	NI	1	0.10		9.9E-11	1.3E-10	9.1E-15				1.4E-10	1.8E-10	3.1E-10	0.41
Heptachlor	1.1E-02	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.9E-11	4.5E-10	9.1E-15	4.2E-14			1.4E-10	6.3E-10	1.1E-09	1.43
Heptachlor epoxide	1.1E-02	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-11	9.0E-10	9.1E-15	8.2E-14			1.4E-10	1.3E-09	2.2E-09	2.89
Methoxychlor	1.1E-01	NI	NI	NI	1	0.10		9.9E-10		9.1E-14				1.4E-09			
Toxaphene	1.1E+00	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-09	1.1E-08	9.1E-13	1.0E-12			1.4E-08	1.5E-08	2.6E-08	34.91
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									3.1E-08		2.7E-12				4.4E-08	7.5E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL175-2

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	7.9E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		7.1E-11	1.2E-09	6.5E-15	1.1E-13			1.0E-10	1.7E-09	2.9E-09	13.53
Alpha-BHC	2.0E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		1.8E-11	1.1E-10	1.6E-15	1.0E-14			2.5E-11	1.6E-10	2.7E-10	1.27
Beta-BHC	2.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.8E-11	3.2E-11	1.6E-15	3.0E-15			2.5E-11	4.6E-11	7.8E-11	0.36
4,4-DDD	9.5E-02	2.4E-01	2.4E-01	NI	1	0.10		8.6E-10	2.1E-10	7.8E-14				1.2E-09	2.9E-10	5.0E-10	2.30
4,4-DDE	1.1E-02	3.4E-01	3.4E-01	NI	1	0.10		9.9E-11	3.4E-11	9.1E-15				1.4E-10	4.8E-11	8.1E-11	0.38
4,4-DDT	2.9E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.6E-09	8.9E-10	2.4E-13	8.1E-14			3.7E-09	1.3E-09	2.1E-09	9.94
Delta-BHC	2.0E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		1.8E-11	3.2E-11	1.6E-15	3.0E-15			2.5E-11	4.6E-11	7.8E-11	0.36
Dieldrin	2.7E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.4E-10	3.9E-09	2.2E-14	3.6E-13			3.4E-10	5.5E-09	9.4E-09	43.53
Chlordane	2.4E-02	3.5E-01	3.5E-01	3.5E-01	1	0.10		2.2E-10	7.5E-11	2.0E-14	6.9E-15			3.0E-10	1.1E-10	1.8E-10	0.84
Endosulfan I	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan II	8.8E-03	NI	NI	NI	1	0.10		7.9E-11		7.3E-15				1.1E-10			
Endosulfan sulfate	3.9E-03	NI	NI	NI	1	0.10		3.5E-11		3.2E-15				5.0E-11			
Endrin	1.0E-02	NI	NI	NI	1	0.10		9.0E-11		8.2E-15				1.3E-10			
Endrin aldehyde	3.9E-03	NI	NI	NI	1	0.10		3.5E-11		3.2E-15				5.0E-11			
Endrin ketone	3.9E-03	NI	NI	NI	1	0.10		3.5E-11		3.2E-15				5.0E-11			
Gamma-BHC (Lindane)	2.0E-03	1.3E+00	1.3E+00	NI	1	0.10		1.8E-11	2.3E-11	1.6E-15				2.5E-11	3.3E-11	5.8E-11	0.26
Heptachlor	7.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		6.4E-11	2.9E-10	5.9E-15	2.7E-14			9.0E-11	4.1E-10	6.9E-10	3.22
Heptachlor epoxide	2.0E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		1.8E-11	1.6E-10	1.6E-15	1.5E-14			2.5E-11	2.3E-10	4.0E-10	1.83
Methoxychlor	2.0E-02	NI	NI	NI	1	0.10		1.8E-10		1.6E-14				2.5E-10			
Toxaphene	2.0E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		1.8E-09	2.0E-09	1.6E-13	1.8E-13			2.5E-09	2.8E-09	4.8E-09	22.17
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									8.9E-09		7.9E-13				1.3E-08	2.2E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$CRD = IDD * SFD$$

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

$$CRI = IDI * SFI$$

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

$$CRIV = IDIV * SFI$$

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

$$CRIG = IDIG * SFO$$

RME ADULT CONSTRUCTION WORKER CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL176-2

Chemical Name	Concentration in soil (CS), mg/kg	Cancer Potency Factors, 1/(mg/kg-d)			Absorption factor, unitless		Volatilization factor (VF), m³/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	1.2E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.1E-10	1.8E-09	9.9E-15	1.7E-13			1.5E-10	2.6E-09	4.4E-09	7.56
Alpha-BHC	5.5E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		5.0E-11	3.1E-10	4.5E-15	2.9E-14			7.0E-11	4.4E-10	7.5E-10	1.28
Beta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.37
4,4-DDD	9.7E-01	2.4E-01	2.4E-01	NI	1	0.10		8.7E-09	2.1E-09	8.0E-13				1.2E-08	3.0E-09	5.1E-09	8.63
4,4-DDE	1.1E-02	3.4E-01	3.4E-01	NI	1	0.10		9.5E-11	3.2E-11	8.7E-15				1.3E-10	4.5E-11	7.8E-11	0.13
4,4-DDT	2.6E-01	3.4E-01	3.4E-01	3.4E-01	1	0.10		2.3E-09	8.0E-10	2.1E-13	7.3E-14			3.3E-09	1.1E-09	1.9E-09	3.28
Delta-BHC	5.5E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		5.0E-11	8.9E-11	4.5E-15	8.2E-15			7.0E-11	1.3E-10	2.2E-10	0.37
Dieldrin	2.6E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		2.3E-10	3.7E-09	2.1E-14	3.4E-13			3.3E-10	5.3E-09	9.0E-09	15.43
Chlordane	1.3E-01	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.2E-09	4.1E-10	1.1E-13	3.7E-14			1.7E-09	5.8E-10	9.9E-10	1.69
Endosulfan I	5.5E-03	NI	NI	NI	1	0.10		5.0E-11		4.5E-15				7.0E-11			
Endosulfan II	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endosulfan sulfate	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin aldehyde	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Endrin ketone	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Gamma-BHC (Lindane)	5.5E-03	1.3E+00	1.3E+00	NI	1	0.10		5.0E-11	6.4E-11	4.5E-15				7.0E-11	9.1E-11	1.6E-10	0.27
Heptachlor	2.2E-01	4.5E+00	4.5E+00	4.6E+00	1	0.10		2.0E-09	8.9E-09	1.8E-13	8.3E-13			2.8E-09	1.3E-08	2.2E-08	36.71
Heptachlor epoxide	5.5E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		5.0E-11	4.5E-10	4.5E-15	4.1E-14			7.0E-11	6.4E-10	1.1E-09	1.86
Methoxychlor	5.5E-02	NI	NI	NI	1	0.10		5.0E-10		4.5E-14				7.0E-10			
Toxaphene	5.5E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		5.0E-09	5.4E-09	4.5E-13	5.0E-13			7.0E-09	7.7E-09	1.3E-08	22.43
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									2.4E-08		2.0E-12				3.4E-08	5.9E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL177-2

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	9.1E-02	1.7E+01	1.7E+01	1.7E+01	1	0.10		8.2E-10	1.4E-08	7.5E-14	1.3E-12			1.2E-09	2.0E-08	3.4E-08	86.83
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.5E-12	6.0E-11	8.7E-16	5.5E-15			1.3E-11	8.4E-11	1.4E-10	0.37
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.11
4,4-DDD	2.5E-03	2.4E-01	2.4E-01	NI	1	0.10		2.3E-11	5.4E-12	2.1E-15				3.2E-11	7.6E-12	1.3E-11	0.03
4,4-DDE	2.0E-03	3.4E-01	3.4E-01	NI	1	0.10		1.8E-11	6.1E-12	1.6E-15				2.5E-11	8.6E-12	1.5E-11	0.04
4,4-DDT	2.0E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.8E-11	6.1E-12	1.6E-15	5.6E-16			2.5E-11	8.6E-12	1.5E-11	0.04
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.5E-12	1.7E-11	8.7E-16	1.6E-15			1.3E-11	2.4E-11	4.1E-11	0.11
Dieldrin	5.6E-03	1.6E+01	1.6E+01	1.6E+01	1	0.10		5.0E-11	8.1E-10	4.6E-15	7.4E-14			7.1E-11	1.1E-09	1.9E-09	5.03
Chlordane	4.3E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		3.9E-11	1.4E-11	3.5E-15	1.2E-15			5.5E-11	1.9E-11	3.3E-11	0.08
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.5E-12		8.7E-16				1.3E-11			
Endosulfan II	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endosulfan sulfate	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin aldehyde	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Endrin ketone	2.0E-03	NI	NI	NI	1	0.10		1.8E-11		1.6E-15				2.5E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.5E-12	1.2E-11	8.7E-16				1.3E-11	1.7E-11	3.0E-11	0.08
Heptachlor	1.1E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		9.5E-12	4.3E-11	8.7E-16	4.0E-15			1.3E-11	6.0E-11	1.0E-10	0.27
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.5E-12	8.6E-11	8.7E-16	7.9E-15			1.3E-11	1.2E-10	2.1E-10	0.54
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.5E-11		8.7E-15				1.3E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.5E-10	1.0E-09	8.7E-14	9.5E-14			1.3E-09	1.5E-09	2.5E-09	6.48
DIOXIN																	
2,3,7,8-TCDD No sample collected		1.5E+05	1.5E+05	1.5E+05	1	0.10											
Total Cancer Risk									1.6E-08		1.5E-12				2.3E-08	3.9E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL178-2

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	1.5E-03	1.7E+01	1.7E+01	1.7E+01	1	0.10		1.4E-11	2.3E-10	1.2E-15	2.1E-14			1.9E-11	3.2E-10	5.5E-10	5.47
Alpha-BHC	1.1E-03	6.3E+00	6.3E+00	6.3E+00	1	0.10		9.9E-12	6.2E-11	9.1E-16	5.7E-15			1.4E-11	8.8E-11	1.5E-10	1.49
Beta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.43
4,4-DDD	2.1E-03	2.4E-01	2.4E-01	NI	1	0.10		1.9E-11	4.5E-12	1.7E-15				2.7E-11	6.4E-12	1.1E-11	0.11
4,4-DDE	2.1E-03	3.4E-01	3.4E-01	NI	1	0.10		1.9E-11	6.4E-12	1.7E-15				2.7E-11	9.1E-12	1.6E-11	0.15
4,4-DDT	2.1E-03	3.4E-01	3.4E-01	3.4E-01	1	0.10		1.9E-11	6.4E-12	1.7E-15	5.9E-16			2.7E-11	9.1E-12	1.6E-11	0.15
Delta-BHC	1.1E-03	1.8E+00	1.8E+00	1.8E+00	1	0.10		9.9E-12	1.8E-11	9.1E-16	1.6E-15			1.4E-11	2.5E-11	4.3E-11	0.43
Dieldrin	1.8E-02	1.6E+01	1.6E+01	1.6E+01	1	0.10		1.6E-10	2.6E-09	1.5E-14	2.4E-13			2.3E-10	3.7E-09	6.3E-09	61.83
Chlordane	2.1E-03	3.5E-01	3.5E-01	3.5E-01	1	0.10		1.9E-11	6.6E-12	1.7E-15	6.1E-16			2.7E-11	9.3E-12	1.6E-11	0.16
Endosulfan I	1.1E-03	NI	NI	NI	1	0.10		9.9E-12		9.1E-16				1.4E-11			
Endosulfan II	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endosulfan sulfate	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin aldehyde	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Endrin ketone	2.1E-03	NI	NI	NI	1	0.10		1.9E-11		1.7E-15				2.7E-11			
Gamma-BHC (Lindane)	1.1E-03	1.3E+00	1.3E+00	NI	1	0.10		9.9E-12	1.3E-11	9.1E-16				1.4E-11	1.8E-11	3.1E-11	0.31
Heptachlor	1.4E-03	4.5E+00	4.5E+00	4.6E+00	1	0.10		1.3E-11	5.7E-11	1.2E-15	5.3E-15			1.8E-11	8.0E-11	1.4E-10	1.35
Heptachlor epoxide	1.1E-03	9.1E+00	9.1E+00	9.1E+00	1	0.10		9.9E-12	9.0E-11	9.1E-16	8.2E-15			1.4E-11	1.3E-10	2.2E-10	2.15
Methoxychlor	1.1E-02	NI	NI	NI	1	0.10		9.9E-11		9.1E-15				1.4E-10			
Toxaphene	1.1E-01	1.1E+00	1.1E+00	1.1E+00	1	0.10		9.9E-10	1.1E-09	9.1E-14	1.0E-13			1.4E-09	1.5E-09	2.6E-09	25.96
DIOXIN																	
2,3,7,8-TCDD		1.5E+05	1.5E+05	1.5E+05	1	0.10											
No sample collected																	
Total Cancer Risk									4.2E-09		3.8E-13				5.9E-09	1.0E-08	100

ASSUMPTIONS:

Averaging Time, AT (yr)	75
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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-[redacted]azard Index
Removal Action Sampling
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte														Total Non-Cancer HI
	Aldrin	4,4-DDT	Dieldrin	Chlordane	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	Gamma-BHC	Heptachlor	Heptachlor Epoxide	Methoxychlor	
SL90-7	1.09E-04	6.35E-06	3.26E-05	6.35E-06	5.43E-07	2.71E-07	5.29E-07	1.06E-05	0.00E+00	1.06E-05	1.06E-05	0.00E+00	1.25E-04	3.26E-07	3.13E-04
SL91-6	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL92-7	5.70E-05	6.52E-06	6.52E-05	6.84E-06	2.85E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	3.14E-04
SL93-2	3.20E-04	8.14E-06	3.26E-04	1.39E-04	8.69E-07	1.63E-06	1.63E-06	3.26E-05	3.26E-05	3.26E-05	1.74E-05	1.73E-04	4.01E-04	1.04E-05	1.50E-03
SL94-1	1.14E-01	7.17E-04	2.77E-03	1.24E-04	3.12E-05	5.97E-06	5.97E-06	1.19E-03	1.19E-03	1.19E-03	6.24E-04	6.84E-05	1.44E-02	3.75E-04	1.37E-01
SL95-8	1.63E-02	8.80E-05	2.31E-03	1.64E-04	1.06E-06	1.90E-06	1.90E-06	3.80E-05	3.80E-05	3.80E-05	2.12E-05	2.05E-04	4.64E-04	1.21E-05	1.97E-02
SL96-6	1.52E-01	1.47E-04	1.04E-03	1.43E-04	2.71E-05	5.16E-05	5.16E-05	1.03E-03	1.03E-03	1.03E-03	8.14E-05	5.54E-04	1.25E-02	3.26E-04	1.70E-01
SL97-6	2.71E-04	6.35E-06	6.35E-05	7.07E-05	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-05	3.26E-06	1.25E-04	3.26E-06	6.31E-04
SL98-1	1.36E-04	7.17E-06	7.17E-05	7.17E-06	2.99E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	5.97E-06	4.24E-06	1.38E-04	3.58E-06	4.11E-04
SL100-3	1.57E-04	6.68E-06	6.68E-05	8.96E-06	2.85E-07	5.57E-07	5.57E-07	1.11E-05	1.11E-05	1.11E-05	5.70E-06	3.58E-06	1.32E-04	3.42E-06	4.19E-04
SL101-7	2.23E-01	1.99E-02	5.54E-02	7.92E-03	1.26E-04	2.44E-04	2.44E-04	4.89E-03	4.89E-03	4.89E-03	2.52E-03	1.69E-03	1.03E-02	1.51E-03	3.37E-01
SL102-2	3.37E-01	3.58E-03	2.77E-01	1.43E-02	1.49E-05	7.87E-05	2.99E-05	9.23E-04	5.97E-04	1.57E-03	2.39E-02	1.27E-02	2.00E-02	1.79E-04	6.92E-01
SL102-4	1.47E-02	4.56E-04	2.25E-01	2.51E-03	1.49E-04	2.71E-04	2.71E-04	5.43E-03	5.43E-03	1.95E-03	2.99E-03	9.77E-04	3.26E-02	1.79E-03	2.94E-01
SL103-2	4.13E-01	1.73E-02	7.49E-01	2.54E-02	5.16E-04	1.33E-04	1.02E-03	2.04E-02	2.04E-02	4.24E-03	1.36E-03	1.21E-02	4.64E-02	6.19E-03	1.32E+00
SL103-4	4.13E-01	3.58E-02	1.73E+00	2.90E-02	6.11E-05	1.55E-04	1.19E-04	2.39E-03	2.39E-03	9.77E-03	2.17E-03	3.26E-02	2.00E-01	7.33E-04	2.46E+00
SL104-2	2.33E-01	8.80E-03	8.47E-01	1.56E-02	5.97E-04	1.17E-03	1.17E-03	2.33E-02	2.33E-02	7.60E-03	1.19E-02	1.17E-02	2.26E-01	7.17E-03	1.42E+00
SL104-4	7.06E-03	1.53E-05	1.01E-02	3.84E-04	4.48E-07	1.28E-06	8.69E-07	1.74E-05	1.74E-05	8.69E-05	8.96E-06	5.38E-06	1.00E-03	5.38E-06	1.87E-02
SL105-2	3.64E-01	2.96E-03	2.31E-01	7.49E-03	2.99E-04	2.55E-04	5.70E-04	5.38E-03	1.14E-02	1.14E-02	5.97E-03	3.58E-03	3.38E-02	3.58E-03	6.82E-01
SL106-2	1.90E+00	2.80E-02	5.86E-01	1.27E-01	2.58E-03	5.43E-04	5.02E-03	1.00E-01	1.00E-01	1.00E-01	8.14E-03	2.31E-01	1.19E+00	3.10E-02	4.41E+00
SL106-4	1.36E+00	2.22E-02	5.54E-01	8.15E-02	5.97E-05	3.26E-04	1.17E-04	4.29E-03	2.33E-03	2.66E-03	1.85E-03	8.80E-02	5.14E-02	1.27E-03	2.17E+00
SL107-2	2.33E+00	1.73E-02	5.86E-01	1.60E-01	5.84E-04	8.69E-04	1.14E-04	4.67E-02	2.25E-02	1.95E-02	5.00E-03	8.47E-02	1.01E-01	7.00E-03	3.39E+00
SL107-4	1.03E+00	1.60E-02	3.91E-01	5.34E-02	1.36E-05	1.76E-04	4.34E-05	6.52E-03	5.43E-04	3.58E-03	8.14E-04	4.89E-02	3.51E-02	1.63E-04	1.59E+00
SL108-2	1.09E+00	2.35E-02	7.82E-01	8.83E-02	1.13E-03	4.07E-04	2.99E-04	2.06E-02	4.62E-03	7.60E-03	2.25E-02	1.24E-01	1.07E-01	1.35E-02	2.28E+00
SL108-4	3.69E+00	1.11E-02	9.77E-01	1.04E-01	1.25E-04	5.97E-04	2.63E-04	1.52E-02	4.89E-03	4.89E-03	2.50E-03	8.14E-02	5.76E-02	1.50E-03	4.95E+00
SL109-2	1.79E-01	5.21E-04	1.11E-01	5.96E-03	7.19E-05	1.57E-05	1.36E-04	5.21E-04	2.71E-03	3.31E-03	1.44E-03	1.04E-03	7.89E-03	8.63E-04	3.14E-01
SL110-2	2.44E+00	3.91E-02	4.89E-01	2.67E-02	1.49E-04	3.00E-04	3.00E-04	6.00E-03	6.00E-03	6.52E-03	2.99E-03	5.54E-02	6.89E-02	1.79E-03	3.15E+00
SL110-4	1.30E-02	3.10E-04	5.54E-02	1.79E-03	2.04E-06	3.94E-06	3.94E-06	1.09E-04	7.87E-05	2.12E-03	7.60E-05	2.44E-05	1.38E-02	2.44E-05	8.67E-02
SL111-2	1.09E+00	6.84E-03	1.82E-01	2.80E-02	2.99E-04	5.70E-04	5.70E-04	1.14E-02	1.14E-02	2.39E-03	5.97E-03	3.58E-02	2.00E-02	3.58E-04	1.39E+00
SL111-4	1.47E+00	3.91E-02	2.74E+00	4.07E-02	4.48E-05	8.69E-05	8.69E-05	1.19E-02	2.23E-03	7.06E-03	8.96E-03	6.52E-03	3.76E-02	5.38E-04	4.36E+00
SL112-2	1.19E+01	1.60E-02	4.56E-01	1.91E-02	5.57E-03	1.07E-02	1.07E-02	2.14E-01	2.14E-01	2.14E-01	1.11E-01	2.38E-02	2.57E+00	6.68E-02	1.59E+01
SL112-4	3.42E-03	9.45E-05	1.34E-02	3.29E-04	8.55E-07	4.34E-06	1.63E-06	5.10E-05	3.26E-05	2.71E-04	1.71E-05	1.82E-04	2.51E-03	1.03E-05	2.03E-02
SL113-4	2.55E+00	3.13E-02	3.10E-01	2.70E-02	6.38E-04	1.22E-03	1.22E-03	2.44E-02	2.44E-02	3.86E-03	1.28E-02	3.91E-02	2.94E-01	7.66E-03	3.33E+00
SL113-6	5.97E-04	8.47E-05	1.89E-04	3.75E-05	2.85E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.70E-06	5.86E-05	1.32E-04	3.42E-06	1.14E-03
SL114-2	3.75E+00	1.08E-01	7.82E+00	4.37E-01	3.80E-03	7.33E-03	7.33E-03	1.47E-01	1.47E-01	1.47E-01	7.60E-02	1.95E-01	1.75E+00	4.56E-02	1.46E+01
SL115-2	1.85E-02	4.89E-05	2.77E-03	2.28E-04	8.96E-06	1.76E-05	1.76E-05	3.53E-04	3.53E-04	3.53E-04	1.79E-04	1.27E-04	4.14E-03	1.08E-04	2.72E-02
SL116-5	6.52E-04	7.17E-06	1.27E-04	1.16E-05	3.12E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	6.24E-06	3.75E-06	1.44E-04	3.75E-06	9.93E-04
SL117-6	3.10E-03	2.77E-05	7.82E-04	8.80E-06	1.18E-06	2.31E-06	2.31E-06	4.62E-05	4.62E-05	4.62E-05	2.36E-05	9.12E-06	5.45E-04	1.42E-05	4.65E-03
SL118-2	1.09E-03	6.68E-06	1.60E-04	6.84E-06	2.85E-07	5.57E-07	5.57E-07	1.11E-05	1.11E-05	1.11E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	1.44E-03
SL119-2	1.63E-03	2.09E-05	7.17E-04	1.63E-05	2.99E-07	5.70E-07	5.70E-07	1.14E-05	1.14E-05	1.14E-05	5.97E-06	3.58E-06	1.38E-04	3.58E-06	2.57E-03
SL120-2	2.71E-04	6.52E-06	8.47E-05	6.84E-06	2.85E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	5.48E-04
SL121-1	8.69E-03	8.14E-06	2.25E-03	3.26E-05	3.53E-07	6.24E-06	6.24E-06	1.25E-04	1.25E-04	2.61E-05	6.52E-05	3.58E-05	1.50E-03	3.91E-05	1.29E-02
SL122-5	4.13E-03	3.58E-05	4.89E-04	3.58E-05	5.70E-06	2.99E-06	2.99E-06	5.97E-06	5.97E-05	5.97E-05	2.99E-05	6.52E-06	6.89E-04	1.79E-05	5.62E-03
SL123-5	2.39E-03	7.17E-06	7.49E-04	1.19E-05	4.89E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	6.24E-06	1.14E-05	1.44E-04	3.75E-06	3.36E-03
SL124-5	1.09E-03	7.17E-06	6.19E-04	1.40E-05	3.12E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	6.24E-06	3.75E-06	1.44E-04	3.75E-06	1.92E-03
SL125-5	4.89E-02	7.17E-04	4.56E-03	7.49E-04	3.12E-05	5.97E-05	5.97E-05	1.19E-03	1.19E-03	1.19E-03	6.24E-04	3.75E-04	1.44E-02	3.75E-04	7.44E-02
SL126-4	1.95E-03	6.84E-06	4.89E-04	3.39E-05	5.84E-07	1.14E-06	1.14E-06	2.28E-05	2.28E-05	2.28E-05	1.17E-05	7.17E-06	2.69E-04	7.00E-06	2.85E-03

Notes:
(1) Risk was calculated based on assumptions in EE/CA created by Ecology and Environment, Inc. (with revised assumption)
(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

Total Non-Cancer Hazard Index
Removal Action Sampling
Riverdale Chemical Company - Chicago Heights, Illinois

Sampling Location	Analyte														Total Non-Cancer HI
	Aldrin	4,4-DDT	Dieldrin	Chlordane	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	Gamma-BHC	Heptachlor	Heptachlor Epoxide	Methoxychlor	
SL127-5	5.70E-05	6.68E-06	9.45E-05	7.98E-06	2.85E-07	5.57E-07	5.57E-07	1.11E-05	1.11E-05	1.11E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	3.45E-04
SL128-7	2.77E-04	6.35E-06	6.52E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.58E-06	1.25E-04	3.26E-06	5.26E-04
SL129-5	1.09E-03	1.92E-04	3.10E-03	4.66E-04	1.49E-06	2.12E-06	2.85E-06	5.70E-05	5.70E-05	5.70E-05	3.48E-05	2.99E-05	1.34E-04	8.02E-04	1.79E-05	5.96E-03
SL130-2	6.52E-05	7.49E-06	7.49E-05	7.82E-06	3.26E-07	6.24E-07	6.24E-07	1.25E-05	1.25E-05	1.25E-05	6.52E-06	6.52E-06	6.19E-06	1.50E-04	3.91E-06	3.61E-04
SL131-2	1.14E-02	2.12E-05	2.44E-03	2.57E-04	5.84E-06	1.13E-05	1.13E-05	2.25E-04	2.25E-04	2.25E-04	1.17E-04	1.30E-05	2.69E-03	7.00E-05	1.77E-02
SL132-2	5.43E-05	6.52E-06	6.52E-05	6.52E-06	2.71E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.04E-04
SL133-2	1.36E-04	6.35E-06	6.35E-05	7.82E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	7.17E-06	1.25E-04	3.26E-06	3.88E-04
SL134-2	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL135-2	5.43E-05	6.35E-06	9.12E-05	6.52E-06	3.80E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.29E-04
SL136-3	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL137-2	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL138-1	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL139-1	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL140-1	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL141-1	1.14E-03	2.54E-05	6.52E-04	3.45E-05	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	2.02E-03
SL142-2	5.43E-05	6.35E-06	8.47E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.22E-04
SL143-2	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL144-2	5.43E-05	6.35E-06	6.84E-05	7.82E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.07E-04
SL145-2	5.43E-05	6.35E-06	6.35E-05	6.52E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	3.01E-04
SL146-1	5.70E-05	6.68E-06	6.68E-05	6.84E-06	2.85E-07	5.57E-07	5.57E-07	1.11E-05	1.11E-05	1.11E-05	5.70E-06	3.42E-06	4.01E-04	3.42E-06	5.86E-04
SL147-2	1.63E-03	1.53E-05	4.56E-03	6.91E-05	9.77E-07	8.42E-07	6.11E-06	1.22E-04	1.22E-04	1.22E-04	6.24E-05	3.91E-06	2.13E-03	3.75E-05	8.88E-03
SL149-2	7.60E-05	7.17E-06	7.17E-05	1.04E-05	3.12E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	6.24E-06	3.75E-06	1.44E-04	3.75E-06	3.67E-04
SL150-1	3.64E-04	1.63E-05	5.86E-04	2.34E-05	3.12E-07	5.97E-07	5.97E-07	1.19E-05	1.19E-05	1.19E-05	6.24E-06	1.30E-05	1.44E-04	3.75E-06	1.28E-03
SL151-2	1.36E-03	1.92E-05	2.18E-04	2.83E-05	2.71E-07	5.16E-07	5.16E-07	1.03E-05	1.03E-05	1.03E-05	5.43E-06	1.76E-05	1.25E-04	3.26E-06	1.81E-03
SL152-2	2.01E-04	6.52E-06	6.52E-05	9.34E-06	2.85E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	4.61E-04
SL153-2	1.14E+00	1.17E-02	9.77E-02	3.39E-02	2.44E-04	7.08E-05	4.75E-04	9.50E-03	9.50E-03	2.17E-03	4.89E-03	3.91E-02	1.13E-01	2.93E-03	1.47E+00
SL153-4	9.23E-04	6.52E-05	3.58E-04	2.41E-05	2.99E-07	5.70E-07	5.70E-07	1.14E-05	1.14E-05	1.14E-05	5.97E-06	1.43E-05	1.38E-04	3.58E-06	1.57E-03
SL154-2	1.25E-03	7.49E-06	6.35E-05	8.47E-06	2.71E-07	5.29E-07	5.29E-07	1.06E-05	1.06E-05	1.06E-05	5.43E-06	5.21E-06	1.25E-04	3.26E-06	1.50E-03
SL155-2	3.64E-03	1.79E-03	3.58E-02	3.94E-03	1.90E-05	2.99E-05	3.67E-05	8.14E-05	7.33E-04	2.55E-04	3.80E-04	7.49E-04	7.52E-03	2.28E-04	5.52E-02
SL156-2	3.86E-04	1.86E-05	1.34E-03	8.18E-05	3.53E-07	6.79E-07	6.79E-07	1.36E-05	1.36E-05	1.36E-05	7.06E-06	1.91E-05	1.63E-04	4.24E-06	2.05E-03
SL157-2	6.79E-05	7.98E-06	1.01E-04	8.15E-06	3.39E-07	6.65E-07	6.65E-07	1.33E-05	1.33E-05	1.33E-05	6.79E-06	4.07E-06	1.57E-04	4.07E-06	3.98E-04
SL158-2	1.95E-04	2.22E-04	2.02E-02	7.26E-04	3.53E-06	1.79E-06	6.79E-06	2.12E-05	1.36E-04	1.09E-04	7.06E-06	2.18E-04	3.51E-03	1.08E-05	2.54E-02
SL159-1	8.14E+00	4.56E-02	9.77E-01	1.55E-01	5.84E-03	1.13E-02	1.13E-02	2.25E-01	2.25E-01	2.25E-01	1.17E-01	2.51E-02	2.69E+00	7.00E-02	1.29E+01
SL160-2	3.15E-04	6.52E-06	1.95E-04	2.09E-05	4.07E-07	5.43E-07	5.43E-07	2.39E-05	1.09E-05	1.09E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	7.22E-04
SL161-2	5.43E-03	6.52E-04	8.47E-03	3.00E-04	2.71E-05	2.04E-05	5.43E-05	2.88E-03	1.09E-03	1.09E-03	7.06E-05	3.26E-04	1.25E-02	3.26E-04	3.33E-02
SL162-4	9.77E-02	9.12E-03	8.14E-01	1.53E-02	2.99E-03	2.09E-03	5.97E-03	1.19E-01	1.47E-02	1.19E-01	5.97E-02	3.58E-02	1.38E+00	3.58E-02	2.71E+00
SL162-6	2.25E-04	2.61E-05	1.69E-03	3.91E-05	2.17E-05	3.53E-06	2.17E-06	2.12E-04	4.34E-05	4.34E-05	2.25E-05	1.35E-05	5.20E-04	1.35E-05	2.78E-03
SL163-2	2.33E-02	1.01E-04	3.58E-03	1.08E-03	9.50E-07	1.90E-06	1.90E-06	3.80E-05	3.80E-05	3.80E-05	1.90E-05	1.01E-03	8.77E-04	1.14E-05	3.02E-02
SL164-2	1.47E+00	4.56E-02	3.58E+00	1.12E-01	9.37E-03	2.09E-04	1.76E-04	5.43E-03	3.53E-03	2.86E-02	2.55E-03	6.52E-02	2.51E-01	1.12E-03	5.57E+00
SL165-2	9.21E+00	3.10E-01	1.01E+01	1.71E+00	2.99E-03	5.70E-03	5.70E-03	1.14E-01	1.14E-01	1.14E-01	5.97E-02	3.00E+00	1.38E+00	3.58E-02	2.62E+01
SL166-2	1.57E+00	6.19E+00	5.21E+00	4.53E-01	1.90E-03	4.62E-03	3.67E-03	7.33E-02	7.33E-02	7.33E-02	3.80E-02	1.04E-01	8.77E-01	2.28E-02	1.47E+01
SL167-2	4.51E-02	6.19E-03	8.14E-03	1.11E-03	2.99E-06	5.84E-06	5.84E-06	1.17E-04	1.17E-04	1.17E-04	5.97E-05	2.38E-04	1.38E-03	3.58E-05	6.26E-02
SL168-2	8.11E+00	7.33E-03	7.33E-02	7.49E-03	3.12E-04	6.11E-04	6.11E-04	1.22E-02	1.22E-02	1.22E-02	6.24E-03	3.75E-03	1.44E-01	3.75E-03	8.43E+00
SL168-4	6.52E-03	6.52E-06	7.17E-04	6.52E-05	2.71E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.36E-05	5.43E-06	3.26E-06	1.25E-04	3.26E-06	7.48E-03
SL169-2	3.91E-03	4.89E-05	6.19E-04	1.08E-04	2.99E-07	5.70E-07	5.70E-07	1.14E-05	1.14E-05	1.14E-05	5.97E-06	1.50E-05	3.01E-04	3.58E-06	5.05E-03
SL170-2	3.91E-01	2.31E-02	7.82E-01	1.63E-02	2.85E-05	8.69E-05	5.43E-05	1.09E-03	1.09E-03	3.26E-03	5.70E-04	1.04E-02	8.52E-02	5.86E-03	1.32E+00
SL171-2	2.26E+00	4.24E-03	4.89E-01	1.21E-02	1.15E-04	2.17E-04	2.17E-04	4.34E-03	4.34E-03	4.34E-03	6.52E-02	1.63E-02	5.33E-02	1.38E-03	2.88E+00
SL171-4	2.71E-03	1.89E-04	7.49E-01	1.11E-04	2.99E-07	9.50E-07	5.84E-07	1.19E-05	1.17E-05	1.74E-04	2.12E-05	6.52E-05	8.27E-04	3.58E-06	1.16E-02
SL172-2	5.43E-01	3.91E-02	2.54E+00	3.55E-02	5.70E-05	2.31E-04	1.11E-04	2.50E-03	2.23E-03	1.52E-02	3.75E-03	2.87E-02	2.51E-01	6.84E-04	3.46E+00
SL172-4	1.09E-04	7.49E-06	1.79E-04	7.82E-06	3.26E-07	6.24E-07	6.24E-07	1.25E-05	1.25E-05	1.25E-05	6.52E-06	3.91E-06	1.50E-04	3.91E-06	5.07E-04
SL173-2	5.97E-05	6.84E-06	9.45E-05	7.17E-06	2.99E-07	5.70E-07	5.70E-07	1.14E-05	1.14E-05	1.14E-05	5.97E-06	3.58E-06	1.38E-04	3.58E-06	3.56E-04
SL174-2	5.97E-04	1.66E-04	2.98E-03	1.17E-03	2.99E-06	4.89E-05	6.79E-06	3.86E-04	1.14E-04	1.14E-04	5.97E-05	3.58E-05	1.38E-03	3.58E-05	7.08E-03
SL175-2	4.29E-04	9.45E-04	8.80E-04	7.79E-05	5.43E-07	2.39E-06	1.06E-06	5.43E-05	2.12E-05	2.12E-05	1.09E-05	2.31E-05	2.51E-04	6.52E-06	2.72E-03
SL176-2	6.52E-04	8.47E-04	8.47E-04	4.23E-04	1.99E-06	2.85E-06	2.85E-06	5.70E-05	5.70E-05	5.70E-05	2.99E-05	7.17E-04	6.89E-04	1.79E-05	4.40E-03
SL177-2	4.94E-03	6.52E-06	1.82E-04	1.40E-05	2.85E-07	5.43E-07	5.43E-07	1.09E-05	1.09E-05	1.09E-05	5.70E-06	3.42E-06	1.32E-04	3.42E-06	5.32E-03
SL178-2	8.14E-05	6.84E-06	5.86E-04	6.84E-06	2.99E-07	5.70E-07	5.70E-07	1.14E-05	1.14E-05	1.14E-05	5.97E-06	4.56E-06	1.38E-04	3.58E-06	8.69E-04

Notes:
(1) Risk was calculated based on assumptions in EE/CA created by Ecology and Environment, Inc. (with revised assumption)
(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 SL90-7

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 Index	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	2.0E-03	3.0E-05	3.0E-05	NI	1	0.10		1.4E-09	4.5E-05	1.2E-13				1.9E-09	6.4E-05	1.1E-04	34.74
Alpha-BHC	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.03
Delta-BHC		NI	NI	NI	1	0.10											
Dieldrin	1.0E-03	5.0E-05	5.0E-05	NI	1	0.10		6.8E-10	1.4E-05	6.2E-14				9.5E-10	1.9E-05	3.3E-05	10.42
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.3E-09	2.6E-06	1.2E-13	2.4E-10			1.9E-09	3.7E-06	6.4E-06	2.03
Endosulfan I	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.17
Endosulfan II	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.17
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.39
Endrin aldehyde		3.0E-04	3.0E-04	NI	1	0.10											
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.39
Gamma-BHC (Lindane)	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.39
Heptachlor		5.0E-04	5.0E-04	NI	1	0.10											
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	40.06
Methoxychlor	1.0E-03	5.0E-03	5.0E-03	NI	1	0.10		6.8E-10	1.4E-07	6.2E-14				9.5E-10	1.9E-07	3.3E-07	0.10
Toxaphene	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-04		2.4E-10				1.8E-04	3.1E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL91-6

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-08	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-08	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.08
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL92-7

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 Index	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	NI	1	0.10		7.1E-10	2.4E-05	6.5E-14				1.0E-09	3.3E-05	5.7E-05	18.18
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	2.08
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.7E-05	1.2E-13				1.9E-09	3.8E-05	6.5E-05	20.78
Chlordane	2.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.8E-06	1.3E-13	2.6E-10			2.0E-09	4.0E-06	6.8E-06	2.18
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.17
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.17
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.46
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.46
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.46
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	1.82
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	1.09
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	41.96
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	1.09
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-04		2.6E-10				1.8E-04	3.1E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL93-2

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 Index	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	5.9E-03	3.0E-05	3.0E-05	NI	1	0.10		4.0E-09	1.3E-04	3.6E-13				5.6E-09	1.9E-04	3.2E-04	21.41
Alpha-BHC	3.2E-03	NI	NI	NI	1	0.10		2.2E-09		2.0E-13				3.1E-09			
Beta-BHC	3.2E-03	NI	NI	NI	1	0.10		2.2E-09		2.0E-13				3.1E-09			
4,4-DDD	6.0E-03	NI	NI	NI	1	0.10		4.1E-09		3.7E-13				5.7E-09			
4,4-DDE	6.0E-03	NI	NI	NI	1	0.10		4.1E-09		3.7E-13				5.7E-09			
4,4-DDT	2.5E-03	5.0E-04	5.0E-04	NI	1	0.10		1.7E-09	3.4E-06	1.5E-13				2.4E-09	4.8E-06	8.1E-06	0.54
Delta-BHC	3.2E-03	NI	NI	NI	1	0.10		2.2E-09		2.0E-13				3.1E-09			
Dieldrin	1.0E-02	5.0E-05	5.0E-05	NI	1	0.10		6.8E-09	1.4E-04	6.2E-13				9.5E-09	1.9E-04	3.3E-04	21.77
Chlordane	4.3E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.9E-08	5.8E-05	2.6E-12	5.3E-09			4.1E-08	8.1E-05	1.4E-04	9.26
Endosulfan I	3.2E-03	6.0E-03	6.0E-03	NI	1	0.10		2.2E-09	3.6E-07	2.0E-13				3.1E-09	5.1E-07	8.7E-07	0.06
Endosulfan II	6.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.1E-09	6.8E-07	3.7E-13				5.7E-09	9.5E-07	1.6E-06	0.11
Endosulfan sulfate	6.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.1E-09	6.8E-07	3.7E-13				5.7E-09	9.5E-07	1.6E-06	0.11
Endrin	6.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.1E-09	1.4E-05	3.7E-13				5.7E-09	1.9E-05	3.3E-05	2.18
Endrin aldehyde	6.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.1E-09	1.4E-05	3.7E-13				5.7E-09	1.9E-05	3.3E-05	2.18
Endrin ketone	6.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.1E-09	1.4E-05	3.7E-13				5.7E-09	1.9E-05	3.3E-05	2.18
Gamma-BHC (Lindane)	3.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.2E-09	7.2E-06	2.0E-13				3.1E-09	1.0E-05	1.7E-05	1.16
Heptachlor	5.3E-02	5.0E-04	5.0E-04	NI	1	0.10		3.6E-08	7.2E-05	3.3E-12				5.1E-08	1.0E-04	1.7E-04	11.54
Heptachlor epoxide	3.2E-03	1.3E-05	1.3E-05	NI	1	0.10		2.2E-09	1.7E-04	2.0E-13				3.1E-09	2.3E-04	4.0E-04	26.80
Methoxychlor	3.2E-02	5.0E-03	5.0E-03	NI	1	0.10		2.2E-08	4.3E-06	2.0E-12				3.1E-08	6.1E-06	1.0E-05	0.70
Toxaphene	3.2E-01	NI	NI	NI	1	0.10		2.2E-07		2.0E-11				3.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No sample collected																	
Total Noncancer Hazard									6.2E-04		5.3E-09				8.8E-04	1.5E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL94-1

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 Index	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	2.1E+00	3.0E-05	3.0E-05	NI	1	0.10		1.4E-06	4.7E-02	1.3E-10				2.0E-06	6.7E-02	1.1E-01	83.32
Alpha-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
Beta-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
4,4-DDD	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDE	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDT	2.2E-01	5.0E-04	5.0E-04	NI	1	0.10		1.5E-07	3.0E-04	1.4E-11				2.1E-07	4.2E-04	7.2E-04	0.52
Delta-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
Dieldrin	8.5E-02	5.0E-05	5.0E-05	NI	1	0.10		5.7E-08	1.1E-03	5.3E-12				8.1E-08	1.6E-03	2.8E-03	2.02
Chlordane	3.8E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.6E-08	5.1E-05	2.3E-12	4.7E-09			3.6E-08	7.2E-05	1.2E-04	0.09
Endosulfan I	1.2E-01	6.0E-03	6.0E-03	NI	1	0.10		7.8E-08	1.3E-05	7.1E-12				1.1E-07	1.8E-05	3.1E-05	0.02
Endosulfan II	2.2E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.5E-05	6.0E-05	0.04
Endosulfan sulfate	2.2E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.5E-05	6.0E-05	0.04
Endrin	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	0.87
Endrin aldehyde	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	0.87
Endrin ketone	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	0.87
Gamma-BHC (Lindane)	1.2E-01	3.0E-04	3.0E-04	NI	1	0.10		7.8E-08	2.6E-04	7.1E-12				1.1E-07	3.7E-04	6.2E-04	0.46
Heptachlor	2.1E-02	5.0E-04	5.0E-04	NI	1	0.10		1.4E-08	2.8E-05	1.3E-12				2.0E-08	4.0E-05	6.8E-05	0.05
Heptachlor epoxide	1.2E-01	1.3E-05	1.3E-05	NI	1	0.10		7.8E-08	6.0E-03	7.1E-12				1.1E-07	8.4E-03	1.4E-02	10.53
Methoxychlor	1.2E+00	5.0E-03	5.0E-03	NI	1	0.10		7.8E-07	1.6E-04	7.1E-11				1.1E-06	2.2E-04	3.7E-04	0.27
Toxaphene	1.2E+01	NI	NI	NI	1	0.10		7.8E-06		7.1E-10				1.1E-05			
DIOXIN																	
2,3,7,8-TCDD	1.2E-06				1	0.10		8.1E-13		7.4E-17				1.1E-12			
Total Noncancer Hazard									5.7E-02		4.7E-09				6.0E-02	1.4E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL95-8

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HOD), unitless	Amount Inhaled (IDIS), (mg/kg-d)	Lifetime HQ (HOIS), unitless	Amount Inhaled (IDIV) (mg/kg-d)	Lifetime HQ (HOIV), unitless	Amount Ingested (IDIG) (mg/kg-d)	Lifetime HQ (HOIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.0E-01	3.0E-05	3.0E-05	NI	1	0.10		2.0E-07	6.8E-03	1.9E-11				2.9E-07	9.5E-03	1.6E-02	82.79
Alpha-BHC	3.9E-03	NI	NI	NI	1	0.10		2.6E-09		2.4E-13				3.7E-09			
Beta-BHC	3.9E-03	NI	NI	NI	1	0.10		2.6E-09		2.4E-13				3.7E-09			
4,4-DDD	1.2E-02	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
4,4-DDE	7.0E-03	NI	NI	NI	1	0.10		4.7E-09		4.3E-13				6.7E-09			
4,4-DDT	2.7E-02	5.0E-04	5.0E-04	NI	1	0.10		1.8E-08	3.6E-05	1.7E-12				2.6E-08	5.2E-05	8.8E-05	0.45
Delta-BHC	3.9E-03	NI	NI	NI	1	0.10		2.6E-09		2.4E-13				3.7E-09			
Dieldrin	7.1E-02	5.0E-05	5.0E-05	NI	1	0.10		4.8E-08	9.6E-04	4.4E-12				6.8E-08	1.4E-03	2.3E-03	11.76
Chlordane	5.0E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.4E-08	6.8E-05	3.1E-12	6.2E-09			4.8E-08	9.6E-05	1.6E-04	0.83
Endosulfan I	3.9E-03	6.0E-03	6.0E-03	NI	1	0.10		2.6E-09	4.4E-07	2.4E-13				3.7E-09	6.2E-07	1.1E-06	0.01
Endosulfan II	7.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.7E-09	7.9E-07	4.3E-13				6.7E-09	1.1E-06	1.9E-06	0.01
Endosulfan sulfate	7.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.7E-09	7.9E-07	4.3E-13				6.7E-09	1.1E-06	1.9E-06	0.01
Endrin	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.19
Endrin aldehyde	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.19
Endrin ketone	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.19
Gamma-BHC (Lindane)	3.9E-03	3.0E-04	3.0E-04	NI	1	0.10		2.6E-09	8.8E-06	2.4E-13				3.7E-09	1.2E-05	2.1E-05	0.11
Heptachlor	6.3E-02	5.0E-04	5.0E-04	NI	1	0.10		4.3E-08	8.5E-05	3.9E-12				6.0E-08	1.2E-04	2.1E-04	1.04
Heptachlor epoxide	3.7E-03	1.3E-05	1.3E-05	NI	1	0.10		2.5E-09	1.9E-04	2.3E-13				3.5E-09	2.7E-04	4.6E-04	2.36
Methoxychlor	3.7E-02	5.0E-03	5.0E-03	NI	1	0.10		2.5E-08	5.0E-06	2.3E-12				3.5E-08	7.1E-06	1.2E-05	0.06
Toxaphene	3.7E-01	NI	NI	NI	1	0.10		2.5E-07		2.3E-11				3.5E-07			
DIOXIN																	
2,3,7,8-TCDD	1.7E-07				1	0.10		1.1E-13		1.1E-17				1.6E-13			
Total Noncancer Hazard									8.2E-03		6.2E-09				1.2E-02	2.0E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL96-6

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (AB		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+00	3.0E-05	3.0E-05	NI	1	0.10		1.9E-06	6.3E-02	1.7E-10				2.7E-06	8.9E-02	1.5E-01	89.39
Alpha-BHC	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
Beta-BHC	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
4,4-DDD	1.9E-01	NI	NI	NI	1	0.10		1.3E-07		1.2E-11				1.8E-07			
4,4-DDE	1.9E-01	NI	NI	NI	1	0.10		1.3E-07		1.2E-11				1.8E-07			
4,4-DDT	4.5E-02	5.0E-04	5.0E-04	NI	1	0.10		3.0E-08	6.1E-05	2.8E-12				4.3E-08	8.6E-05	1.5E-04	0.09
Delta-BHC	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
Dieldrin	3.2E-02	5.0E-05	5.0E-05	NI	1	0.10		2.2E-08	4.3E-04	2.0E-12				3.1E-08	6.1E-04	1.0E-03	0.61
Chlordane	4.4E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.0E-08	5.9E-05	2.7E-12	5.4E-09			4.2E-08	8.4E-05	1.4E-04	0.08
Endosulfan I	1.0E-01	6.0E-03	6.0E-03	NI	1	0.10		6.8E-08	1.1E-05	6.2E-12				9.5E-08	1.6E-05	2.7E-05	0.02
Endosulfan II	1.9E-01	6.0E-03	6.0E-03	NI	1	0.10		1.3E-07	2.1E-05	1.2E-11				1.8E-07	3.0E-05	5.2E-05	0.03
Endosulfan sulfate	1.9E-01	6.0E-03	6.0E-03	NI	1	0.10		1.3E-07	2.1E-05	1.2E-11				1.8E-07	3.0E-05	5.2E-05	0.03
Endrin	1.9E-01	3.0E-04	3.0E-04	NI	1	0.10		1.3E-07	4.3E-04	1.2E-11				1.8E-07	6.0E-04	1.0E-03	0.61
Endrin aldehyde	1.9E-01	3.0E-04	3.0E-04	NI	1	0.10		1.3E-07	4.3E-04	1.2E-11				1.8E-07	6.0E-04	1.0E-03	0.61
Endrin ketone	1.9E-01	3.0E-04	3.0E-04	NI	1	0.10		1.3E-07	4.3E-04	1.2E-11				1.8E-07	6.0E-04	1.0E-03	0.61
Gamma-BHC (Lindane)	1.5E-02	3.0E-04	3.0E-04	NI	1	0.10		1.0E-08	3.4E-05	9.3E-13				1.4E-08	4.8E-05	8.1E-05	0.05
Heptachlor	1.7E-01	5.0E-04	5.0E-04	NI	1	0.10		1.1E-07	2.3E-04	1.1E-11				1.6E-07	3.2E-04	5.5E-04	0.33
Heptachlor epoxide	1.0E-01	1.3E-05	1.3E-05	NI	1	0.10		6.8E-08	5.2E-03	6.2E-12				9.5E-08	7.3E-03	1.3E-02	7.37
Methoxychlor	1.0E+00	5.0E-03	5.0E-03	NI	1	0.10		6.8E-07	1.4E-04	6.2E-11				9.5E-07	1.9E-04	3.3E-04	0.19
Toxaphene	1.0E+01	NI	NI	NI	1	0.10		6.8E-06		6.2E-10				9.5E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									7.0E-02		5.4E-09				1.0E-01	1.7E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL97-6

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 Index	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	5.0E-03	3.0E-05	3.0E-05	NI	1	0.10		3.4E-09	1.1E-04	3.1E-13				4.8E-09	1.6E-04	2.7E-04	43.01
Alpha-BHC	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
Beta-BHC	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	1.01
Delta-BHC	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	10.06
Chlordane	2.2E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.5E-08	2.9E-05	1.3E-12	2.7E-09			2.1E-08	4.1E-05	7.1E-05	11.20
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.04
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.08
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.08
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	1.68
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	1.68
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	1.68
Gamma-BHC (Lindane)	1.0E-02	3.0E-04	3.0E-04	NI	1	0.10		6.8E-09	2.3E-05	6.2E-13				9.5E-09	3.2E-05	5.4E-05	8.60
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	0.52
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	19.85
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.52
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.6E-04		2.7E-09				3.7E-04	6.3E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL98-1

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 Index	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	2.5E-03	3.0E-05	3.0E-05	NI	1	0.10		1.7E-09	5.6E-05	1.5E-13				2.4E-09	7.9E-05	1.4E-04	33.05
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	1.75
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	2.2E-03	5.0E-05	5.0E-05	NI	1	0.10		1.5E-09	3.0E-05	1.4E-13				2.1E-09	4.2E-05	7.2E-05	17.45
Chlordane	2.2E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.5E-09	3.0E-06	1.4E-13	2.7E-10			2.1E-09	4.2E-06	7.2E-06	1.75
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.07
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.15
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.15
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	2.91
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	2.91
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	2.91
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	1.45
Heptachlor	1.3E-03	5.0E-04	5.0E-04	NI	1	0.10		8.8E-10	1.8E-06	8.0E-14				1.2E-09	2.5E-06	4.2E-06	1.03
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.4E-10	5.7E-05	6.8E-14				1.0E-09	8.1E-05	1.4E-04	33.56
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.87
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.7E-04		2.7E-10				2.4E-04	4.1E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL100-3

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABSO)	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	2.9E-03	3.0E-05	3.0E-05	NI	1	0.10		2.0E-09	6.5E-05	1.8E-13				2.8E-09	9.2E-05	1.6E-04	37.59
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	3.9E-06	6.7E-06	1.59
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.1E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.8E-05	1.3E-13				2.0E-09	3.9E-05	6.7E-05	15.94
Chlordane	2.8E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.9E-09	3.7E-06	1.7E-13	3.4E-10			2.6E-09	5.2E-06	9.0E-06	2.14
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.07
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.13
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.13
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	2.66
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	2.66
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	2.66
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	1.36
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.4E-10	1.5E-06	6.8E-14				1.0E-09	2.1E-06	3.6E-06	0.86
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	31.40
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.82
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.7E-04		3.4E-10				2.5E-04	4.2E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL101-7

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 Index	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	4.1E+00	3.0E-05	3.0E-05	NI	1	0.10		2.8E-06	9.2E-02	2.5E-10				3.9E-06	1.3E-01	2.2E-01	66.04
Alpha-BHC	4.7E-01	NI	NI	NI	1	0.10		3.1E-07		2.9E-11				4.4E-07			
Beta-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDD	2.0E+00	NI	NI	NI	1	0.10		1.4E-06		1.2E-10				1.9E-06			
4,4-DDE	7.9E-01	NI	NI	NI	1	0.10		5.3E-07		4.9E-11				7.5E-07			
4,4-DDT	6.1E+00	5.0E-04	5.0E-04	NI	1	0.10		4.1E-06	8.2E-03	3.8E-10				5.8E-06	1.2E-02	2.0E-02	5.90
Delta-BHC	4.7E-01	NI	NI	NI	1	0.10		3.1E-07		2.9E-11				4.4E-07			
Dieldrin	1.7E+00	5.0E-05	5.0E-05	NI	1	0.10		1.1E-06	2.3E-02	1.1E-10				1.6E-06	3.2E-02	5.5E-02	16.43
Chlordane	2.4E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-06	3.3E-03	1.5E-10	3.0E-07			2.3E-06	4.6E-03	7.9E-03	2.35
Endosulfan I	4.7E-01	6.0E-03	6.0E-03	NI	1	0.10		3.1E-07	5.2E-05	2.9E-11				4.4E-07	7.4E-05	1.3E-04	0.04
Endosulfan II	9.0E-01	6.0E-03	6.0E-03	NI	1	0.10		6.1E-07	1.0E-04	5.6E-11				8.6E-07	1.4E-04	2.4E-04	0.07
Endosulfan sulfate	9.0E-01	6.0E-03	6.0E-03	NI	1	0.10		6.1E-07	1.0E-04	5.6E-11				8.6E-07	1.4E-04	2.4E-04	0.07
Endrin	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	1.45
Endrin aldehyde	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	1.45
Endrin ketone	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	1.45
Gamma-BHC (Lindane)	4.7E-01	3.0E-04	3.0E-04	NI	1	0.10		3.1E-07	1.0E-03	2.9E-11				4.4E-07	1.5E-03	2.5E-03	0.75
Heptachlor	5.2E-01	5.0E-04	5.0E-04	NI	1	0.10		3.5E-07	7.0E-04	3.2E-11				5.0E-07	9.9E-04	1.7E-03	0.50
Heptachlor epoxide	8.2E-02	1.3E-05	1.3E-05	NI	1	0.10		5.5E-06	4.3E-03	5.1E-12				7.8E-06	6.0E-03	1.0E-02	3.05
Methoxychlor	4.7E+00	5.0E-03	5.0E-03	NI	1	0.10		3.1E-06	6.3E-04	2.9E-10				4.4E-06	8.9E-04	1.5E-03	0.45
Toxaphene	4.7E+01	NI	NI	NI	1	0.10		3.1E-05		2.9E-09				4.4E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E-01		3.0E-07				2.0E-01	3.4E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL102-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	6.2E+00	3.0E-05	3.0E-05	NI	1	0.10		4.2E-06	1.4E-01	3.8E-10				5.9E-06	2.0E-01	3.4E-01	48.68
Alpha-BHC	5.5E-02	NI	NI	NI	1	0.10		3.7E-08		3.4E-12				5.2E-08			
Beta-BHC	5.5E-02	NI	NI	NI	1	0.10		3.7E-08		3.4E-12				5.2E-08			
4,4-DDD	3.3E-01	NI	NI	NI	1	0.10		2.2E-07		2.0E-11				3.1E-07			
4,4-DDE	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDT	1.1E+00	5.0E-04	5.0E-04	NI	1	0.10		7.4E-07	1.5E-03	6.8E-11				1.0E-06	2.1E-03	3.6E-03	0.52
Delta-BHC	5.5E-02	NI	NI	NI	1	0.10		3.7E-08		3.4E-12				5.2E-08			
Dieldrin	6.5E+00	5.0E-05	5.0E-05	NI	1	0.10		5.7E-06	1.1E-01	5.3E-10				8.1E-06	1.6E-01	2.8E-01	40.04
Chlordane	4.4E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.0E-06	5.9E-03	2.7E-10	5.4E-07			4.2E-06	8.4E-03	1.4E-02	2.07
Endosulfan I	5.5E-02	6.0E-03	6.0E-03	NI	1	0.10		3.7E-08	6.2E-06	3.4E-12				5.2E-08	8.7E-06	1.5E-05	0.00
Endosulfan II	2.9E-01	6.0E-03	6.0E-03	NI	1	0.10		2.0E-07	3.3E-05	1.8E-11				2.8E-07	4.6E-05	7.9E-05	0.01
Endosulfan sulfate	1.1E-01	6.0E-03	6.0E-03	NI	1	0.10		7.4E-08	1.2E-05	6.8E-12				1.0E-07	1.7E-05	3.0E-05	0.00
Endrin	1.7E-01	3.0E-04	3.0E-04	NI	1	0.10		1.1E-07	3.8E-04	1.1E-11				1.6E-07	5.4E-04	9.2E-04	0.13
Endrin aldehyde	1.1E-01	3.0E-04	3.0E-04	NI	1	0.10		7.4E-08	2.5E-04	6.8E-12				1.0E-07	3.5E-04	6.0E-04	0.09
Endrin ketone	2.9E-01	3.0E-04	3.0E-04	NI	1	0.10		2.0E-07	6.5E-04	1.8E-11				2.8E-07	9.2E-04	1.6E-03	0.23
Gamma-BHC (Lindane)	4.4E+00	3.0E-04	3.0E-04	NI	1	0.10		3.0E-06	9.9E-03	2.7E-10				4.2E-06	1.4E-02	2.4E-02	3.45
Heptachlor	3.9E+00	5.0E-04	5.0E-04	NI	1	0.10		2.6E-06	5.3E-03	2.4E-10				3.7E-06	7.4E-03	1.3E-02	1.84
Heptachlor epoxide	1.6E-01	1.3E-05	1.3E-05	NI	1	0.10		1.1E-07	8.3E-03	9.9E-12				1.5E-07	1.2E-02	2.0E-02	2.90
Methoxychlor	5.5E-01	5.0E-03	5.0E-03	NI	1	0.10		3.7E-07	7.4E-05	3.4E-11				5.2E-07	1.0E-04	1.8E-04	0.03
Toxaphene	5.5E+00	NI	NI	NI	1	0.10		3.7E-06		3.4E-10				5.2E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.9E-01		5.4E-07				4.0E-01	6.9E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL102-4

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 Index	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-01	3.0E-05	3.0E-05	NI	1	0.10		1.8E-07	6.1E-03	1.7E-11				2.6E-07	8.6E-03	1.5E-02	4.98
Alpha-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
Beta-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
4,4-DDD	1.0E+00	NI	NI	NI	1	0.10		6.8E-07		6.2E-11				9.5E-07			
4,4-DDE	1.0E+00	NI	NI	NI	1	0.10		6.8E-07		6.2E-11				9.5E-07			
4,4-DDT	1.4E-01	5.0E-04	5.0E-04	NI	1	0.10		9.5E-08	1.9E-04	8.7E-12				1.3E-07	2.7E-04	4.6E-04	0.16
Delta-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
Dieldrin	6.9E+00	5.0E-05	5.0E-05	NI	1	0.10		4.7E-06	9.3E-02	4.3E-10				6.6E-06	1.3E-01	2.2E-01	76.39
Chlordane	7.7E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.2E-07	1.0E-03	4.8E-11	9.5E-08			7.3E-07	1.5E-03	2.5E-03	0.85
Endosulfan I	5.5E-01	6.0E-03	6.0E-03	NI	1	0.10		3.7E-07	6.2E-05	3.4E-11				5.2E-07	8.7E-05	1.5E-04	0.05
Endosulfan II	1.0E+00	6.0E-03	6.0E-03	NI	1	0.10		6.8E-07	1.1E-04	6.2E-11				9.5E-07	1.6E-04	2.7E-04	0.09
Endosulfan sulfate	1.0E+00	6.0E-03	6.0E-03	NI	1	0.10		6.8E-07	1.1E-04	6.2E-11				9.5E-07	1.6E-04	2.7E-04	0.09
Endrin	1.0E+00	3.0E-04	3.0E-04	NI	1	0.10		6.8E-07	2.3E-03	6.2E-11				9.5E-07	3.2E-03	5.4E-03	1.85
Endrin aldehyde	1.0E+00	3.0E-04	3.0E-04	NI	1	0.10		6.8E-07	2.3E-03	6.2E-11				9.5E-07	3.2E-03	5.4E-03	1.85
Endrin ketone	3.6E-01	3.0E-04	3.0E-04	NI	1	0.10		2.4E-07	8.1E-04	2.2E-11				3.4E-07	1.1E-03	2.0E-03	0.66
Gamma-BHC (Lindane)	5.5E-01	3.0E-04	3.0E-04	NI	1	0.10		3.7E-07	1.2E-03	3.4E-11				5.2E-07	1.7E-03	3.0E-03	1.01
Heptachlor	3.0E-01	5.0E-04	5.0E-04	NI	1	0.10		2.0E-07	4.1E-04	1.9E-11				2.9E-07	5.7E-04	9.8E-04	0.33
Heptachlor epoxide	2.6E-01	1.3E-05	1.3E-05	NI	1	0.10		1.8E-07	1.4E-02	1.6E-11				2.5E-07	1.9E-02	3.3E-02	11.07
Methoxychlor	5.5E+00	5.0E-03	5.0E-03	NI	1	0.10		3.7E-06	7.4E-04	3.4E-10				5.2E-06	1.0E-03	1.8E-03	0.61
Toxaphene	5.5E+01	NI	NI	NI	1	0.10		3.7E-05		3.4E-09				5.2E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-01		9.5E-08				1.7E-01	2.9E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL103-2

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 Index	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+00	3.0E-05	3.0E-05	NI	1	0.10		5.1E-06	1.7E-01	4.7E-10				7.2E-06	2.4E-01	4.1E-01	31.33
Alpha-BHC	1.9E+00	NI	NI	NI	1	0.10		1.3E-06		1.2E-10				1.8E-06			
Beta-BHC	1.9E+00	NI	NI	NI	1	0.10		1.3E-06		1.2E-10				1.8E-06			
4,4-DDD	8.4E-01	NI	NI	NI	1	0.10		5.7E-07		5.2E-11				8.0E-07			
4,4-DDE	7.0E-01	NI	NI	NI	1	0.10		4.7E-07		4.3E-11				6.7E-07			
4,4-DDT	5.3E+00	5.0E-04	5.0E-04	NI	1	0.10		3.6E-06	7.2E-03	3.3E-10				5.1E-06	1.0E-02	1.7E-02	1.31
Delta-BHC	1.9E+00	NI	NI	NI	1	0.10		1.3E-06		1.2E-10				1.8E-06			
Dieldrin	2.3E+01	5.0E-05	5.0E-05	NI	1	0.10		1.6E-05	3.1E-01	1.4E-09				2.2E-05	4.4E-01	7.5E-01	56.88
Chlordane	7.8E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.3E-06	1.1E-02	4.8E-10	9.6E-07			7.4E-06	1.5E-02	2.5E-02	1.93
Endosulfan I	1.9E+00	6.0E-03	6.0E-03	NI	1	0.10		1.3E-06	2.1E-04	1.2E-10				1.8E-06	3.0E-04	5.2E-04	0.04
Endosulfan II	4.9E-01	6.0E-03	6.0E-03	NI	1	0.10		3.3E-07	5.5E-05	3.0E-11				4.7E-07	7.8E-05	1.3E-04	0.01
Endosulfan sulfate	3.8E+00	6.0E-03	6.0E-03	NI	1	0.10		2.5E-06	4.2E-04	2.3E-10				3.6E-06	6.0E-04	1.0E-03	0.08
Endrin	3.8E+00	3.0E-04	3.0E-04	NI	1	0.10		2.5E-06	8.4E-03	2.3E-10				3.6E-06	1.2E-02	2.0E-02	1.55
Endrin aldehyde	3.8E+00	3.0E-04	3.0E-04	NI	1	0.10		2.5E-06	8.4E-03	2.3E-10				3.6E-06	1.2E-02	2.0E-02	1.55
Endrin ketone	7.8E-01	3.0E-04	3.0E-04	NI	1	0.10		5.3E-07	1.8E-03	4.8E-11				7.4E-07	2.5E-03	4.2E-03	0.32
Gamma-BHC (Lindane)	2.5E-01	3.0E-04	3.0E-04	NI	1	0.10		1.7E-07	5.6E-04	1.5E-11				2.4E-07	7.9E-04	1.4E-03	0.10
Heptachlor	3.7E+00	5.0E-04	5.0E-04	NI	1	0.10		2.5E-06	5.0E-03	2.3E-10				3.5E-06	7.1E-03	1.2E-02	0.92
Heptachlor epoxide	3.7E-01	1.3E-05	1.3E-05	NI	1	0.10		2.5E-07	1.9E-02	2.3E-11				3.5E-07	2.7E-02	4.6E-02	3.52
Methoxychlor	1.9E+01	5.0E-03	5.0E-03	NI	1	0.10		1.3E-05	2.6E-03	1.2E-09				1.8E-05	3.6E-03	6.2E-03	0.47
Toxaphene	1.9E+02	NI	NI	NI	1	0.10		1.3E-04		1.2E-08				1.8E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.5E-01		9.6E-07				7.7E-01	1.3E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL103-4

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 Index	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+00	3.0E-05	3.0E-05	NI	1	0.10		5.1E-06	1.7E-01	4.7E-10				7.2E-06	2.4E-01	4.1E-01	16.81
Alpha-BHC	2.3E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
Beta-BHC	2.3E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDD	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDE	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDT	1.1E+01	5.0E-04	5.0E-04	NI	1	0.10		7.4E-06	1.5E-02	6.8E-10				1.0E-05	2.1E-02	3.6E-02	1.46
Delta-BHC	2.4E-01	NI	NI	NI	1	0.10		1.6E-07		1.5E-11				2.3E-07			
Dieldrin	5.3E+01	5.0E-05	5.0E-05	NI	1	0.10		3.6E-05	7.2E-01	3.3E-09				5.1E-05	1.0E+00	1.7E+00	70.33
Chlordane	8.9E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		6.0E-06	1.2E-02	5.5E-10	1.1E-06			8.5E-06	1.7E-02	2.9E-02	1.18
Endosulfan I	2.3E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.6E-05	6.1E-05	0.00
Endosulfan II	5.7E-01	6.0E-03	6.0E-03	NI	1	0.10		3.8E-07	6.4E-05	3.5E-11				5.4E-07	9.1E-05	1.5E-04	0.01
Endosulfan sulfate	4.4E-01	6.0E-03	6.0E-03	NI	1	0.10		3.0E-07	5.0E-05	2.7E-11				4.2E-07	7.0E-05	1.2E-04	0.00
Endrin	4.4E-01	3.0E-04	3.0E-04	NI	1	0.10		3.0E-07	9.9E-04	2.7E-11				4.2E-07	1.4E-03	2.4E-03	0.10
Endrin aldehyde	4.4E-01	3.0E-04	3.0E-04	NI	1	0.10		3.0E-07	9.9E-04	2.7E-11				4.2E-07	1.4E-03	2.4E-03	0.10
Endrin ketone	1.8E+00	3.0E-04	3.0E-04	NI	1	0.10		1.2E-06	4.1E-03	1.1E-10				1.7E-06	5.7E-03	9.8E-03	0.40
Gamma-BHC (Lindane)	4.0E-01	3.0E-04	3.0E-04	NI	1	0.10		2.7E-07	9.0E-04	2.5E-11				3.8E-07	1.3E-03	2.2E-03	0.09
Heptachlor	1.0E+01	5.0E-04	5.0E-04	NI	1	0.10		6.8E-06	1.4E-02	6.2E-10				9.5E-06	1.9E-02	3.3E-02	1.33
Heptachlor epoxide	1.6E+00	1.3E-05	1.3E-05	NI	1	0.10		1.1E-06	8.3E-02	9.9E-11				1.5E-06	1.2E-01	2.0E-01	8.17
Methoxychlor	2.3E+00	5.0E-03	5.0E-03	NI	1	0.10		1.5E-06	3.0E-04	1.4E-10				2.1E-06	4.3E-04	7.3E-04	0.03
Toxaphene	2.3E+01	NI	NI	NI	1	0.10		1.5E-05		1.4E-09				2.1E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.0E+00		1.1E-06				1.4E+00	2.5E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL104-2

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 Index	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	4.3E+00	3.0E-05	3.0E-05	NI	1	0.10		2.9E-06	9.7E-02	2.7E-10				4.1E-06	1.4E-01	2.3E-01	18.46
Alpha-BHC	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
Beta-BHC	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
4,4-DDD	4.3E+00	NI	NI	NI	1	0.10		2.9E-06		2.7E-10				4.1E-06			
4,4-DDE	4.6E-01	NI	NI	NI	1	0.10		3.1E-07		2.8E-11				4.4E-07			
4,4-DDT	2.7E+00	5.0E-04	5.0E-04	NI	1	0.10		1.8E-06	3.6E-03	1.7E-10				2.6E-06	5.2E-03	8.8E-03	0.62
Delta-BHC	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
Dieldrin	2.6E+01	5.0E-05	5.0E-05	NI	1	0.10		1.8E-05	3.5E-01	1.6E-09				2.5E-05	5.0E-01	8.5E-01	59.71
Chlordane	4.8E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.2E-06	6.5E-03	3.0E-10	5.9E-07			4.6E-06	9.2E-03	1.6E-02	1.10
Endosulfan I	2.2E+00	6.0E-03	6.0E-03	NI	1	0.10		1.5E-06	2.5E-04	1.4E-10				2.1E-06	3.5E-04	6.0E-04	0.04
Endosulfan II	4.3E+00	6.0E-03	6.0E-03	NI	1	0.10		2.9E-06	4.8E-04	2.7E-10				4.1E-06	6.8E-04	1.2E-03	0.08
Endosulfan sulfate	4.3E+00	6.0E-03	6.0E-03	NI	1	0.10		2.9E-06	4.8E-04	2.7E-10				4.1E-06	6.8E-04	1.2E-03	0.08
Endrin	4.3E+00	3.0E-04	3.0E-04	NI	1	0.10		2.9E-06	9.7E-03	2.7E-10				4.1E-06	1.4E-02	2.3E-02	1.65
Endrin aldehyde	4.3E+00	3.0E-04	3.0E-04	NI	1	0.10		2.9E-06	9.7E-03	2.7E-10				4.1E-06	1.4E-02	2.3E-02	1.65
Endrin ketone	1.4E+00	3.0E-04	3.0E-04	NI	1	0.10		9.5E-07	3.2E-03	8.7E-11				1.3E-06	4.5E-03	7.6E-03	0.54
Gamma-BHC (Lindane)	2.2E+00	3.0E-04	3.0E-04	NI	1	0.10		1.5E-06	5.0E-03	1.4E-10				2.1E-06	7.0E-03	1.2E-02	0.84
Heptachlor	3.6E+00	5.0E-04	5.0E-04	NI	1	0.10		2.4E-06	4.9E-03	2.2E-10				3.4E-06	6.9E-03	1.2E-02	0.83
Heptachlor epoxide	1.8E+00	1.3E-05	1.3E-05	NI	1	0.10		1.2E-06	9.3E-02	1.1E-10				1.7E-06	1.3E-01	2.3E-01	15.90
Methoxychlor	2.2E+01	5.0E-03	5.0E-03	NI	1	0.10		1.5E-05	3.0E-03	1.4E-09				2.1E-05	4.2E-03	7.2E-03	0.51
Toxaphene	2.2E+02	NI	NI	NI	1	0.10		1.5E-04		1.4E-08				2.1E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.9E-01		5.9E-07				8.3E-01	1.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL104-4

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 Index	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	NI	1	0.10		8.8E-08	2.9E-03	8.0E-12				1.2E-07	4.1E-03	7.1E-03	37.74
Alpha-BHC	1.7E-03	NI	NI	NI	1	0.10		1.1E-09		1.0E-13				1.6E-09			
Beta-BHC	1.7E-03	NI	NI	NI	1	0.10		1.1E-09		1.0E-13				1.6E-09			
4,4-DDD	9.3E-03	NI	NI	NI	1	0.10		6.3E-09		5.7E-13				8.9E-09			
4,4-DDE	3.2E-03	NI	NI	NI	1	0.10		2.2E-09		2.0E-13				3.1E-09			
4,4-DDT	4.7E-03	5.0E-04	5.0E-04	NI	1	0.10		3.2E-09	6.3E-06	2.9E-13				4.5E-09	9.0E-06	1.5E-05	0.08
Delta-BHC	1.7E-03	NI	NI	NI	1	0.10		1.1E-09		1.0E-13				1.6E-09			
Dieldrin	3.1E-01	5.0E-05	5.0E-05	NI	1	0.10		2.1E-07	4.2E-03	1.9E-11				3.0E-07	5.9E-03	1.0E-02	54.00
Chlordane	1.2E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		8.0E-08	1.6E-04	7.3E-12	1.5E-08			1.1E-07	2.3E-04	3.8E-04	2.06
Endosulfan I	1.7E-03	6.0E-03	6.0E-03	NI	1	0.10		1.1E-09	1.9E-07	1.0E-13				1.6E-09	2.6E-07	4.5E-07	0.00
Endosulfan II	4.7E-03	6.0E-03	6.0E-03	NI	1	0.10		3.2E-09	5.3E-07	2.9E-13				4.5E-09	7.5E-07	1.3E-06	0.01
Endosulfan sulfate	3.2E-03	6.0E-03	6.0E-03	NI	1	0.10		2.2E-09	3.6E-07	2.0E-13				3.1E-09	5.1E-07	8.7E-07	0.00
Endrin	3.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.2E-09	7.2E-06	2.0E-13				3.1E-09	1.0E-05	1.7E-05	0.09
Endrin aldehyde	3.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.2E-09	7.2E-06	2.0E-13				3.1E-09	1.0E-05	1.7E-05	0.09
Endrin ketone	1.6E-02	3.0E-04	3.0E-04	NI	1	0.10		1.1E-08	3.6E-05	9.9E-13				1.5E-08	5.1E-05	8.7E-05	0.46
Gamma-BHC (Lindane)	1.7E-03	3.0E-04	3.0E-04	NI	1	0.10		1.1E-09	3.7E-06	1.0E-13				1.6E-09	5.2E-06	9.0E-06	0.05
Heptachlor	1.7E-03	5.0E-04	5.0E-04	NI	1	0.10		1.1E-09	2.2E-06	1.0E-13				1.6E-09	3.1E-06	5.4E-06	0.03
Heptachlor epoxide	8.0E-03	1.3E-05	1.3E-05	NI	1	0.10		5.4E-09	4.2E-04	4.9E-13				7.6E-09	5.9E-04	1.0E-03	5.36
Methoxychlor	1.7E-02	5.0E-03	5.0E-03	NI	1	0.10		1.1E-08	2.2E-06	1.0E-12				1.6E-08	3.1E-06	5.4E-06	0.03
Toxaphene	1.7E-01	NI	NI	NI	1	0.10		1.1E-07		1.0E-11				1.6E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									7.8E-03		1.5E-08				1.1E-02	1.9E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL105-2

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 Index	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	6.7E+00	3.0E-05	3.0E-05	NI	1	0.10		4.5E-06	1.5E-01	4.1E-10				6.4E-06	2.1E-01	3.6E-01	53.36
Alpha-BHC	1.1E+00	NI	NI	NI	1	0.10											
Beta-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDD	6.5E+00	NI	NI	NI	1	0.10		4.4E-06		4.0E-10				6.2E-06			
4,4-DDE	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDT	9.1E-01	5.0E-04	5.0E-04	NI	1	0.10		6.1E-07	1.2E-03	5.6E-11				8.7E-07	1.7E-03	3.0E-03	0.43
Delta-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
Dieldrin	7.1E+00	5.0E-05	5.0E-05	NI	1	0.10		4.8E-06	9.6E-02	4.4E-10				6.8E-06	1.4E-01	2.3E-01	33.92
Chlordane	2.3E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-06	3.1E-03	1.4E-10	2.8E-07			2.2E-06	4.4E-03	7.5E-03	1.10
Endosulfan I	1.1E+00	6.0E-03	6.0E-03	NI	1	0.10		7.4E-07	1.2E-04	6.8E-11				1.0E-06	1.7E-04	3.0E-04	0.04
Endosulfan II	9.4E-01	6.0E-03	6.0E-03	NI	1	0.10		6.3E-07	1.1E-04	5.8E-11				9.0E-07	1.5E-04	2.6E-04	0.04
Endosulfan sulfate	2.1E+00	6.0E-03	6.0E-03	NI	1	0.10		1.4E-06	2.4E-04	1.3E-10				2.0E-06	3.3E-04	5.7E-04	0.08
Endrin	9.9E-01	3.0E-04	3.0E-04	NI	1	0.10		6.7E-07	2.2E-03	6.1E-11				9.4E-07	3.1E-03	5.4E-03	0.79
Endrin aldehyde	2.1E+00	3.0E-04	3.0E-04	NI	1	0.10		1.4E-06	4.7E-03	1.3E-10				2.0E-06	6.7E-03	1.1E-02	1.67
Endrin ketone	2.1E+00	3.0E-04	3.0E-04	NI	1	0.10		1.4E-06	4.7E-03	1.3E-10				2.0E-06	6.7E-03	1.1E-02	1.67
Gamma-BHC (Lindane)	1.1E+00	3.0E-04	3.0E-04	NI	1	0.10		7.4E-07	2.5E-03	6.8E-11				1.0E-06	3.5E-03	6.0E-03	0.88
Heptachlor	1.1E+00	5.0E-04	5.0E-04	NI	1	0.10		7.4E-07	1.5E-03	6.8E-11				1.0E-06	2.1E-03	3.6E-03	0.53
Heptachlor epoxide	2.7E-01	1.3E-05	1.3E-05	NI	1	0.10		1.8E-07	1.4E-02	1.7E-11				2.6E-07	2.0E-02	3.4E-02	4.96
Methoxychlor	1.1E+01	5.0E-03	5.0E-03	NI	1	0.10		7.4E-06	1.5E-03	6.8E-10				1.0E-05	2.1E-03	3.6E-03	0.53
Toxaphene	1.1E+02	NI	NI	NI	1	0.10		7.4E-05		6.8E-09				1.0E-04			
DIOXIN																	
2,3,7,8-TCDD	3.2E-01				1	0.10		2.2E-07		2.0E-11				3.1E-07			
No samples collected																	
Total Noncancer Hazard									2.8E-01		2.8E-07				4.0E-01	6.8E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL106-2

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 Index	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	3.5E+01	3.0E-05	3.0E-05	NI	1	0.10		2.4E-05	7.9E-01	2.2E-09				3.3E-05	1.1E+00	1.9E+00	43.07
Alpha-BHC	9.5E+00	NI	NI	NI	1	0.10		6.4E-06		5.9E-10				9.1E-06			
Beta-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
4,4-DDD	3.0E+01	NI	NI	NI	1	0.10		2.0E-05		1.9E-09				2.9E-05			
4,4-DDE	2.3E+00	NI	NI	NI	1	0.10		1.6E-06		1.4E-10				2.2E-06			
4,4-DDT	8.6E+00	5.0E-04	5.0E-04	NI	1	0.10		5.8E-06	1.2E-02	5.3E-10				8.2E-06	1.6E-02	2.8E-02	0.64
Delta-BHC	9.5E+00	NI	NI	NI	1	0.10		6.4E-06		5.9E-10				9.1E-06			
Dieldrin	1.8E+01	5.0E-05	5.0E-05	NI	1	0.10		1.2E-05	2.4E-01	1.1E-09				1.7E-05	3.4E-01	5.9E-01	13.29
Chlordane	3.9E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.6E-05	5.3E-02	2.4E-09	4.8E-06			3.7E-05	7.4E-02	1.3E-01	2.88
Endosulfan I	9.5E+00	6.0E-03	6.0E-03	NI	1	0.10		6.4E-06	1.1E-03	5.9E-10				9.1E-06	1.5E-03	2.6E-03	0.06
Endosulfan II	2.0E+00	6.0E-03	6.0E-03	NI	1	0.10		1.4E-06	2.3E-04	1.2E-10				1.9E-06	3.2E-04	5.4E-04	0.01
Endosulfan sulfate	1.9E+01	6.0E-03	6.0E-03	NI	1	0.10		1.2E-05	2.1E-03	1.1E-09				1.8E-05	2.9E-03	5.0E-03	0.11
Endrin	1.9E+01	3.0E-04	3.0E-04	NI	1	0.10		1.2E-05	4.2E-02	1.1E-09				1.8E-05	5.9E-02	1.0E-01	2.28
Endrin aldehyde	1.9E+01	3.0E-04	3.0E-04	NI	1	0.10		1.2E-05	4.2E-02	1.1E-09				1.8E-05	5.9E-02	1.0E-01	2.28
Endrin ketone	1.9E+01	3.0E-04	3.0E-04	NI	1	0.10		1.2E-05	4.2E-02	1.1E-09				1.8E-05	5.9E-02	1.0E-01	2.28
Gamma-BHC (Lindane)	1.5E+00	3.0E-04	3.0E-04	NI	1	0.10		1.0E-06	3.4E-03	9.3E-11				1.4E-06	4.8E-03	8.1E-03	0.18
Heptachlor	7.1E+01	5.0E-04	5.0E-04	NI	1	0.10		4.8E-05	9.6E-02	4.4E-09				6.8E-05	1.4E-01	2.3E-01	5.24
Heptachlor epoxide	9.5E+00	1.3E-05	1.3E-05	NI	1	0.10		6.4E-06	4.9E-01	5.9E-10				9.1E-06	7.0E-01	1.2E+00	26.98
Methoxychlor	9.5E+01	5.0E-03	5.0E-03	NI	1	0.10		6.4E-05	1.3E-02	5.9E-09				9.1E-05	1.8E-02	3.1E-02	0.70
Toxaphene	9.5E+02	NI	NI	NI	1	0.10		6.4E-04		5.9E-08				9.1E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.8E+00		4.8E-06				2.6E+00	4.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL106-4

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 Index	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	2.5E+01	3.0E-05	3.0E-05	NI	1	0.10		1.7E-05	5.6E-01	1.5E-09				2.4E-05	7.9E-01	1.4E+00	62.64
Alpha-BHC	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
Beta-BHC	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDD	2.5E+01	NI	NI	NI	1	0.10		1.7E-05		1.5E-09				2.4E-05			
4,4-DDE	1.8E+00	NI	NI	NI	1	0.10		1.2E-06		1.1E-10				1.7E-06			
4,4-DDT	6.8E+00	5.0E-04	5.0E-04	NI	1	0.10		4.6E-06	9.2E-03	4.2E-10				6.5E-06	1.3E-02	2.2E-02	1.02
Delta-BHC	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
Dieldrin	1.7E+01	5.0E-05	5.0E-05	NI	1	0.10		1.1E-05	2.3E-01	1.1E-09				1.6E-05	3.2E-01	5.5E-01	25.56
Chlordane	2.5E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.7E-05	3.4E-02	1.5E-09	3.1E-06			2.4E-05	4.8E-02	8.1E-02	3.76
Endosulfan I	2.2E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.5E-05	6.0E-05	0.00
Endosulfan II	1.2E+00	6.0E-03	6.0E-03	NI	1	0.10		8.1E-07	1.4E-04	7.4E-11				1.1E-06	1.9E-04	3.3E-04	0.02
Endosulfan sulfate	4.3E-01	6.0E-03	6.0E-03	NI	1	0.10		2.9E-07	4.8E-05	2.7E-11				4.1E-07	6.8E-05	1.2E-04	0.01
Endrin	7.9E-01	3.0E-04	3.0E-04	NI	1	0.10		5.3E-07	1.8E-03	4.9E-11				7.5E-07	2.5E-03	4.3E-03	0.20
Endrin aldehyde	4.3E-01	3.0E-04	3.0E-04	NI	1	0.10		2.9E-07	9.7E-04	2.7E-11				4.1E-07	1.4E-03	2.3E-03	0.11
Endrin ketone	4.9E-01	3.0E-04	3.0E-04	NI	1	0.10		3.3E-07	1.1E-03	3.0E-11				4.7E-07	1.6E-03	2.7E-03	0.12
Gamma-BHC (Lindane)	3.4E-01	3.0E-04	3.0E-04	NI	1	0.10		2.3E-07	7.7E-04	2.1E-11				3.2E-07	1.1E-03	1.8E-03	0.09
Heptachlor	2.7E+01	5.0E-04	5.0E-04	NI	1	0.10		1.8E-05	3.6E-02	1.7E-09				2.6E-05	5.2E-02	8.8E-02	4.06
Heptachlor epoxide	4.1E-01	1.3E-05	1.3E-05	NI	1	0.10		2.8E-07	2.1E-02	2.5E-11				3.9E-07	3.0E-02	5.1E-02	2.37
Methoxychlor	3.9E+00	5.0E-03	5.0E-03	NI	1	0.10		2.6E-06	5.3E-04	2.4E-10				3.7E-06	7.4E-04	1.3E-03	0.06
Toxaphene	2.2E+01	NI	NI	NI	1	0.10		1.5E-05		1.4E-09				2.1E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									9.0E-01		3.1E-06				1.3E+00	2.2E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL107-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABS)	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	4.3E+01	3.0E-05	3.0E-05	NI	1	0.10		2.9E-05	9.7E-01	2.7E-09				4.1E-05	1.4E+00	2.3E+00	68.94
Alpha-BHC	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.3E-10				2.1E-06			
Beta-BHC	7.6E+00	NI	NI	NI	1	0.10		5.1E-06		4.7E-10				7.2E-06			
4,4-DDD	3.1E+01	NI	NI	NI	1	0.10		2.1E-05		1.9E-09				3.0E-05			
4,4-DDE	1.3E+00	NI	NI	NI	1	0.10		8.8E-07		8.0E-11				1.2E-06			
4,4-DDT	5.3E+00	5.0E-04	5.0E-04	NI	1	0.10		3.6E-06	7.2E-03	3.3E-10				5.1E-06	1.0E-02	1.7E-02	0.51
Delta-BHC	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.3E-10				2.1E-06			
Dieldrin	1.8E+01	5.0E-05	5.0E-05	NI	1	0.10		1.2E-05	2.4E-01	1.1E-09				1.7E-05	3.4E-01	5.9E-01	17.32
Chlordane	4.9E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.3E-05	6.6E-02	3.0E-09	6.1E-06			4.7E-05	9.3E-02	1.6E-01	4.71
Endosulfan I	2.2E+00	6.0E-03	6.0E-03	NI	1	0.10		1.5E-06	2.4E-04	1.3E-10				2.1E-06	3.4E-04	5.8E-04	0.02
Endosulfan II	3.2E+00	6.0E-03	6.0E-03	NI	1	0.10		2.2E-06	3.6E-04	2.0E-10				3.1E-06	5.1E-04	8.7E-04	0.03
Endosulfan sulfate	4.2E-01	6.0E-03	6.0E-03	NI	1	0.10		2.8E-07	4.7E-05	2.6E-11				4.0E-07	6.7E-05	1.1E-04	0.00
Endrin	8.6E+00	3.0E-04	3.0E-04	NI	1	0.10		5.8E-06	1.9E-02	5.3E-10				8.2E-06	2.7E-02	4.7E-02	1.38
Endrin aldehyde	4.2E+00	3.0E-04	3.0E-04	NI	1	0.10		2.8E-06	9.3E-03	2.6E-10				4.0E-06	1.3E-02	2.3E-02	0.67
Endrin ketone	3.6E+00	3.0E-04	3.0E-04	NI	1	0.10		2.4E-06	8.1E-03	2.2E-10				3.4E-06	1.1E-02	2.0E-02	0.58
Gamma-BHC (Lindane)	9.2E-01	3.0E-04	3.0E-04	NI	1	0.10		6.2E-07	2.1E-03	5.7E-11				8.8E-07	2.9E-03	5.0E-03	0.15
Heptachlor	2.6E+01	5.0E-04	5.0E-04	NI	1	0.10		1.8E-05	3.5E-02	1.6E-09				2.5E-05	5.0E-02	8.5E-02	2.50
Heptachlor epoxide	8.1E-01	1.3E-05	1.3E-05	NI	1	0.10		5.5E-07	4.2E-02	5.0E-11				7.7E-07	5.9E-02	1.0E-01	3.00
Methoxychlor	2.2E+01	5.0E-03	5.0E-03	NI	1	0.10		1.5E-05	2.9E-03	1.3E-09				2.1E-05	4.1E-03	7.0E-03	0.21
Toxaphene	2.2E+02	NI	NI	NI	1	0.10		1.5E-04		1.3E-08				2.1E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E+00		6.1E-06				2.0E+00	3.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL107-4

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	NI	1	0.10		1.3E-05	4.3E-01	1.2E-09				1.8E-05	6.0E-01	1.0E+00	64.97
Alpha-BHC	5.0E-02	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
Beta-BHC	5.0E-02	NI	NI	NI	1	0.10		3.4E-08		3.1E-12				4.8E-08			
4,4-DDD	5.1E+00	NI	NI	NI	1	0.10		3.4E-06		3.2E-10				4.9E-06			
4,4-DDE	6.0E-01	NI	NI	NI	1	0.10		4.1E-07		3.7E-11				5.7E-07			
4,4-DDT	4.9E+00	5.0E-04	5.0E-04	NI	1	0.10		3.3E-06	6.6E-03	3.0E-10				4.7E-06	9.3E-03	1.6E-02	1.01
Delta-BHC	8.1E-02	NI	NI	NI	1	0.10		5.5E-08		5.0E-12				7.7E-08			
Dieldrin	1.2E+01	5.0E-05	5.0E-05	NI	1	0.10		8.1E-06	1.6E-01	7.4E-10				1.1E-05	2.3E-01	3.9E-01	24.62
Chlordane	1.6E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.1E-05	2.2E-02	1.0E-09	2.0E-06			1.6E-05	3.1E-02	5.3E-02	3.37
Endosulfan I	5.0E-02	6.0E-03	6.0E-03	NI	1	0.10		3.4E-08	5.6E-06	3.1E-12				4.8E-08	7.9E-06	1.4E-05	0.00
Endosulfan II	6.5E-01	6.0E-03	6.0E-03	NI	1	0.10		4.4E-07	7.3E-05	4.0E-11				6.2E-07	1.0E-04	1.8E-04	0.01
Endosulfan sulfate	1.6E-01	6.0E-03	6.0E-03	NI	1	0.10		1.1E-07	1.8E-05	9.9E-12				1.5E-07	2.5E-05	4.3E-05	0.00
Endrin	1.2E+00	3.0E-04	3.0E-04	NI	1	0.10		8.1E-07	2.7E-03	7.4E-11				1.1E-06	3.8E-03	6.5E-03	0.41
Endrin aldehyde	1.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.8E-08	2.3E-04	6.2E-12				9.5E-08	3.2E-04	5.4E-04	0.03
Endrin ketone	6.6E-01	3.0E-04	3.0E-04	NI	1	0.10		4.5E-07	1.5E-03	4.1E-11				6.3E-07	2.1E-03	3.6E-03	0.23
Gamma-BHC (Lindane)	1.5E-01	3.0E-04	3.0E-04	NI	1	0.10		1.0E-07	3.4E-04	9.3E-12				1.4E-07	4.8E-04	8.1E-04	0.05
Heptachlor	1.5E+01	5.0E-04	5.0E-04	NI	1	0.10		1.0E-05	2.0E-02	9.3E-10				1.4E-05	2.9E-02	4.9E-02	3.08
Heptachlor epoxide	2.8E-01	1.3E-05	1.3E-05	NI	1	0.10		1.9E-07	1.5E-02	1.7E-11				2.7E-07	2.1E-02	3.5E-02	2.21
Methoxychlor	5.0E-01	5.0E-03	5.0E-03	NI	1	0.10		3.4E-07	6.8E-05	3.1E-11				4.8E-07	9.5E-05	1.6E-04	0.01
Toxaphene	5.0E+00	NI	NI	NI	1	0.10		3.4E-06		3.1E-10				4.8E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.6E-01		2.0E-06				9.3E-01	1.6E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL108-2

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 Index	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	2.0E+01	3.0E-05	3.0E-05	NI	1	0.10		1.4E-05	4.5E-01	1.2E-09				1.9E-05	6.4E-01	1.1E+00	47.62
Alpha-BHC	4.2E+00	NI	NI	NI	1	0.10		2.8E-06		2.6E-10				4.0E-06			
Beta-BHC	4.2E+00	NI	NI	NI	1	0.10		2.8E-06		2.6E-10				4.0E-06			
4,4-DDD	6.6E+00	NI	NI	NI	1	0.10		4.5E-06		4.1E-10				6.3E-06			
4,4-DDE	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDT	7.2E+00	5.0E-04	5.0E-04	NI	1	0.10		4.9E-06	9.7E-03	4.5E-10				6.9E-06	1.4E-02	2.3E-02	1.03
Delta-BHC	4.2E+00	NI	NI	NI	1	0.10		2.8E-06		2.6E-10				4.0E-06			
Dieldrin	2.4E+01	5.0E-05	5.0E-05	NI	1	0.10		1.6E-05	3.2E-01	1.5E-09				2.3E-05	4.6E-01	7.8E-01	34.28
Chlordane	2.7E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.8E-05	3.7E-02	1.7E-09	3.4E-06			2.6E-05	5.2E-02	8.8E-02	3.87
Endosulfan I	4.2E+00	6.0E-03	6.0E-03	NI	1	0.10		2.8E-06	4.7E-04	2.6E-10				4.0E-06	6.6E-04	1.1E-03	0.05
Endosulfan II	1.5E+00	6.0E-03	6.0E-03	NI	1	0.10		1.0E-06	1.7E-04	9.3E-11				1.4E-06	2.4E-04	4.1E-04	0.02
Endosulfan sulfate	1.1E+00	6.0E-03	6.0E-03	NI	1	0.10		7.4E-07	1.2E-04	6.8E-11				1.0E-06	1.7E-04	3.0E-04	0.01
Endrin	3.8E+00	3.0E-04	3.0E-04	NI	1	0.10		2.6E-06	8.6E-03	2.3E-10				3.6E-06	1.2E-02	2.1E-02	0.90
Endrin aldehyde	8.5E-01	3.0E-04	3.0E-04	NI	1	0.10		5.7E-07	1.9E-03	5.3E-11				8.1E-07	2.7E-03	4.6E-03	0.20
Endrin ketone	1.4E+00	3.0E-04	3.0E-04	NI	1	0.10		9.5E-07	3.2E-03	8.7E-11				1.3E-06	4.5E-03	7.6E-03	0.33
Gamma-BHC (Lindane)	4.2E+00	3.0E-04	3.0E-04	NI	1	0.10		2.8E-06	9.3E-03	2.6E-10				4.0E-06	1.3E-02	2.3E-02	0.99
Heptachlor	3.8E+01	5.0E-04	5.0E-04	NI	1	0.10		2.6E-05	5.1E-02	2.3E-09				3.6E-05	7.2E-02	1.2E-01	5.43
Heptachlor epoxide	8.5E-01	1.3E-05	1.3E-05	NI	1	0.10		5.7E-07	4.4E-02	5.3E-11				8.1E-07	6.2E-02	1.1E-01	4.67
Methoxychlor	4.2E+01	5.0E-03	5.0E-03	NI	1	0.10		2.8E-05	5.6E-03	2.6E-09				4.0E-05	7.9E-03	1.4E-02	0.59
Toxaphene	4.2E+02	NI	NI	NI	1	0.10		2.8E-04		2.6E-08				4.0E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									9.5E-01		3.4E-06				1.3E+00	2.3E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL108-4

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 Index	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	6.8E+01	3.0E-05	3.0E-05	NI	1	0.10		4.6E-05	1.5E+00	4.2E-09				6.5E-05	2.2E+00	3.7E+00	74.53
Alpha-BHC	4.6E-01	NI	NI	NI	1	0.10		3.1E-07		2.8E-11				4.4E-07			
Beta-BHC	4.6E-01	NI	NI	NI	1	0.10		3.1E-07		2.8E-11				4.4E-07			
4,4-DDD	3.4E+00	NI	NI	NI	1	0.10		2.3E-06		2.1E-10				3.2E-06			
4,4-DDE	1.3E+00	NI	NI	NI	1	0.10		8.8E-07		8.0E-11				1.2E-06			
4,4-DDT	3.4E+00	5.0E-04	5.0E-04	NI	1	0.10		2.3E-06	4.6E-03	2.1E-10				3.2E-06	6.5E-03	1.1E-02	0.22
Delta-BHC	4.6E-01	NI	NI	NI	1	0.10		3.1E-07		2.8E-11				4.4E-07			
Dieldrin	3.0E+01	5.0E-05	5.0E-05	NI	1	0.10		2.0E-05	4.1E-01	1.9E-09				2.9E-05	5.7E-01	9.8E-01	19.73
Chlordane	3.2E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.2E-05	4.3E-02	2.0E-09	4.0E-06			3.1E-05	6.1E-02	1.0E-01	2.10
Endosulfan I	4.6E-01	6.0E-03	6.0E-03	NI	1	0.10		3.1E-07	5.2E-05	2.8E-11				4.4E-07	7.3E-05	1.2E-04	0.00
Endosulfan II	2.2E+00	6.0E-03	6.0E-03	NI	1	0.10		1.5E-06	2.5E-04	1.4E-10				2.1E-06	3.5E-04	6.0E-04	0.01
Endosulfan sulfate	9.7E-01	6.0E-03	6.0E-03	NI	1	0.10		6.5E-07	1.1E-04	6.0E-11				9.3E-07	1.5E-04	2.6E-04	0.01
Endrin	2.8E+00	3.0E-04	3.0E-04	NI	1	0.10		1.9E-06	6.3E-03	1.7E-10				2.7E-06	8.9E-03	1.5E-02	0.31
Endrin aldehyde	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	0.10
Endrin ketone	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	0.10
Gamma-BHC (Lindane)	4.6E-01	3.0E-04	3.0E-04	NI	1	0.10		3.1E-07	1.0E-03	2.8E-11				4.4E-07	1.5E-03	2.5E-03	0.05
Heptachlor	2.5E+01	5.0E-04	5.0E-04	NI	1	0.10		1.7E-05	3.4E-02	1.5E-09				2.4E-05	4.8E-02	8.1E-02	1.64
Heptachlor epoxide	4.6E-01	1.3E-05	1.3E-05	NI	1	0.10		3.1E-07	2.4E-02	2.8E-11				4.4E-07	3.4E-02	5.8E-02	1.16
Methoxychlor	4.6E+00	5.0E-03	5.0E-03	NI	1	0.10		3.1E-06	6.2E-04	2.8E-10				4.4E-06	8.8E-04	1.5E-03	0.03
Toxaphene	4.6E+01	NI	NI	NI	1	0.10		3.1E-05		2.8E-09				4.4E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.1E+00		4.0E-06				2.9E+00	5.0E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL109-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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+00	3.0E-05	3.0E-05	NI	1	0.10		2.2E-06	7.4E-02	2.0E-10				3.1E-06	1.0E-01	1.8E-01	56.98
Alpha-BHC	2.7E-01	NI	NI	NI	1	0.10		1.8E-07		1.6E-11				2.5E-07			
Beta-BHC	4.4E-01	NI	NI	NI	1	0.10		3.0E-07		2.7E-11				4.2E-07			
4,4-DDD	1.9E-01	NI	NI	NI	1	0.10		1.3E-07		1.2E-11				1.8E-07			
4,4-DDE	7.5E-02	NI	NI	NI	1	0.10		5.1E-08		4.6E-12				7.2E-08			
4,4-DDT	1.6E-01	5.0E-04	5.0E-04	NI	1	0.10		1.1E-07	2.2E-04	9.9E-12				1.5E-07	3.1E-04	5.2E-04	0.17
Delta-BHC	9.6E-02	NI	NI	NI	1	0.10		6.5E-08		5.9E-12				9.2E-08			
Dieldrin	3.4E+00	5.0E-05	5.0E-05	NI	1	0.10		2.3E-06	4.6E-02	2.1E-10				3.2E-06	6.5E-02	1.1E-01	35.23
Chlordane	1.8E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.2E-06	2.5E-03	1.1E-10	2.3E-07			1.7E-06	3.5E-03	6.0E-03	1.90
Endosulfan I	2.7E-01	6.0E-03	6.0E-03	NI	1	0.10		1.8E-07	3.0E-05	1.6E-11				2.5E-07	4.2E-05	7.2E-05	0.02
Endosulfan II	5.8E-02	6.0E-03	6.0E-03	NI	1	0.10		3.9E-08	6.5E-06	3.6E-12				5.5E-08	9.2E-06	1.6E-05	0.01
Endosulfan sulfate	5.0E-01	6.0E-03	6.0E-03	NI	1	0.10		3.4E-07	5.6E-05	3.1E-11				4.8E-07	7.9E-05	1.4E-04	0.04
Endrin	9.6E-02	3.0E-04	3.0E-04	NI	1	0.10		6.5E-08	2.2E-04	5.9E-12				9.2E-08	3.1E-04	5.2E-04	0.17
Endrin aldehyde	5.0E-01	3.0E-04	3.0E-04	NI	1	0.10		3.4E-07	1.1E-03	3.1E-11				4.8E-07	1.6E-03	2.7E-03	0.86
Endrin ketone	6.1E-01	3.0E-04	3.0E-04	NI	1	0.10		4.1E-07	1.4E-03	3.8E-11				5.8E-07	1.9E-03	3.3E-03	1.05
Gamma-BHC (Lindane)	2.7E-01	3.0E-04	3.0E-04	NI	1	0.10		1.8E-07	6.0E-04	1.6E-11				2.5E-07	8.4E-04	1.4E-03	0.46
Heptachlor	3.2E-01	5.0E-04	5.0E-04	NI	1	0.10		2.2E-07	4.3E-04	2.0E-11				3.1E-07	6.1E-04	1.0E-03	0.33
Heptachlor epoxide	6.3E-02	1.3E-05	1.3E-05	NI	1	0.10		4.3E-08	3.3E-03	3.9E-12				6.0E-08	4.6E-03	7.9E-03	2.51
Methoxychlor	2.7E+00	5.0E-03	5.0E-03	NI	1	0.10		1.8E-06	3.6E-04	1.6E-10				2.5E-06	5.1E-04	8.6E-04	0.27
Toxaphene	2.7E+01	NI	NI	NI	1	0.10		1.8E-05		1.6E-09				2.5E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-01		2.3E-07				1.8E-01	3.1E-01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL110-2

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 Index	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	4.5E+01	3.0E-05	3.0E-05	NI	1	0.10		3.0E-05	1.0E+00	2.8E-09				4.3E-05	1.4E+00	2.4E+00	77.66
Alpha-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
Beta-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
4,4-DDD	2.0E+00	NI	NI	NI	1	0.10		1.4E-06		1.2E-10				1.9E-06			
4,4-DDE	1.1E+00	NI	NI	NI	1	0.10		7.1E-07		6.5E-11				1.0E-06			
4,4-DDT	1.2E+01	5.0E-04	5.0E-04	NI	1	0.10		8.1E-06	1.6E-02	7.4E-10				1.1E-05	2.3E-02	3.9E-02	1.24
Delta-BHC	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
Dieldrin	1.5E+01	5.0E-05	5.0E-05	NI	1	0.10		1.0E-05	2.0E-01	9.3E-10				1.4E-05	2.9E-01	4.9E-01	15.53
Chlordane	8.2E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.5E-06	1.1E-02	5.1E-10	1.0E-06			7.8E-06	1.6E-02	2.7E-02	0.85
Endosulfan I	5.5E-01	6.0E-03	6.0E-03	NI	1	0.10		3.7E-07	6.2E-05	3.4E-11				5.2E-07	8.7E-05	1.5E-04	0.00
Endosulfan II	1.1E+00	6.0E-03	6.0E-03	NI	1	0.10		7.5E-07	1.2E-04	6.8E-11				1.1E-06	1.8E-04	3.0E-04	0.01
Endosulfan sulfate	1.1E+00	6.0E-03	6.0E-03	NI	1	0.10		7.5E-07	1.2E-04	6.8E-11				1.1E-06	1.8E-04	3.0E-04	0.01
Endrin	1.1E+00	3.0E-04	3.0E-04	NI	1	0.10		7.5E-07	2.5E-03	6.8E-11				1.1E-06	3.5E-03	6.0E-03	0.19
Endrin aldehyde	1.1E+00	3.0E-04	3.0E-04	NI	1	0.10		7.5E-07	2.5E-03	6.8E-11				1.1E-06	3.5E-03	6.0E-03	0.19
Endrin ketone	1.2E+00	3.0E-04	3.0E-04	NI	1	0.10		8.1E-07	2.7E-03	7.4E-11				1.1E-06	3.8E-03	6.5E-03	0.21
Gamma-BHC (Lindane)	5.5E-01	3.0E-04	3.0E-04	NI	1	0.10		3.7E-07	1.2E-03	3.4E-11				5.2E-07	1.7E-03	3.0E-03	0.09
Heptachlor	1.7E+01	5.0E-04	5.0E-04	NI	1	0.10		1.1E-05	2.3E-02	1.1E-09				1.6E-05	3.2E-02	5.5E-02	1.76
Heptachlor epoxide	5.5E-01	1.3E-05	1.3E-05	NI	1	0.10		3.7E-07	2.9E-02	3.4E-11				5.2E-07	4.0E-02	6.9E-02	2.19
Methoxychlor	5.5E+00	5.0E-03	5.0E-03	NI	1	0.10		3.7E-06	7.4E-04	3.4E-10				5.2E-06	1.0E-03	1.8E-03	0.06
Toxaphene	5.5E+01	NI	NI	NI	1	0.10		3.7E-05		3.4E-09				5.2E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E+00		1.0E-06				1.8E+00	3.1E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
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: SL110-4

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 Index	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	NI	1	0.10		1.6E-07	5.4E-03	1.5E-11				2.3E-07	7.6E-03	1.3E-02	15.02
Alpha-BHC	2.2E-02	NI	NI	NI	1	0.10		1.5E-08		1.4E-12				2.1E-08			
Beta-BHC	3.3E-01	NI	NI	NI	1	0.10		2.2E-07		2.0E-11				3.1E-07			
4,4-DDD	5.7E-02	NI	NI	NI	1	0.10		3.8E-08		3.5E-12				5.4E-08			
4,4-DDE	8.9E-02	NI	NI	NI	1	0.10		6.0E-08		5.5E-12				8.5E-08			
4,4-DDT	9.5E-02	5.0E-04	5.0E-04	NI	1	0.10		6.4E-08	1.3E-04	5.9E-12				9.1E-08	1.8E-04	3.1E-04	0.36
Delta-BHC	7.4E-02	NI	NI	NI	1	0.10		5.0E-08		4.6E-12				7.1E-08			
Dieldrin	1.7E+00	5.0E-05	5.0E-05	NI	1	0.10		1.1E-06	2.3E-02	1.1E-10				1.6E-06	3.2E-02	5.5E-02	63.85
Chlordane	5.5E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.7E-07	7.4E-04	3.4E-11	6.8E-08			5.2E-07	1.0E-03	1.8E-03	2.07
Endosulfan I	7.5E-03	6.0E-03	6.0E-03	NI	1	0.10		5.1E-09	8.4E-07	4.6E-13				7.2E-09	1.2E-06	2.0E-06	0.00
Endosulfan II	1.5E-02	6.0E-03	6.0E-03	NI	1	0.10		9.8E-09	1.6E-06	9.0E-13				1.4E-08	2.3E-06	3.9E-06	0.00
Endosulfan sulfate	1.5E-02	6.0E-03	6.0E-03	NI	1	0.10		9.8E-09	1.6E-06	9.0E-13				1.4E-08	2.3E-06	3.9E-06	0.00
Endrin	2.0E-02	3.0E-04	3.0E-04	NI	1	0.10		1.4E-08	4.5E-05	1.2E-12				1.9E-08	6.4E-05	1.1E-04	0.13
Endrin aldehyde	1.5E-02	3.0E-04	3.0E-04	NI	1	0.10		9.8E-09	3.3E-05	9.0E-13				1.4E-08	4.6E-05	7.9E-05	0.09
Endrin ketone	3.9E-01	3.0E-04	3.0E-04	NI	1	0.10		2.6E-07	8.8E-04	2.4E-11				3.7E-07	1.2E-03	2.1E-03	2.44
Gamma-BHC (Lindane)	1.4E-02	3.0E-04	3.0E-04	NI	1	0.10		9.5E-09	3.2E-05	8.7E-13				1.3E-08	4.5E-05	7.6E-05	0.09
Heptachlor	7.5E-03	5.0E-04	5.0E-04	NI	1	0.10		5.1E-09	1.0E-05	4.6E-13				7.2E-09	1.4E-05	2.4E-05	0.03
Heptachlor epoxide	1.1E-01	1.3E-05	1.3E-05	NI	1	0.10		7.4E-08	5.7E-03	6.8E-12				1.0E-07	8.1E-03	1.4E-02	15.89
Methoxychlor	7.5E-02	5.0E-03	5.0E-03	NI	1	0.10		5.1E-08	1.0E-05	4.6E-12				7.2E-08	1.4E-05	2.4E-05	0.03
Toxaphene	7.5E-01	NI	NI	NI	1	0.10		5.1E-07		4.6E-11				7.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.6E-02		6.8E-08				5.1E-02	8.7E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL111-2

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 Index	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	2.0E+01	3.0E-05	3.0E-05	NI	1	0.10		1.4E-05	4.5E-01	1.2E-09				1.9E-05	6.4E-01	1.1E+00	78.01
Alpha-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
Beta-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
4,4-DDD	1.4E+00	NI	NI	NI	1	0.10		9.5E-07		8.7E-11				1.3E-06			
4,4-DDE	2.9E-01	NI	NI	NI	1	0.10		2.0E-07		1.8E-11				2.8E-07			
4,4-DDT	2.1E+00	5.0E-04	5.0E-04	NI	1	0.10		1.4E-06	2.8E-03	1.3E-10				2.0E-06	4.0E-03	6.8E-03	0.49
Delta-BHC	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
Dieldrin	5.6E+00	5.0E-05	5.0E-05	NI	1	0.10		3.8E-06	7.6E-02	3.5E-10				5.3E-06	1.1E-01	1.8E-01	13.11
Chlordane	8.6E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.8E-06	1.2E-02	5.3E-10	1.1E-06			8.2E-06	1.6E-02	2.8E-02	2.01
Endosulfan I	1.1E+00	6.0E-03	6.0E-03	NI	1	0.10		7.4E-07	1.2E-04	6.8E-11				1.0E-06	1.7E-04	3.0E-04	0.02
Endosulfan II	2.1E+00	6.0E-03	6.0E-03	NI	1	0.10		1.4E-06	2.4E-04	1.3E-10				2.0E-06	3.3E-04	5.7E-04	0.04
Endosulfan sulfate	2.1E+00	6.0E-03	6.0E-03	NI	1	0.10		1.4E-06	2.4E-04	1.3E-10				2.0E-06	3.3E-04	5.7E-04	0.04
Endrin	2.1E+00	3.0E-04	3.0E-04	NI	1	0.10		1.4E-06	4.7E-03	1.3E-10				2.0E-06	6.7E-03	1.1E-02	0.82
Endrin aldehyde	2.1E+00	3.0E-04	3.0E-04	NI	1	0.10		1.4E-06	4.7E-03	1.3E-10				2.0E-06	6.7E-03	1.1E-02	0.82
Endrin ketone	4.4E-01	3.0E-04	3.0E-04	NI	1	0.10		3.0E-07	9.9E-04	2.7E-11				4.2E-07	1.4E-03	2.4E-03	0.17
Gamma-BHC (Lindane)	1.1E+00	3.0E-04	3.0E-04	NI	1	0.10		7.4E-07	2.5E-03	6.8E-11				1.0E-06	3.5E-03	6.0E-03	0.43
Heptachlor	1.1E+01	5.0E-04	5.0E-04	NI	1	0.10		7.4E-06	1.5E-02	6.8E-10				1.0E-05	2.1E-02	3.6E-02	2.57
Heptachlor epoxide	1.6E-01	1.3E-05	1.3E-05	NI	1	0.10		1.1E-07	8.3E-03	9.9E-12				1.5E-07	1.2E-02	2.0E-02	1.44
Methoxychlor	1.1E+00	5.0E-03	5.0E-03	NI	1	0.10		7.4E-07	1.5E-04	6.8E-11				1.0E-06	2.1E-04	3.6E-04	0.03
Toxaphene	1.1E+02	NI	NI	NI	1	0.10		7.4E-05		6.8E-09				1.0E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.8E-01		1.1E-06				8.2E-01	1.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL111-4

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.7E+01	3.0E-05	3.0E-05	NI	1	0.10		1.8E-05	6.1E-01	1.7E-09				2.6E-05	8.6E-01	1.5E+00	33.64
Alpha-BHC	1.7E-01	NI	NI	NI	1	0.10		1.1E-07		1.0E-11				1.6E-07			
Beta-BHC	1.7E-01	NI	NI	NI	1	0.10		1.1E-07		1.0E-11				1.6E-07			
4,4-DDD	3.8E+00	NI	NI	NI	1	0.10		2.6E-06		2.3E-10				3.6E-06			
4,4-DDE	1.3E+00	NI	NI	NI	1	0.10		8.8E-07		8.0E-11				1.2E-06			
4,4-DDT	1.2E+01	5.0E-04	5.0E-04	NI	1	0.10		8.1E-06	1.6E-02	7.4E-10				1.1E-05	2.3E-02	3.9E-02	0.90
Delta-BHC	1.7E-01	NI	NI	NI	1	0.10		1.1E-07		1.1E-11				1.6E-07			
Dieldrin	8.4E+01	5.0E-05	5.0E-05	NI	1	0.10		5.7E-05	1.1E+00	5.2E-09				8.0E-05	1.6E+00	2.7E+00	62.80
Chlordane	1.3E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		8.4E-06	1.7E-02	7.7E-10	1.5E-06			1.2E-05	2.4E-02	4.1E-02	0.93
Endosulfan I	1.7E-01	6.0E-03	6.0E-03	NI	1	0.10		1.1E-07	1.9E-05	1.0E-11				1.6E-07	2.6E-05	4.5E-05	0.00
Endosulfan II	3.2E-01	6.0E-03	6.0E-03	NI	1	0.10		2.2E-07	3.6E-05	2.0E-11				3.1E-07	5.1E-05	8.7E-05	0.00
Endosulfan sulfate	3.2E-01	6.0E-03	6.0E-03	NI	1	0.10		2.2E-07	3.6E-05	2.0E-11				3.1E-07	5.1E-05	8.7E-05	0.00
Endrin	2.2E+00	3.0E-04	3.0E-04	NI	1	0.10		1.5E-06	5.0E-03	1.4E-10				2.1E-06	7.0E-03	1.2E-02	0.27
Endrin aldehyde	4.1E-01	3.0E-04	3.0E-04	NI	1	0.10		2.8E-07	9.2E-04	2.5E-11				3.9E-07	1.3E-03	2.2E-03	0.05
Endrin ketone	1.3E+00	3.0E-04	3.0E-04	NI	1	0.10		8.8E-07	2.9E-03	8.0E-11				1.2E-06	4.1E-03	7.1E-03	0.16
Gamma-BHC (Lindane)	1.7E+00	3.0E-04	3.0E-04	NI	1	0.10		1.1E-06	3.7E-03	1.0E-10				1.6E-06	5.2E-03	9.0E-03	0.21
Heptachlor	2.0E+00	5.0E-04	5.0E-04	NI	1	0.10		1.4E-06	2.7E-03	1.2E-10				1.9E-06	3.8E-03	6.5E-03	0.15
Heptachlor epoxide	3.0E-01	1.3E-05	1.3E-05	NI	1	0.10		2.0E-07	1.6E-02	1.9E-11				2.9E-07	2.2E-02	3.8E-02	0.86
Methoxychlor	1.7E+00	5.0E-03	5.0E-03	NI	1	0.10		1.1E-06	2.2E-04	1.0E-10				1.6E-06	3.1E-04	5.4E-04	0.01
Toxaphene	1.7E+01	NI	NI	NI	1	0.10		1.1E-05		1.0E-09				1.6E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.8E+00		1.5E-06				2.6E+00	4.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL112-2

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 Index	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	2.2E+02	3.0E-05	3.0E-05	NI	1	0.10		1.5E-04	5.0E+00	1.4E-08				2.1E-04	7.0E+00	1.2E+01	75.23
Alpha-BHC	2.1E+01	NI	NI	NI	1	0.10		1.4E-05		1.3E-09				2.0E-05			
Beta-BHC	2.1E+01	NI	NI	NI	1	0.10		1.4E-05		1.3E-09				2.0E-05			
4,4-DDD	4.0E+01	NI	NI	NI	1	0.10		2.7E-05		2.4E-09				3.8E-05			
4,4-DDE	4.0E+01	NI	NI	NI	1	0.10		2.7E-05		2.4E-09				3.8E-05			
4,4-DDT	4.9E+00	5.0E-04	5.0E-04	NI	1	0.10		3.3E-06	6.6E-03	3.0E-10				4.7E-06	9.3E-03	1.6E-02	0.10
Delta-BHC	2.1E+01	NI	NI	NI	1	0.10		1.4E-05		1.3E-09				2.0E-05			
Dieldrin	1.4E+01	5.0E-05	5.0E-05	NI	1	0.10		9.5E-06	1.9E-01	8.7E-10				1.3E-05	2.7E-01	4.6E-01	2.87
Chlordane	5.9E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.9E-06	7.9E-03	3.6E-10	7.2E-07			5.6E-06	1.1E-02	1.9E-02	0.12
Endosulfan I	2.1E+01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-05	2.3E-03	1.3E-09				2.0E-05	3.3E-03	5.6E-03	0.04
Endosulfan II	4.0E+01	6.0E-03	6.0E-03	NI	1	0.10		2.7E-05	4.4E-03	2.4E-09				3.8E-05	6.3E-03	1.1E-02	0.07
Endosulfan sulfate	4.0E+01	6.0E-03	6.0E-03	NI	1	0.10		2.7E-05	4.4E-03	2.4E-09				3.8E-05	6.3E-03	1.1E-02	0.07
Endrin	4.0E+01	3.0E-04	3.0E-04	NI	1	0.10		2.7E-05	8.9E-02	2.4E-09				3.8E-05	1.3E-01	2.1E-01	1.35
Endrin aldehyde	4.0E+01	3.0E-04	3.0E-04	NI	1	0.10		2.7E-05	8.9E-02	2.4E-09				3.8E-05	1.3E-01	2.1E-01	1.35
Endrin ketone	4.0E+01	3.0E-04	3.0E-04	NI	1	0.10		2.7E-05	8.9E-02	2.4E-09				3.8E-05	1.3E-01	2.1E-01	1.35
Gamma-BHC (Lindane)	2.1E+01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-05	4.6E-02	1.3E-09				2.0E-05	6.5E-02	1.1E-01	0.70
Heptachlor	7.3E+00	5.0E-04	5.0E-04	NI	1	0.10		4.9E-06	9.9E-03	4.5E-10				7.0E-06	1.4E-02	2.4E-02	0.15
Heptachlor epoxide	2.1E+01	1.3E-05	1.3E-05	NI	1	0.10		1.4E-05	1.1E+00	1.3E-09				2.0E-05	1.5E+00	2.6E+00	16.18
Methoxychlor	2.1E+02	5.0E-03	5.0E-03	NI	1	0.10		1.4E-04	2.8E-02	1.3E-08				2.0E-04	3.9E-02	6.7E-02	0.42
Toxaphene	2.1E+03	NI	NI	NI	1	0.10		1.4E-03		1.3E-07				2.0E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.6E+00		7.2E-07				9.3E+00	1.6E+01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL112-4

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQO), 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	6.3E-02	3.0E-05	3.0E-05	NI	1	0.10		4.3E-08	1.4E-03	3.9E-12				6.0E-08	2.0E-03	3.4E-03	16.87
Alpha-BHC	3.2E-03	NI	NI	NI	1	0.10		2.1E-09		1.9E-13				3.0E-09			
Beta-BHC	3.2E-03	NI	NI	NI	1	0.10		2.1E-09		1.9E-13				3.0E-09			
4,4-DDD	2.1E-02	NI	NI	NI	1	0.10		1.4E-08		1.3E-12				2.0E-08			
4,4-DDE	1.6E-02	NI	NI	NI	1	0.10		1.1E-08		9.9E-13				1.5E-08			
4,4-DDT	2.9E-02	5.0E-04	5.0E-04	NI	1	0.10		2.0E-08	3.9E-05	1.8E-12				2.8E-08	5.5E-05	9.4E-05	0.47
Delta-BHC	3.2E-03	NI	NI	NI	1	0.10		2.1E-09		1.9E-13				3.0E-09			
Dieldrin	4.1E-01	5.0E-05	5.0E-05	NI	1	0.10		2.8E-07	5.5E-03	2.5E-11				3.9E-07	7.8E-03	1.3E-02	65.87
Chlordane	1.0E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		6.8E-08	1.4E-04	6.2E-12	1.2E-08			9.6E-08	1.9E-04	3.3E-04	1.62
Endosulfan I	3.2E-03	6.0E-03	6.0E-03	NI	1	0.10		2.1E-09	3.5E-07	1.9E-13				3.0E-09	5.0E-07	8.6E-07	0.00
Endosulfan II	1.6E-02	6.0E-03	6.0E-03	NI	1	0.10		1.1E-08	1.8E-06	9.9E-13				1.5E-08	2.5E-06	4.3E-06	0.02
Endosulfan sulfate	6.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.1E-09	6.8E-07	3.7E-13				5.7E-09	9.5E-07	1.6E-06	0.01
Endrin	9.4E-03	3.0E-04	3.0E-04	NI	1	0.10		6.3E-09	2.1E-05	5.8E-13				9.0E-09	3.0E-05	5.1E-05	0.25
Endrin aldehyde	6.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.1E-09	1.4E-05	3.7E-13				5.7E-09	1.9E-05	3.3E-05	0.16
Endrin ketone	5.0E-02	3.0E-04	3.0E-04	NI	1	0.10		3.4E-08	1.1E-04	3.1E-12				4.8E-08	1.6E-04	2.7E-04	1.34
Gamma-BHC (Lindane)	3.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.1E-09	7.1E-06	1.9E-13				3.0E-09	1.0E-05	1.7E-05	0.08
Heptachlor	5.6E-02	5.0E-04	5.0E-04	NI	1	0.10		3.8E-08	7.6E-05	3.5E-12				5.3E-08	1.1E-04	1.8E-04	0.90
Heptachlor epoxide	2.0E-02	1.3E-05	1.3E-05	NI	1	0.10		1.4E-08	1.0E-03	1.2E-12				1.9E-08	1.5E-03	2.5E-03	12.36
Methoxychlor	3.2E-02	5.0E-03	5.0E-03	NI	1	0.10		2.1E-08	4.3E-06	1.9E-12				3.0E-08	6.0E-06	1.0E-05	0.05
Toxaphene	3.2E-01	NI	NI	NI	1	0.10		2.1E-07		1.9E-11				3.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									8.4E-03		1.2E-08				1.2E-02	2.0E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL113-4

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 Index	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+01	3.0E-05	3.0E-05	NI	1	0.10		3.2E-05	1.1E+00	2.9E-09				4.5E-05	1.5E+00	2.6E+00	78.65
Alpha-BHC	2.4E+00	NI	NI	NI	1	0.10		1.6E-06		1.5E-10				2.2E-06			
Beta-BHC	2.4E+00	NI	NI	NI	1	0.10		1.6E-06		1.5E-10				2.2E-06			
4,4-DDD	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
4,4-DDE	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
4,4-DDT	9.6E+00	5.0E-04	5.0E-04	NI	1	0.10		6.5E-06	1.3E-02	5.9E-10				9.2E-06	1.8E-02	3.1E-02	0.94
Delta-BHC	2.4E+00	NI	NI	NI	1	0.10		1.6E-06		1.5E-10				2.2E-06			
Dieldrin	9.5E+00	5.0E-05	5.0E-05	NI	1	0.10		6.4E-06	1.3E-01	5.9E-10				9.1E-06	1.8E-01	3.1E-01	9.30
Chlordane	8.3E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.6E-06	1.1E-02	5.1E-10	1.0E-06			7.9E-06	1.6E-02	2.7E-02	0.81
Endosulfan I	2.4E+00	6.0E-03	6.0E-03	NI	1	0.10		1.6E-06	2.6E-04	1.5E-10				2.2E-06	3.7E-04	6.4E-04	0.02
Endosulfan II	4.5E+00	6.0E-03	6.0E-03	NI	1	0.10		3.0E-06	5.1E-04	2.8E-10				4.3E-06	7.2E-04	1.2E-03	0.04
Endosulfan sulfate	4.5E+00	6.0E-03	6.0E-03	NI	1	0.10		3.0E-06	5.1E-04	2.8E-10				4.3E-06	7.2E-04	1.2E-03	0.04
Endrin	4.5E+00	3.0E-04	3.0E-04	NI	1	0.10		3.0E-06	1.0E-02	2.8E-10				4.3E-06	1.4E-02	2.4E-02	0.73
Endrin aldehyde	4.5E+00	3.0E-04	3.0E-04	NI	1	0.10		3.0E-06	1.0E-02	2.8E-10				4.3E-06	1.4E-02	2.4E-02	0.73
Endrin ketone	7.1E-01	3.0E-04	3.0E-04	NI	1	0.10		4.8E-07	1.6E-03	4.4E-11				6.8E-07	2.3E-03	3.9E-03	0.12
Gamma-BHC (Lindane)	2.4E+00	3.0E-04	3.0E-04	NI	1	0.10		1.6E-06	5.3E-03	1.5E-10				2.2E-06	7.5E-03	1.3E-02	0.38
Heptachlor	1.2E+01	5.0E-04	5.0E-04	NI	1	0.10		8.1E-06	1.6E-02	7.4E-10				1.1E-05	2.3E-02	3.9E-02	1.17
Heptachlor epoxide	2.4E+00	1.3E-05	1.3E-05	NI	1	0.10		1.6E-06	1.2E-01	1.5E-10				2.2E-06	1.7E-01	2.9E-01	8.84
Methoxychlor	2.4E+01	5.0E-03	5.0E-03	NI	1	0.10		1.6E-05	3.2E-03	1.5E-09				2.2E-05	4.5E-03	7.7E-03	0.23
Toxaphene	2.4E+02	NI	NI	NI	1	0.10		1.6E-04		1.5E-08				2.2E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E+00		1.0E-06				1.9E+00	3.3E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL113-6

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABS)	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	NI	1	0.10		7.4E-09	2.5E-04	6.8E-13				1.0E-08	3.5E-04	6.0E-04	52.32
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.8E-03	NI	NI	NI	1	0.10		1.9E-09		1.7E-13				2.7E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.6E-02	5.0E-04	5.0E-04	NI	1	0.10		1.8E-08	3.5E-05	1.6E-12				2.5E-08	5.0E-05	8.5E-05	7.42
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	5.8E-03	5.0E-05	5.0E-05	NI	1	0.10		3.9E-09	7.8E-05	3.6E-13				5.5E-09	1.1E-04	1.9E-04	16.55
Chlordane	1.2E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.8E-09	1.6E-05	7.1E-13	1.4E-09			1.1E-08	2.2E-05	3.7E-05	3.28
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.02
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.05
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.05
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.95
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.95
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.95
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	0.50
Heptachlor	1.6E-02	5.0E-04	5.0E-04	NI	1	0.10		1.2E-08	2.4E-05	1.1E-12				1.7E-08	3.4E-05	5.9E-05	5.14
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	11.52
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.30
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									4.7E-04		1.4E-09				6.7E-04	1.1E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL114-2

Chemical Name	Concentration in soil (CS), mg/kg	Reference Doses, mg/kg-d: Oral (RFDO)	Reference Doses, mg/kg-d: Dermal (RFDO)	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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	6.9E+01	3.0E-05	3.0E-05	NI	1	0.10		4.7E-05	1.6E+00	4.3E-09				6.6E-05	2.2E+00	3.7E+00	25.59
Alpha-BHC	1.4E+01	NI	NI	NI	1	0.10		9.5E-06		8.7E-10				1.3E-05			
Beta-BHC	1.5E+01	NI	NI	NI	1	0.10		1.0E-05		9.3E-10				1.4E-05			
4,4-DDD	6.6E+00	NI	NI	NI	1	0.10		4.5E-06		4.1E-10				6.3E-06			
4,4-DDE	2.7E+01	NI	NI	NI	1	0.10		1.8E-05		1.7E-09				2.6E-05			
4,4-DDT	3.3E+01	5.0E-04	5.0E-04	NI	1	0.10		2.2E-05	4.5E-02	2.0E-09				3.1E-05	6.3E-02	1.1E-01	0.73
Delta-BHC	1.4E+01	NI	NI	NI	1	0.10		9.5E-06		8.7E-10				1.3E-05			
Dieldrin	2.4E+02	5.0E-05	5.0E-05	NI	1	0.10		1.6E-04	3.2E+00	1.5E-08				2.3E-04	4.6E+00	7.8E+00	53.41
Chlordane	1.3E+02	5.0E-04	5.0E-04	5.0E-04	1	0.10		9.0E-05	1.8E-01	8.3E-09	1.7E-05			1.3E-04	2.6E-01	4.4E-01	2.98
Endosulfan I	1.4E+01	6.0E-03	6.0E-03	NI	1	0.10		9.5E-06	1.6E-03	8.7E-10				1.3E-05	2.2E-03	3.8E-03	0.03
Endosulfan II	2.7E+01	6.0E-03	6.0E-03	NI	1	0.10		1.8E-05	3.0E-03	1.7E-09				2.6E-05	4.3E-03	7.3E-03	0.05
Endosulfan sulfate	2.7E+01	6.0E-03	6.0E-03	NI	1	0.10		1.8E-05	3.0E-03	1.7E-09				2.6E-05	4.3E-03	7.3E-03	0.05
Endrin	2.7E+01	3.0E-04	3.0E-04	NI	1	0.10		1.8E-05	6.1E-02	1.7E-09				2.6E-05	8.6E-02	1.5E-01	1.00
Endrin aldehyde	2.7E+01	3.0E-04	3.0E-04	NI	1	0.10		1.8E-05	6.1E-02	1.7E-09				2.6E-05	8.6E-02	1.5E-01	1.00
Endrin ketone	2.7E+01	3.0E-04	3.0E-04	NI	1	0.10		1.8E-05	6.1E-02	1.7E-09				2.6E-05	8.6E-02	1.5E-01	1.00
Gamma-BHC (Lindane)	1.4E+01	3.0E-04	3.0E-04	NI	1	0.10		9.5E-06	3.2E-02	8.7E-10				1.3E-05	4.5E-02	7.6E-02	0.52
Heptachlor	6.0E+01	5.0E-04	5.0E-04	NI	1	0.10		4.1E-05	8.1E-02	3.7E-09				5.7E-05	1.1E-01	2.0E-01	1.34
Heptachlor epoxide	1.4E+01	1.3E-05	1.3E-05	NI	1	0.10		9.5E-06	7.3E-01	8.7E-10				1.3E-05	1.0E+00	1.8E+00	11.98
Methoxychlor	1.4E+02	5.0E-03	5.0E-03	NI	1	0.10		9.5E-05	1.9E-02	8.7E-09				1.3E-04	2.7E-02	4.6E-02	0.31
Toxaphene	1.4E+03	NI	NI	NI	1	0.10		9.5E-04		8.7E-08				1.3E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.1E+00		1.7E-05				8.6E+00	1.5E+01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherance Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL115-2

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 Index	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)	Lifeime HQ (HQIG), unitless		
PESTICIDES/PCBs																	
Aldrin	3.4E-01	3.0E-05	3.0E-05	NI	1	0.10		2.3E-07	7.7E-03	2.1E-11				3.2E-07	1.1E-02	1.8E-02	67.97
Alpha-BHC	3.3E-02	NI	NI	NI	1	0.10		2.2E-08		2.0E-12				3.1E-08			
Beta-BHC	5.9E-03	NI	NI	NI	1	0.10		4.0E-09		3.6E-13				5.6E-09			
4,4-DDD	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
4,4-DDE	6.5E-02	NI	NI	NI	1	0.10		4.4E-08		4.0E-12				6.2E-08			
4,4-DDT	1.5E-02	5.0E-04	5.0E-04	NI	1	0.10		1.0E-08	2.0E-05	9.3E-13				1.4E-08	2.9E-05	4.9E-05	0.18
Delta-BHC	3.3E-02	NI	NI	NI	1	0.10		2.2E-08		2.0E-12				3.1E-08			
Dieldrin	8.5E-02	5.0E-05	5.0E-05	NI	1	0.10		5.7E-08	1.1E-03	5.3E-12				8.1E-08	1.6E-03	2.8E-03	10.20
Chlordane	7.0E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		4.7E-08	9.5E-05	4.3E-12	8.7E-09			6.7E-08	1.3E-04	2.3E-04	0.84
Endosulfan I	3.3E-02	6.0E-03	6.0E-03	NI	1	0.10		2.2E-08	3.7E-06	2.0E-12				3.1E-08	5.2E-06	9.0E-06	0.03
Endosulfan II	6.5E-02	6.0E-03	6.0E-03	NI	1	0.10		4.4E-08	7.3E-06	4.0E-12				6.2E-08	1.0E-05	1.8E-05	0.06
Endosulfan sulfate	6.5E-02	6.0E-03	6.0E-03	NI	1	0.10		4.4E-08	7.3E-06	4.0E-12				6.2E-08	1.0E-05	1.8E-05	0.06
Endrin	6.5E-02	3.0E-04	3.0E-04	NI	1	0.10		4.4E-08	1.5E-04	4.0E-12				6.2E-08	2.1E-04	3.5E-04	1.30
Endrin aldehyde	6.5E-02	3.0E-04	3.0E-04	NI	1	0.10		4.4E-08	1.5E-04	4.0E-12				6.2E-08	2.1E-04	3.5E-04	1.30
Endrin ketone	6.5E-02	3.0E-04	3.0E-04	NI	1	0.10		4.4E-08	1.5E-04	4.0E-12				6.2E-08	2.1E-04	3.5E-04	1.30
Gamma-BHC (Lindane)	3.3E-02	3.0E-04	3.0E-04	NI	1	0.10		2.2E-08	7.4E-05	2.0E-12				3.1E-08	1.0E-04	1.8E-04	0.66
Heptachlor	3.9E-02	5.0E-04	5.0E-04	NI	1	0.10		2.6E-08	5.3E-05	2.4E-12				3.7E-08	7.4E-05	1.3E-04	0.47
Heptachlor epoxide	3.3E-02	1.3E-05	1.3E-05	NI	1	0.10		2.2E-08	1.7E-03	2.0E-12				3.1E-08	2.4E-03	4.1E-03	15.23
Methoxychlor	3.3E-01	5.0E-03	5.0E-03	NI	1	0.10		2.2E-07	4.5E-05	2.0E-11				3.1E-07	6.3E-05	1.1E-04	0.40
Toxaphene	3.3E+00	NI	NI	NI	1	0.10		2.2E-06		2.0E-10				3.1E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-02		8.7E-09				1.6E-02	2.7E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL116-5

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 Index	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-02	3.0E-05	3.0E-05	NI	1	0.10		8.1E-09	2.7E-04	7.4E-13				1.1E-08	3.8E-04	6.5E-04	65.65
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
4,4-DDD	3.0E-03	NI	NI	NI	1	0.10		2.0E-09		1.9E-13				2.9E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	0.72
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Dieldrin	3.9E-03	5.0E-05	5.0E-05	NI	1	0.10		2.6E-09	5.3E-05	2.4E-13				3.7E-09	7.4E-05	1.3E-04	12.80
Chlordane	3.6E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.4E-09	4.8E-06	2.2E-13	4.4E-10			3.4E-09	6.8E-06	1.2E-05	1.17
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		7.8E-10	1.3E-07	7.1E-14				1.1E-09	1.8E-07	3.1E-07	0.03
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.06
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.06
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	1.20
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	1.20
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	1.20
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		7.8E-10	2.6E-06	7.1E-14				1.1E-09	3.7E-06	6.2E-06	0.63
Heptachlor	1.2E-03	5.0E-04	5.0E-04	NI	1	0.10		7.8E-10	1.6E-06	7.1E-14				1.1E-09	2.2E-06	3.7E-06	0.38
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		7.8E-10	6.0E-05	7.1E-14				1.1E-09	8.4E-05	1.4E-04	14.52
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		7.8E-09	1.6E-06	7.1E-13				1.1E-08	2.2E-06	3.7E-06	0.38
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									4.1E-04		4.4E-10				5.8E-04	9.9E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL117-6

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 Index	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-02	3.0E-05	3.0E-05	NI	1	0.10		3.8E-08	1.3E-03	3.5E-12				5.4E-08	1.8E-03	3.1E-03	66.56
Alpha-BHC	4.4E-03	NI	NI	NI	1	0.10		2.9E-09		2.7E-13				4.1E-09			
Beta-BHC	4.4E-03	NI	NI	NI	1	0.10		2.9E-09		2.7E-13				4.1E-09			
4,4-DDD	8.5E-03	NI	NI	NI	1	0.10		5.7E-09		5.3E-13				8.1E-09			
4,4-DDE	8.5E-03	NI	NI	NI	1	0.10		5.7E-09		5.3E-13				8.1E-09			
4,4-DDT	8.5E-03	5.0E-04	5.0E-04	NI	1	0.10		5.7E-09	1.1E-05	5.3E-13				8.1E-09	1.6E-05	2.8E-05	0.60
Delta-BHC	4.4E-03	NI	NI	NI	1	0.10		2.9E-09		2.7E-13				4.1E-09			
Dieldrin	2.4E-02	5.0E-05	5.0E-05	NI	1	0.10		1.6E-08	3.2E-04	1.5E-12				2.3E-08	4.6E-04	7.8E-04	16.82
Chlordane	2.7E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.8E-09	3.6E-06	1.7E-13	3.3E-10			2.6E-09	5.2E-06	8.8E-06	0.19
Endosulfan I	4.4E-03	6.0E-03	6.0E-03	NI	1	0.10		2.9E-09	4.9E-07	2.7E-13				4.1E-09	6.9E-07	1.2E-06	0.03
Endosulfan II	8.5E-03	6.0E-03	6.0E-03	NI	1	0.10		5.7E-09	9.6E-07	5.3E-13				8.1E-09	1.4E-06	2.3E-06	0.05
Endosulfan sulfate	8.5E-03	6.0E-03	6.0E-03	NI	1	0.10		5.7E-09	9.6E-07	5.3E-13				8.1E-09	1.4E-06	2.3E-06	0.05
Endrin	8.5E-03	3.0E-04	3.0E-04	NI	1	0.10		5.7E-09	1.9E-05	5.3E-13				8.1E-09	2.7E-05	4.6E-05	0.99
Endrin aldehyde	8.5E-03	3.0E-04	3.0E-04	NI	1	0.10		5.7E-09	1.9E-05	5.3E-13				8.1E-09	2.7E-05	4.6E-05	0.99
Endrin ketone	8.5E-03	3.0E-04	3.0E-04	NI	1	0.10		5.7E-09	1.9E-05	5.3E-13				8.1E-09	2.7E-05	4.6E-05	0.99
Gamma-BHC (Lindane)	4.4E-03	3.0E-04	3.0E-04	NI	1	0.10		2.9E-09	9.8E-06	2.7E-13				4.1E-09	1.4E-05	2.4E-05	0.51
Heptachlor	2.8E-03	5.0E-04	5.0E-04	NI	1	0.10		1.9E-09	3.8E-06	1.7E-13				2.7E-09	5.3E-06	9.1E-06	0.20
Heptachlor epoxide	4.4E-03	1.3E-05	1.3E-05	NI	1	0.10		2.9E-09	2.3E-04	2.7E-13				4.1E-09	3.2E-04	5.5E-04	11.72
Methoxychlor	4.4E-02	5.0E-03	5.0E-03	NI	1	0.10		2.9E-08	5.9E-06	2.7E-12				4.1E-08	8.3E-06	1.4E-05	0.30
Toxaphene	4.4E-01	NI	NI	NI	1	0.10		2.9E-07		2.7E-11				4.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.9E-03		3.3E-10				2.7E-03	4.6E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL118-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	2.0E-02	3.0E-05	3.0E-05	NI	1	0.10		1.4E-08	4.5E-04	1.2E-12				1.9E-08	6.4E-04	1.1E-03	75.52
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	3.9E-06	6.7E-06	0.46
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	4.9E-03	5.0E-05	5.0E-05	NI	1	0.10		3.3E-09	6.6E-05	3.0E-13				4.7E-09	9.3E-05	1.6E-04	11.10
Chlordane	2.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.8E-06	1.3E-13	2.6E-10			2.0E-09	4.0E-06	6.8E-06	0.48
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.02
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.04
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.04
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	0.77
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	0.77
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	0.77
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	0.40
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.24
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	9.15
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.24
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.0E-04		2.6E-10				8.4E-04	1.4E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL119-2

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 Index	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	3.0E-02	3.0E-05	3.0E-05	NI	1	0.10		2.0E-08	6.8E-04	1.9E-12				2.9E-08	9.5E-04	1.6E-03	63.40
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	2.7E-03	NI	NI	NI	1	0.10		1.8E-09		1.7E-13				2.6E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	6.4E-03	5.0E-04	5.0E-04	NI	1	0.10		4.3E-09	8.6E-06	4.0E-13				6.1E-09	1.2E-05	2.1E-05	0.81
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	2.2E-02	5.0E-05	5.0E-05	NI	1	0.10		1.5E-08	3.0E-04	1.4E-12				2.1E-08	4.2E-04	7.2E-04	27.89
Chlordane	5.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.4E-09	6.8E-06	3.1E-13	6.2E-10			4.8E-09	9.5E-06	1.6E-05	0.63
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.01
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.02
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.02
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.44
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.44
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.44
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	0.23
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.4E-10	1.5E-06	6.8E-14				1.0E-09	2.1E-06	3.6E-06	0.14
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.4E-10	5.7E-05	6.8E-14				1.0E-09	8.1E-05	1.4E-04	5.36
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.14
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-03		6.2E-10				1.5E-03	2.6E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL120-2

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 Index	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	5.0E-03	3.0E-05	3.0E-05	NI	1	0.10		3.4E-09	1.1E-04	3.1E-13				4.8E-09	1.6E-04	2.7E-04	49.58
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	1.19
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.6E-03	5.0E-05	5.0E-05	NI	1	0.10		1.8E-09	3.5E-05	1.6E-13				2.5E-09	5.0E-05	8.5E-05	15.47
Chlordane	2.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.8E-06	1.3E-13	2.6E-10			2.0E-09	4.0E-06	6.8E-06	1.25
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.05
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.10
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.10
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	1.98
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	1.98
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	1.98
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	1.04
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.62
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	24.03
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.62
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.3E-04		2.6E-10				3.2E-04	5.5E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL121-1

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 Index	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-01	3.0E-05	3.0E-05	NI	1	0.10		1.1E-07	3.6E-03	9.9E-12				1.5E-07	5.1E-03	8.7E-03	67.30
Alpha-BHC	1.2E-02	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Beta-BHC	1.2E-02	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
4,4-DDD	2.3E-02	NI	NI	NI	1	0.10		1.6E-08		1.4E-12				2.2E-08			
4,4-DDE	2.3E-02	NI	NI	NI	1	0.10		1.6E-08		1.4E-12				2.2E-08			
4,4-DDT	2.5E-03	5.0E-04	5.0E-04	NI	1	0.10		1.7E-09	3.4E-06	1.5E-13				2.4E-09	4.8E-06	8.1E-06	0.06
Delta-BHC	1.2E-02	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
Dieldrin	6.9E-02	5.0E-05	5.0E-05	NI	1	0.10		4.7E-08	9.3E-04	4.3E-12				6.6E-08	1.3E-03	2.2E-03	17.41
Chlordane	1.0E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		6.8E-09	1.4E-05	6.2E-13	1.2E-09			9.5E-09	1.9E-05	3.3E-05	0.25
Endosulfan I	1.3E-03	6.0E-03	6.0E-03	NI	1	0.10		8.8E-10	1.5E-07	8.0E-14				1.2E-09	2.1E-07	3.5E-07	0.00
Endosulfan II	2.3E-02	6.0E-03	6.0E-03	NI	1	0.10		1.6E-08	2.6E-06	1.4E-12				2.2E-08	3.7E-06	6.2E-06	0.05
Endosulfan sulfate	2.3E-02	6.0E-03	6.0E-03	NI	1	0.10		1.6E-08	2.6E-06	1.4E-12				2.2E-08	3.7E-06	6.2E-06	0.05
Endrin	2.3E-02	3.0E-04	3.0E-04	NI	1	0.10		1.6E-08	5.2E-05	1.4E-12				2.2E-08	7.3E-05	1.2E-04	0.97
Endrin aldehyde	2.3E-02	3.0E-04	3.0E-04	NI	1	0.10		1.6E-08	5.2E-05	1.4E-12				2.2E-08	7.3E-05	1.2E-04	0.97
Endrin ketone	4.8E-03	3.0E-04	3.0E-04	NI	1	0.10		3.2E-09	1.1E-05	3.0E-13				4.6E-09	1.5E-05	2.6E-05	0.20
Gamma-BHC (Lindane)	1.2E-02	3.0E-04	3.0E-04	NI	1	0.10		8.1E-09	2.7E-05	7.4E-13				1.1E-08	3.8E-05	6.5E-05	0.50
Heptachlor	1.1E-02	5.0E-04	5.0E-04	NI	1	0.10		7.4E-09	1.5E-05	6.8E-13				1.0E-08	2.1E-05	3.6E-05	0.28
Heptachlor epoxide	1.2E-02	1.3E-05	1.3E-05	NI	1	0.10		8.1E-09	6.2E-04	7.4E-13				1.1E-08	8.8E-04	1.5E-03	11.65
Methoxychlor	1.2E-01	5.0E-03	5.0E-03	NI	1	0.10		8.1E-08	1.6E-05	7.4E-12				1.1E-07	2.3E-05	3.9E-05	0.30
Toxaphene	1.2E+00	NI	NI	NI	1	0.10		8.1E-07		7.4E-11				1.1E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.3E-03		1.2E-09				7.6E-03	1.3E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL122-5

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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-02	3.0E-05	3.0E-05	NI	1	0.10		5.1E-08	1.7E-03	4.7E-12				7.2E-08	2.4E-03	4.1E-03	73.41
Alpha-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Beta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
4,4-DDD	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
4,4-DDE	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
4,4-DDT	1.1E-02	5.0E-04	5.0E-04	NI	1	0.10		7.4E-09	1.5E-05	6.8E-13				1.0E-08	2.1E-05	3.6E-05	0.64
Delta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Dieldrin	1.5E-02	5.0E-05	5.0E-05	NI	1	0.10		1.0E-08	2.0E-04	9.3E-13				1.4E-08	2.9E-04	4.9E-04	8.69
Chlordane	1.1E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.4E-09	1.5E-05	6.8E-13	1.4E-09			1.0E-08	2.1E-05	3.6E-05	0.64
Endosulfan I	2.1E-02	6.0E-03	6.0E-03	NI	1	0.10		1.4E-08	2.4E-06	1.3E-12				2.0E-08	3.3E-06	5.7E-06	0.10
Endosulfan II	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.4E-09	1.2E-06	6.8E-13				1.0E-08	1.7E-06	3.0E-06	0.05
Endosulfan sulfate	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.4E-09	1.2E-06	6.8E-13				1.0E-08	1.7E-06	3.0E-06	0.05
Endrin	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.4E-09	2.5E-05	6.8E-13				1.0E-08	3.5E-05	6.0E-05	1.06
Endrin aldehyde	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.4E-09	2.5E-05	6.8E-13				1.0E-08	3.5E-05	6.0E-05	1.06
Endrin ketone	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.4E-09	2.5E-05	6.8E-13				1.0E-08	3.5E-05	6.0E-05	1.06
Gamma-BHC (Lindane)	5.5E-03	3.0E-04	3.0E-04	NI	1	0.10		3.7E-09	1.2E-05	3.4E-13				5.2E-09	1.7E-05	3.0E-05	0.53
Heptachlor	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	0.12
Heptachlor epoxide	5.5E-03	1.3E-05	1.3E-05	NI	1	0.10		3.7E-09	2.9E-04	3.4E-13				5.2E-09	4.0E-04	6.9E-04	12.26
Methoxychlor	5.5E-02	5.0E-03	5.0E-03	NI	1	0.10		3.7E-08	7.4E-06	3.4E-12				5.2E-08	1.0E-05	1.8E-05	0.32
Toxaphene	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.3E-03		1.4E-09				3.3E-03	5.6E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL123-5

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 Index	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-02	3.0E-05	3.0E-05	NI	1	0.10		3.0E-08	9.9E-04	2.7E-12				4.2E-08	1.4E-03	2.4E-03	71.09
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
4,4-DDD	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	0.21
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Dieldrin	2.3E-02	5.0E-05	5.0E-05	NI	1	0.10		1.6E-08	3.1E-04	1.4E-12				2.2E-08	4.4E-04	7.5E-04	22.30
Chlordane	3.7E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.5E-09	4.9E-06	2.3E-13	4.5E-10			3.5E-09	7.0E-06	1.2E-05	0.35
Endosulfan I	1.8E-03	6.0E-03	6.0E-03	NI	1	0.10		1.2E-09	2.0E-07	1.1E-13				1.7E-09	2.9E-07	4.9E-07	0.01
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.02
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.02
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.36
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.36
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.36
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		7.8E-10	2.6E-06	7.1E-14				1.1E-09	3.7E-06	6.2E-06	0.19
Heptachlor	3.5E-03	5.0E-04	5.0E-04	NI	1	0.10		2.4E-09	4.7E-06	2.2E-13				3.3E-09	6.7E-06	1.1E-05	0.34
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		7.8E-10	6.0E-05	7.1E-14				1.1E-09	8.4E-05	1.4E-04	4.29
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		7.8E-09	1.6E-06	7.1E-13				1.1E-08	2.2E-06	3.7E-06	0.11
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD	1.2E-06				1	0.10		8.1E-13		7.4E-17				1.1E-12			
No samples collected																	
Total Noncancer Hazard									1.4E-03		4.5E-10				2.0E-03	3.4E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL124-5

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 (HOD), unitless	Volatile Inhalation from soil dust: Amount Inhaled (IDIS), (mg/kg-d)	Volatile Inhalation from soil dust: Lifetime HQ (HOIS), unitless	Volatile Inhalation from volatiles: Amount Inhaled (IDIV), (mg/kg-d)	Volatile Inhalation from volatiles: Lifetime HQ (HOIV), unitless	Ingestion: Amount Ingested (IDIG), (mg/kg-d)	Ingestion: Lifetime HQ (HOIG), unitless	Total Hazard Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.0E-02	3.0E-05	3.0E-05	NI	1	0.10		1.4E-08	4.5E-04	1.2E-12				1.9E-08	6.4E-04	1.1E-03	56.52
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
4,4-DDD	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	0.37
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Dieldrin	1.9E-02	5.0E-05	5.0E-05	NI	1	0.10		1.3E-08	2.6E-04	1.2E-12				1.8E-08	3.6E-04	6.2E-04	32.22
Chlordane	4.3E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.9E-09	5.8E-06	2.7E-13	5.3E-10			4.1E-09	8.2E-06	1.4E-05	0.73
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		7.8E-10	1.3E-07	7.1E-14				1.1E-09	1.8E-07	3.1E-07	0.02
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.03
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.03
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.62
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.62
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.62
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		7.8E-10	2.6E-06	7.1E-14				1.1E-09	3.7E-06	6.2E-06	0.33
Heptachlor	1.2E-03	5.0E-04	5.0E-04	NI	1	0.10		7.8E-10	1.6E-06	7.1E-14				1.1E-09	2.2E-06	3.7E-06	0.20
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		7.8E-10	6.0E-05	7.1E-14				1.1E-09	8.4E-05	1.4E-04	7.50
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		7.8E-09	1.6E-06	7.1E-13				1.1E-08	2.2E-06	3.7E-06	0.20
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD	1.2E-06				1	0.10		8.1E-13		7.4E-17				1.1E-12			
No samples collected																	
Total Noncancer Hazard									8.0E-04		5.3E-10				1.1E-03	1.9E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HOD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HOIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL125-5

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 Index	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-01	3.0E-05	3.0E-05	NI	1	0.10		6.1E-07	2.0E-02	5.6E-11				8.6E-07	2.9E-02	4.9E-02	65.67
Alpha-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
Beta-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
4,4-DDD	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDE	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.4E-11				2.1E-07			
4,4-DDT	2.2E-01	5.0E-04	5.0E-04	NI	1	0.10		1.5E-07	3.0E-04	1.4E-11				2.1E-07	4.2E-04	7.2E-04	0.98
Delta-BHC	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
Dieldrin	1.4E-01	5.0E-05	5.0E-05	NI	1	0.10		9.5E-08	1.9E-03	8.7E-12				1.3E-07	2.7E-03	4.6E-03	6.13
Chlordane	2.3E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-07	3.1E-04	1.4E-11	2.8E-08			2.2E-07	4.4E-04	7.5E-04	1.01
Endosulfan I	1.2E-01	6.0E-03	6.0E-03	NI	1	0.10		7.8E-08	1.3E-05	7.1E-12				1.1E-07	1.8E-05	3.1E-05	0.04
Endosulfan II	2.2E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.5E-05	6.0E-05	0.08
Endosulfan sulfate	2.2E-01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-07	2.5E-05	1.4E-11				2.1E-07	3.5E-05	6.0E-05	0.08
Endrin	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	1.61
Endrin aldehyde	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	1.61
Endrin ketone	2.2E-01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-07	5.0E-04	1.4E-11				2.1E-07	7.0E-04	1.2E-03	1.61
Gamma-BHC (Lindane)	1.2E-01	3.0E-04	3.0E-04	NI	1	0.10		7.8E-08	2.6E-04	7.1E-12				1.1E-07	3.7E-04	6.2E-04	0.84
Heptachlor	1.2E-01	5.0E-04	5.0E-04	NI	1	0.10		7.8E-08	1.6E-04	7.1E-12				1.1E-07	2.2E-04	3.7E-04	0.50
Heptachlor epoxide	1.2E-01	1.3E-05	1.3E-05	NI	1	0.10		7.8E-08	6.0E-03	7.1E-12				1.1E-07	8.4E-03	1.4E-02	19.36
Methoxychlor	1.2E+00	5.0E-03	5.0E-03	NI	1	0.10		7.8E-07	1.6E-04	7.1E-11				1.1E-06	2.2E-04	3.7E-04	0.50
Toxaphene	1.2E+01	NI	NI	NI	1	0.10		7.8E-06		7.1E-10				1.1E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.1E-02		2.8E-08				4.4E-02	7.4E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL126-4

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 Index	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	3.6E-02	3.0E-05	3.0E-05	NI	1	0.10		2.4E-08	8.1E-04	2.2E-12				3.4E-08	1.1E-03	2.0E-03	68.57
Alpha-BHC	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.3E-13				2.1E-09			
Beta-BHC	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.3E-13				2.1E-09			
4,4-DDD	4.8E-03	NI	NI	NI	1	0.10		3.2E-09		3.0E-13				4.6E-09			
4,4-DDE	4.2E-03	NI	NI	NI	1	0.10		2.8E-09		2.6E-13				4.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	4.0E-06	6.8E-06	0.24
Delta-BHC	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.3E-13				2.1E-09			
Dieldrin	1.5E-02	5.0E-05	5.0E-05	NI	1	0.10		1.0E-08	2.0E-04	9.3E-13				1.4E-08	2.9E-04	4.9E-04	17.14
Chlordane	1.0E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.0E-09	1.4E-05	6.4E-13	1.3E-09			9.9E-09	2.0E-05	3.4E-05	1.19
Endosulfan I	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.4E-07	1.3E-13				2.1E-09	3.4E-07	5.8E-07	0.02
Endosulfan II	4.2E-03	6.0E-03	6.0E-03	NI	1	0.10		2.8E-09	4.7E-07	2.6E-13				4.0E-09	6.7E-07	1.1E-06	0.04
Endosulfan sulfate	4.2E-03	6.0E-03	6.0E-03	NI	1	0.10		2.8E-09	4.7E-07	2.6E-13				4.0E-09	6.7E-07	1.1E-06	0.04
Endrin	4.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.8E-09	9.5E-06	2.6E-13				4.0E-09	1.3E-05	2.3E-05	0.80
Endrin aldehyde	4.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.8E-09	9.5E-06	2.6E-13				4.0E-09	1.3E-05	2.3E-05	0.80
Endrin ketone	4.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.8E-09	9.5E-06	2.6E-13				4.0E-09	1.3E-05	2.3E-05	0.80
Gamma-BHC (Lindane)	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	4.8E-06	1.3E-13				2.1E-09	6.8E-06	1.2E-05	0.41
Heptachlor	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	0.25
Heptachlor epoxide	2.2E-03	1.3E-05	1.3E-05	NI	1	0.10		1.5E-09	1.1E-04	1.3E-13				2.1E-09	1.6E-04	2.7E-04	9.45
Methoxychlor	2.2E-02	5.0E-03	5.0E-03	NI	1	0.10		1.5E-08	2.9E-06	1.3E-12				2.1E-08	4.1E-06	7.0E-06	0.25
Toxaphene	2.2E-01	NI	NI	NI	1	0.10		1.5E-07		1.3E-11				2.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-03		1.3E-09				1.7E-03	2.9E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL127-5

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	NI	1	0.10		7.1E-10	2.4E-05	6.5E-14				1.0E-09	3.3E-05	5.7E-05	16.52
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	3.9E-06	6.7E-06	1.94
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.9E-03	5.0E-05	5.0E-05	NI	1	0.10		2.0E-09	3.9E-05	1.8E-13				2.8E-09	5.5E-05	9.4E-05	27.38
Chlordane	2.5E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.7E-09	3.3E-06	1.5E-13	3.0E-10			2.3E-09	4.7E-06	8.0E-06	2.31
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.08
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.16
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.16
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	3.23
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	3.23
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	3.23
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	1.65
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.99
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	38.13
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.99
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD	2.5E-06				1	0.10		1.7E-12		1.5E-16				2.4E-12			
No samples collected																	
Total Noncancer Hazard									1.4E-04		3.0E-10				2.0E-04	3.5E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^3/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: SL128-7

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 Index	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	5.1E-03	3.0E-05	3.0E-05	NI	1	0.10		3.4E-09	1.1E-04	3.2E-13				4.9E-09	1.6E-04	2.8E-04	52.68
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	1.21
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.7E-05	1.2E-13				1.9E-09	3.8E-05	6.5E-05	12.40
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	1.24
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.05
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.10
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.10
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.01
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.01
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.01
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.03
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.4E-10	1.5E-06	6.8E-14				1.0E-09	2.1E-06	3.6E-06	0.68
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	23.84
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.62
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.2E-04		2.5E-10				3.1E-04	5.3E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL129-5

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 Index	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	2.0E-02	3.0E-05	3.0E-05	NI	1	0.10		1.4E-08	4.5E-04	1.2E-12				1.9E-08	6.4E-04	1.1E-03	18.23
Alpha-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Beta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
4,4-DDD	1.0E-02	NI	NI	NI	1	0.10		6.8E-09		6.2E-13				9.5E-09			
4,4-DDE	1.8E-02	NI	NI	NI	1	0.10		1.2E-08		1.1E-12				1.7E-08			
4,4-DDT	5.9E-02	5.0E-04	5.0E-04	NI	1	0.10		4.0E-08	8.0E-05	3.6E-12				5.6E-08	1.1E-04	1.9E-04	3.23
Delta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Dieldrin	9.5E-02	5.0E-05	5.0E-05	NI	1	0.10		6.4E-08	1.3E-03	5.9E-12				9.1E-08	1.8E-03	3.1E-03	51.95
Chlordane	1.4E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		9.2E-08	1.8E-04	8.5E-12	1.7E-08			1.3E-07	2.6E-04	4.5E-04	7.49
Endosulfan I	5.5E-03	6.0E-03	6.0E-03	NI	1	0.10		3.7E-09	6.2E-07	3.4E-13				5.2E-09	8.7E-07	1.5E-06	0.03
Endosulfan II	7.8E-03	6.0E-03	6.0E-03	NI	1	0.10		5.3E-09	8.8E-07	4.8E-13				7.4E-09	1.2E-06	2.1E-06	0.04
Endosulfan sulfate	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.1E-09	1.2E-06	6.5E-13				1.0E-08	1.7E-06	2.9E-06	0.05
Endrin	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.1E-09	2.4E-05	6.5E-13				1.0E-08	3.3E-05	5.7E-05	0.96
Endrin aldehyde	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.1E-09	2.4E-05	6.5E-13				1.0E-08	3.3E-05	5.7E-05	0.96
Endrin ketone	6.4E-03	3.0E-04	3.0E-04	NI	1	0.10		4.3E-09	1.4E-05	4.0E-13				6.1E-09	2.0E-05	3.5E-05	0.58
Gamma-BHC (Lindane)	5.5E-03	3.0E-04	3.0E-04	NI	1	0.10		3.7E-09	1.2E-05	3.4E-13				5.2E-09	1.7E-05	3.0E-05	0.50
Heptachlor	4.1E-02	5.0E-04	5.0E-04	NI	1	0.10		2.8E-08	5.5E-05	2.5E-12				3.9E-08	7.8E-05	1.3E-04	2.24
Heptachlor epoxide	6.4E-03	1.3E-05	1.3E-05	NI	1	0.10		4.3E-09	3.3E-04	4.0E-13				6.1E-09	4.7E-04	8.0E-04	13.46
Methoxychlor	5.5E-02	5.0E-03	5.0E-03	NI	1	0.10		3.7E-08	7.4E-06	3.4E-12				5.2E-08	1.0E-05	1.8E-05	0.30
Toxaphene	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD	2.7E-04				1	0.10		1.8E-10		1.7E-14				2.6E-10			
No samples collected																	
Total Noncancer Hazard									2.5E-03		1.7E-08				3.5E-03	6.0E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL130-2

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 Index	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	NI	1	0.10		8.1E-10	2.7E-05	7.4E-14				1.1E-09	3.8E-05	6.5E-05	18.03
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
4,4-DDD	2.3E-03	NI	NI	NI	1	0.10		1.6E-09		1.4E-13				2.2E-09			
4,4-DDE	2.3E-03	NI	NI	NI	1	0.10		1.6E-09		1.4E-13				2.2E-09			
4,4-DDT	2.3E-03	5.0E-04	5.0E-04	NI	1	0.10		1.6E-09	3.1E-06	1.4E-13				2.2E-09	4.4E-06	7.5E-06	2.07
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
Dieldrin	2.3E-03	5.0E-05	5.0E-05	NI	1	0.10		1.6E-09	3.1E-05	1.4E-13				2.2E-09	4.4E-05	7.5E-05	20.73
Chlordane	2.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-09	3.2E-06	1.5E-13	3.0E-10			2.3E-09	4.6E-06	7.8E-06	2.16
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		8.1E-10	1.4E-07	7.4E-14				1.1E-09	1.9E-07	3.3E-07	0.09
Endosulfan II	2.3E-03	6.0E-03	6.0E-03	NI	1	0.10		1.6E-09	2.6E-07	1.4E-13				2.2E-09	3.7E-07	6.2E-07	0.17
Endosulfan sulfate	2.3E-03	6.0E-03	6.0E-03	NI	1	0.10		1.6E-09	2.6E-07	1.4E-13				2.2E-09	3.7E-07	6.2E-07	0.17
Endrin	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	3.46
Endrin aldehyde	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	3.46
Endrin ketone	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	3.46
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		8.1E-10	2.7E-06	7.4E-14				1.1E-09	3.8E-06	6.5E-06	1.80
Heptachlor	1.9E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.8E-09	3.8E-06	6.2E-06	1.71
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		8.1E-10	6.2E-05	7.4E-14				1.1E-09	8.8E-05	1.5E-04	41.60
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		8.1E-09	1.6E-06	7.4E-13				1.1E-08	2.3E-06	3.9E-06	1.08
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		8.1E-08		7.4E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No sample collected																	
Total Noncancer Hazard									1.5E-04		3.0E-10				2.1E-04	3.6E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL131-2

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 Index	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	2.1E-01	3.0E-05	3.0E-05	NI	1	0.10		1.4E-07	4.7E-03	1.3E-11				2.0E-07	6.7E-03	1.1E-02	64.34
Alpha-BHC	2.2E-02	NI	NI	NI	1	0.10		1.5E-08		1.3E-12				2.1E-08			
Beta-BHC	2.2E-02	NI	NI	NI	1	0.10		1.5E-08		1.3E-12				2.1E-08			
4,4-DDD	1.2E-02	NI	NI	NI	1	0.10		8.1E-09		7.4E-13				1.1E-08			
4,4-DDE	5.1E-03	NI	NI	NI	1	0.10		3.4E-09		3.2E-13				4.9E-09			
4,4-DDT	6.5E-03	5.0E-04	5.0E-04	NI	1	0.10		4.4E-09	8.8E-06	4.0E-13				6.2E-09	1.2E-05	2.1E-05	0.12
Delta-BHC	2.2E-02	NI	NI	NI	1	0.10		1.5E-08		1.3E-12				2.1E-08			
Dieldrin	7.5E-02	5.0E-05	5.0E-05	NI	1	0.10		5.1E-08	1.0E-03	4.6E-12				7.2E-08	1.4E-03	2.4E-03	13.79
Chlordane	7.9E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.3E-08	1.1E-04	4.9E-12	9.8E-09			7.5E-08	1.5E-04	2.6E-04	1.45
Endosulfan I	2.2E-02	6.0E-03	6.0E-03	NI	1	0.10		1.5E-08	2.4E-06	1.3E-12				2.1E-08	3.4E-06	5.8E-06	0.03
Endosulfan II	4.2E-02	6.0E-03	6.0E-03	NI	1	0.10		2.8E-08	4.7E-06	2.6E-12				4.0E-08	6.6E-06	1.1E-05	0.06
Endosulfan sulfate	4.2E-02	6.0E-03	6.0E-03	NI	1	0.10		2.8E-08	4.7E-06	2.6E-12				4.0E-08	6.6E-06	1.1E-05	0.06
Endrin	4.2E-02	3.0E-04	3.0E-04	NI	1	0.10		2.8E-08	9.3E-05	2.6E-12				4.0E-08	1.3E-04	2.3E-04	1.27
Endrin aldehyde	4.2E-02	3.0E-04	3.0E-04	NI	1	0.10		2.8E-08	9.3E-05	2.6E-12				4.0E-08	1.3E-04	2.3E-04	1.27
Endrin ketone	4.2E-02	3.0E-04	3.0E-04	NI	1	0.10		2.8E-08	9.3E-05	2.6E-12				4.0E-08	1.3E-04	2.3E-04	1.27
Gamma-BHC (Lindane)	2.2E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	4.8E-05	1.3E-12				2.1E-08	6.8E-05	1.2E-04	0.66
Heptachlor	4.0E-03	5.0E-04	5.0E-04	NI	1	0.10		2.7E-09	5.4E-06	2.5E-13				3.8E-09	7.6E-06	1.3E-05	0.07
Heptachlor epoxide	2.2E-02	1.3E-05	1.3E-05	NI	1	0.10		1.5E-08	1.1E-03	1.3E-12				2.1E-08	1.6E-03	2.7E-03	15.20
Methoxychlor	2.2E-01	5.0E-03	5.0E-03	NI	1	0.10		1.5E-07	2.9E-05	1.3E-11				2.1E-07	4.1E-05	7.0E-05	0.40
Toxaphene	2.2E+00	NI	NI	NI	1	0.10		1.5E-06		1.3E-10				2.1E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
Total Noncancer Hazard									7.3E-03		9.8E-09				1.0E-02	1.8E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL132-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	17.88
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	2.15
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.7E-05	1.2E-13				1.9E-09	3.8E-05	6.5E-05	21.46
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.15
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.58
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.58
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	3.58
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.79
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.07
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.26
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.07
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
Total Noncancer Hazard									1.3E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
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: SL133-2

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 Index	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	2.5E-03	3.0E-05	3.0E-05	NI	1	0.10		1.7E-09	5.6E-05	1.5E-13				2.4E-09	7.9E-05	1.4E-04	35.01
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	1.64
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	16.39
Chlordane	2.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-09	3.2E-06	1.5E-13	3.0E-10			2.3E-09	4.6E-06	7.8E-06	2.02
Endosulfan I	*1.0E-03*	*6.0E-03*	*6.0E-03*	*NI*	*1*	*0.10*		*6.8E-10*	*1.1E-07*	*6.2E-14*				*9.5E-10*	*1.6E-07*	*2.7E-07*	*0.07*
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.14
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.14
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.73
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.73
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	2.73
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.40
Heptachlor	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	1.85
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	32.32
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.84
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.6E-04		3.0E-10				2.3E-04	3.9E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL134-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.08
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL135-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	16.51
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	1.93
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.8E-03	5.0E-05	5.0E-05	NI	1	0.10		1.9E-09	3.8E-05	1.7E-13				2.7E-09	5.3E-05	9.1E-05	27.74
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	1.98
Endosulfan I	1.4E-03	6.0E-03	6.0E-03	NI	1	0.10		9.5E-10	1.6E-07	8.7E-14				1.3E-09	2.2E-07	3.8E-07	0.12
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.16
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.16
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.22
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.22
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.22
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.65
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	0.99
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	38.10
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.99
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E-04		2.5E-10				1.9E-04	3.3E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL136-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.06
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.82
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.06
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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, FtIG (unitless)	1
Fraction Inhaled, FtIV (unitless)	1
Inhalation Rate, IR (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL137-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.08
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL138-1

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.08
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL139-1

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.06
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.06
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL140-1

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.0E-03	3.0E-05	3.0E-05	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.06
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL141-1

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 Index	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	2.1E-02	3.0E-05	3.0E-05	NI	1	0.10		1.4E-08	4.7E-04	1.3E-12				2.0E-08	6.7E-04	1.1E-03	56.39
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	7.8E-03	5.0E-04	5.0E-04	NI	1	0.10		5.3E-09	1.1E-05	4.8E-13				7.4E-09	1.5E-05	2.5E-05	1.26
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-02	5.0E-05	5.0E-05	NI	1	0.10		1.4E-08	2.7E-04	1.2E-12				1.9E-08	3.8E-04	6.5E-04	32.22
Chlordane	1.1E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.2E-09	1.4E-05	6.6E-13	1.3E-09			1.0E-08	2.0E-05	3.5E-05	1.71
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.01
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.03
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.03
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	0.27
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	0.16
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	6.20
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.16
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									8.4E-04		1.3E-09				1.2E-03	2.0E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL142-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	16.85
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	1.5E-02	NI	NI	NI	1	0.10		1.0E-08		9.3E-13				1.4E-08			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	1.97
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.6E-03	5.0E-05	5.0E-05	NI	1	0.10		1.8E-09	3.5E-05	1.6E-13				2.5E-09	5.0E-05	8.5E-05	26.29
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.02
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.08
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.16
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.16
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.29
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.29
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.29
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.69
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.01
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	38.69
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.01
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-04		2.5E-10				1.9E-04	3.2E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL143-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.06
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.06
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL144-2

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 Index	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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	17.67
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.07
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.1E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.8E-05	1.3E-13				2.0E-09	4.0E-05	6.8E-05	22.27
Chlordane	2.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-09	3.2E-06	1.5E-13	3.0E-10			2.3E-09	4.6E-06	7.8E-06	2.55
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.17
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.17
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.45
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.45
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.45
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.77
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.06
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	40.78
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.06
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.3E-04		3.0E-10				1.8E-04	3.1E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL145-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HQO), 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	NI	1	0.10		6.8E-10	2.3E-05	6.2E-14				9.5E-10	3.2E-05	5.4E-05	18.04
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.3E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-09	2.6E-06	1.2E-13				1.9E-09	3.7E-06	6.4E-06	2.11
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	21.10
Chlordane	2.0E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.7E-06	1.2E-13	2.5E-10			1.9E-09	3.8E-06	6.5E-06	2.16
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.09
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.18
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	3.52
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	1.80
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	1.08
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	41.62
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	1.08
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-04		2.5E-10				1.8E-04	3.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL146-1

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HOD), 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	NI	1	0.10		7.1E-10	2.4E-05	6.5E-14				1.0E-09	3.3E-05	5.7E-05	9.74
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	3.9E-06	6.7E-06	1.14
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.1E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.8E-05	1.3E-13				2.0E-09	3.9E-05	6.7E-05	11.40
Chlordane	2.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.8E-06	1.3E-13	2.6E-10			2.0E-09	4.0E-06	6.8E-06	1.17
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.05
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.10
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.3E-13				2.0E-09	3.3E-07	5.6E-07	0.10
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	1.90
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	1.90
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.6E-06	1.3E-13				2.0E-09	6.5E-06	1.1E-05	1.90
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	0.97
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.58
Heptachlor epoxide	3.2E-03	1.3E-05	1.3E-05	NI	1	0.10		2.2E-09	1.7E-04	2.0E-13				3.1E-09	2.3E-04	4.0E-04	68.47
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-06	2.0E-06	3.4E-06	0.58
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.4E-04		2.6E-10				3.4E-04	5.9E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL147-2

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 Index	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	3.0E-02	3.0E-05	3.0E-05	NI	1	0.10		2.0E-08	6.8E-04	1.9E-12				2.9E-08	9.5E-04	1.6E-03	18.34
Alpha-BHC	1.2E-02	NI	NI	NI	1	0.10		7.8E-09		7.1E-13				1.1E-08			
Beta-BHC	1.2E-02	NI	NI	NI	1	0.10		7.8E-09		7.1E-13				1.1E-08			
4,4-DDD	6.0E-02	NI	NI	NI	1	0.10		4.1E-08		3.7E-12				5.7E-08			
4,4-DDE	4.9E-03	NI	NI	NI	1	0.10		3.3E-09		3.0E-13				4.7E-09			
4,4-DDT	4.7E-03	5.0E-04	5.0E-04	NI	1	0.10		3.2E-09	6.3E-06	2.9E-13				4.5E-09	9.0E-06	1.5E-05	0.17
Delta-BHC	1.2E-02	NI	NI	NI	1	0.10		7.8E-09		7.1E-13				1.1E-08			
Dieldrin	1.4E-01	5.0E-05	5.0E-05	NI	1	0.10		9.5E-08	1.9E-03	8.7E-12				1.3E-07	2.7E-03	4.6E-03	51.35
Chlordane	2.1E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-08	2.9E-05	1.3E-12	2.6E-09			2.0E-08	4.0E-05	6.9E-05	0.78
Endosulfan I	3.6E-03	6.0E-03	6.0E-03	NI	1	0.10		2.4E-09	4.1E-07	2.2E-13				3.4E-09	5.7E-07	9.8E-07	0.01
Endosulfan II	3.1E-03	6.0E-03	6.0E-03	NI	1	0.10		2.1E-09	3.5E-07	1.9E-13				3.0E-09	4.9E-07	8.4E-07	0.01
Endosulfan sulfate	2.3E-02	6.0E-03	6.0E-03	NI	1	0.10		1.5E-08	2.5E-06	1.4E-12				2.1E-08	3.6E-06	6.1E-06	0.07
Endrin	2.3E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	5.1E-05	1.4E-12				2.1E-08	7.2E-05	1.2E-04	1.38
Endrin aldehyde	2.3E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	5.1E-05	1.4E-12				2.1E-08	7.2E-05	1.2E-04	1.38
Endrin ketone	2.3E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	5.1E-05	1.4E-12				2.1E-08	7.2E-05	1.2E-04	1.38
Gamma-BHC (Lindane)	1.2E-02	3.0E-04	3.0E-04	NI	1	0.10		7.8E-09	2.6E-05	7.1E-13				1.1E-08	3.7E-05	6.2E-05	0.70
Heptachlor	1.2E-03	5.0E-04	5.0E-04	NI	1	0.10		8.1E-10	1.6E-06	7.4E-14				1.1E-09	2.3E-06	3.9E-06	0.04
Heptachlor epoxide	1.7E-02	1.3E-05	1.3E-05	NI	1	0.10		1.1E-08	8.8E-04	1.1E-12				1.6E-08	1.2E-03	2.1E-03	23.98
Methoxychlor	1.2E-01	5.0E-03	5.0E-03	NI	1	0.10		7.8E-08	1.6E-05	7.1E-12				1.1E-07	2.2E-05	3.7E-05	0.42
Toxaphene	1.2E+00	NI	NI	NI	1	0.10		7.8E-07		7.1E-11				1.1E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.7E-03		2.6E-09				5.2E-03	6.9E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL149-2

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 Index	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	1.4E-03	3.0E-05	3.0E-05	NI	1	0.10		9.5E-10	3.2E-05	8.7E-14				1.3E-09	4.5E-05	7.6E-05	20.71
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
4,4-DDD	2.0E-02	NI	NI	NI	1	0.10		1.4E-08		1.2E-12				1.9E-08			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	2.2E-03	5.0E-04	5.0E-04	NI	1	0.10		1.5E-09	3.0E-06	1.4E-13				2.1E-09	4.2E-06	7.2E-06	1.95
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Dieldrin	2.2E-03	5.0E-05	5.0E-05	NI	1	0.10		1.5E-09	3.0E-05	1.4E-13				2.1E-09	4.2E-05	7.2E-05	19.53
Chlordane	5.2E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.5E-09	7.0E-06	3.2E-13	6.4E-10			5.0E-09	9.9E-06	1.7E-05	4.62
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		7.8E-10	1.3E-07	7.1E-14				1.1E-09	1.8E-07	3.1E-07	0.09
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.16
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.16
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	3.26
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	3.26
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	3.26
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		7.8E-10	2.6E-06	7.1E-14				1.1E-09	3.7E-06	6.2E-06	1.70
Heptachlor	1.2E-03	5.0E-04	5.0E-04	NI	1	0.10		7.8E-10	1.6E-06	7.1E-14				1.1E-09	2.2E-06	3.7E-06	1.02
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		7.8E-10	6.0E-05	7.1E-14				1.1E-09	8.4E-05	1.4E-04	39.27
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		7.8E-09	1.6E-06	7.1E-13				1.1E-08	2.2E-06	3.7E-06	1.02
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E-04		6.4E-10				2.1E-04	3.7E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL150-1

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 Index	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	6.7E-03	3.0E-05	3.0E-05	NI	1	0.10		4.5E-09	1.5E-04	4.1E-13				6.4E-09	2.1E-04	3.6E-04	30.30
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
4,4-DDD	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	5.0E-03	5.0E-04	5.0E-04	NI	1	0.10		3.4E-09	6.8E-06	3.1E-13				4.8E-09	9.5E-06	1.6E-05	1.36
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		7.8E-10		7.1E-14				1.1E-09			
Dieldrin	1.8E-02	5.0E-05	5.0E-05	NI	1	0.10		1.2E-08	2.4E-04	1.1E-12				1.7E-08	3.4E-04	5.9E-04	48.84
Chlordane	9.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		6.1E-09	1.2E-05	5.6E-13	1.1E-09			8.7E-09	1.7E-05	3.0E-05	2.47
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		7.8E-10	1.3E-07	7.1E-14				1.1E-09	1.8E-07	3.1E-07	0.03
Endosulfan II	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.05
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.5E-07	1.4E-13				2.1E-09	3.5E-07	6.0E-07	0.05
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.99
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.99
Endrin ketone	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.99
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		7.8E-10	2.6E-06	7.1E-14				1.1E-09	3.7E-06	6.2E-06	0.52
Heptachlor	4.0E-03	5.0E-04	5.0E-04	NI	1	0.10		2.7E-09	5.4E-06	2.5E-13				3.8E-09	7.6E-06	1.3E-05	1.09
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		7.8E-10	6.0E-05	7.1E-14				1.1E-09	8.4E-05	1.4E-04	12.00
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		7.8E-09	1.6E-06	7.1E-13				1.1E-08	2.2E-06	3.7E-06	0.31
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		7.8E-08		7.1E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.0E-04		1.1E-09				7.0E-04	1.2E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL151-2

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 Index	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	2.5E-02	3.0E-05	3.0E-05	NI	1	0.10		1.7E-08	5.6E-04	1.5E-12				2.4E-08	7.9E-04	1.4E-03	75.12
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	4.2E-03	NI	NI	NI	1	0.10		2.8E-09		2.6E-13				4.0E-09			
4,4-DDE	6.6E-03	NI	NI	NI	1	0.10		4.5E-09		4.1E-13				6.3E-09			
4,4-DDT	5.9E-03	5.0E-04	5.0E-04	NI	1	0.10		4.0E-09	8.0E-06	3.6E-13				5.6E-09	1.1E-05	1.9E-05	1.06
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	6.7E-03	5.0E-05	5.0E-05	NI	1	0.10		4.5E-09	9.0E-05	4.1E-13				6.4E-09	1.3E-04	2.2E-04	12.06
Chlordane	8.7E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.9E-09	1.2E-05	5.4E-13	1.1E-09			8.3E-09	1.7E-05	2.8E-05	1.57
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.02
Endosulfan II	1.9E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.1E-07	1.2E-13				1.8E-09	3.0E-07	5.2E-07	0.03
Endosulfan sulfate	1.9E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.1E-07	1.2E-13				1.8E-09	3.0E-07	5.2E-07	0.03
Endrin	1.9E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.3E-06	1.2E-13				1.8E-09	6.0E-06	1.0E-05	0.57
Endrin aldehyde	1.9E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.3E-06	1.2E-13				1.8E-09	6.0E-06	1.0E-05	0.57
Endrin ketone	1.9E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.3E-06	1.2E-13				1.8E-09	6.0E-06	1.0E-05	0.57
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	0.30
Heptachlor	5.4E-03	5.0E-04	5.0E-04	NI	1	0.10		3.6E-09	7.3E-06	3.3E-13				5.2E-09	1.0E-05	1.8E-05	0.97
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	6.93
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.18
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									7.5E-04		1.1E-09				1.1E-03	1.8E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL152-2

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	3.7E-03	3.0E-05	3.0E-05	NI	1	0.10		2.5E-09	8.3E-05	2.3E-13				3.5E-09	1.2E-04	2.0E-04	43.62
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	1.41
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.4E-09	2.7E-05	1.2E-13				1.9E-09	3.8E-05	6.5E-05	14.15
Chlordane	3.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.1E-09	4.1E-06	1.9E-13	3.8E-10			2.9E-09	5.8E-06	9.9E-06	2.16
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.06
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.12
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.12
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	2.36
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	2.36
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	2.36
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	1.24
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.74
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	28.57
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.74
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.9E-04		3.8E-10				2.7E-04	4.6E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL153-2

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 Index	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	2.1E+01	3.0E-05	3.0E-05	NI	1	0.10		1.4E-05	4.7E-01	1.3E-09				2.0E-05	6.7E-01	1.1E+00	77.82
Alpha-BHC	9.0E-01	NI	NI	NI	1	0.10		6.1E-07		5.6E-11				8.6E-07			
Beta-BHC	9.0E-01	NI	NI	NI	1	0.10		6.1E-07		5.6E-11				8.6E-07			
4,4-DDD	2.3E+00	NI	NI	NI	1	0.10		1.6E-06		1.4E-10				2.2E-06			
4,4-DDE	2.3E-01	NI	NI	NI	1	0.10		1.6E-07		1.4E-11				2.2E-07			
4,4-DDT	3.6E+00	5.0E-04	5.0E-04	NI	1	0.10		2.4E-06	4.9E-03	2.2E-10				3.4E-06	6.9E-03	1.2E-02	0.80
Delta-BHC	9.0E-01	NI	NI	NI	1	0.10		6.1E-07		5.6E-11				8.6E-07			
Dieldrin	3.0E+00	5.0E-05	5.0E-05	NI	1	0.10		2.0E-06	4.1E-02	1.9E-10				2.9E-06	5.7E-02	9.8E-02	6.67
Chlordane	1.0E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.0E-06	1.4E-02	6.4E-10	1.3E-06			9.9E-06	2.0E-02	3.4E-02	2.31
Endosulfan I	9.0E-01	6.0E-03	6.0E-03	NI	1	0.10		6.1E-07	1.0E-04	5.6E-11				8.6E-07	1.4E-04	2.4E-04	0.02
Endosulfan II	2.6E-01	6.0E-03	6.0E-03	NI	1	0.10		1.8E-07	2.9E-05	1.6E-11				2.5E-07	4.1E-05	7.1E-05	0.00
Endosulfan sulfate	1.8E+00	6.0E-03	6.0E-03	NI	1	0.10		1.2E-06	2.0E-04	1.1E-10				1.7E-06	2.8E-04	4.8E-04	0.03
Endrin	1.8E+00	3.0E-04	3.0E-04	NI	1	0.10		1.2E-06	3.9E-03	1.1E-10				1.7E-06	5.6E-03	9.5E-03	0.65
Endrin aldehyde	1.8E+00	3.0E-04	3.0E-04	NI	1	0.10		1.2E-06	3.9E-03	1.1E-10				1.7E-06	5.6E-03	9.5E-03	0.65
Endrin ketone	4.0E-01	3.0E-04	3.0E-04	NI	1	0.10		2.7E-07	9.0E-04	2.5E-11				3.8E-07	1.3E-03	2.2E-03	0.15
Gamma-BHC (Lindane)	9.0E-01	3.0E-04	3.0E-04	NI	1	0.10		6.1E-07	2.0E-03	5.6E-11				8.6E-07	2.9E-03	4.9E-03	0.33
Heptachlor	1.2E+01	5.0E-04	5.0E-04	NI	1	0.10		8.1E-06	1.6E-02	7.4E-10				1.1E-05	2.3E-02	3.9E-02	2.67
Heptachlor epoxide	9.0E-01	1.3E-05	1.3E-05	NI	1	0.10		6.1E-07	4.7E-02	5.6E-11				8.6E-07	6.6E-02	1.1E-01	7.70
Methoxychlor	9.0E+00	5.0E-03	5.0E-03	NI	1	0.10		6.1E-06	1.2E-03	5.6E-10				8.6E-06	1.7E-03	2.9E-03	0.20
Toxaphene	9.0E+01	NI	NI	NI	1	0.10		6.1E-05		5.6E-09				8.6E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.1E-01		1.3E-06				8.6E-01	1.5E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL153-4

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 Index	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-02	3.0E-05	3.0E-05	NI	1	0.10		1.1E-08	3.8E-04	1.1E-12				1.6E-08	5.4E-04	9.2E-04	58.87
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	4.3E-03	NI	NI	NI	1	0.10		2.9E-09		2.7E-13				4.1E-09			
4,4-DDE	6.6E-03	NI	NI	NI	1	0.10		4.5E-09		4.1E-13				6.3E-09			
4,4-DDT	2.0E-02	5.0E-04	5.0E-04	NI	1	0.10		1.4E-08	2.7E-05	1.2E-12				1.9E-08	3.8E-05	6.5E-05	4.16
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	1.1E-02	5.0E-05	5.0E-05	NI	1	0.10		7.4E-09	1.5E-04	6.8E-13				1.0E-08	2.1E-04	3.6E-04	22.85
Chlordane	7.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		5.0E-09	1.0E-05	4.6E-13	9.1E-10			7.1E-09	1.4E-05	2.4E-05	1.54
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.02
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.04
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.04
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.73
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.73
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.73
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	0.38
Heptachlor	4.4E-03	5.0E-04	5.0E-04	NI	1	0.10		3.0E-09	5.9E-06	2.7E-13				4.2E-09	8.4E-06	1.4E-05	0.91
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.4E-10	5.7E-05	6.8E-14				1.0E-09	8.1E-05	1.4E-04	8.79
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.23
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.5E-04		9.1E-10				9.2E-04	1.6E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL154-2

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	2.3E-02	3.0E-05	3.0E-05	NI	1	0.10		1.6E-08	5.2E-04	1.4E-12				2.2E-08	7.3E-04	1.2E-03	83.22
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	5.6E-03	NI	NI	NI	1	0.10		3.8E-09		3.5E-13				5.3E-09			
4,4-DDE	2.8E-03	NI	NI	NI	1	0.10		1.9E-09		1.7E-13				2.7E-09			
4,4-DDT	2.3E-03	5.0E-04	5.0E-04	NI	1	0.10		1.6E-09	3.1E-06	1.4E-13				2.2E-09	4.4E-06	7.5E-06	0.50
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.0E-03	5.0E-05	5.0E-05	NI	1	0.10		1.3E-09	2.6E-05	1.2E-13				1.9E-09	3.7E-05	6.4E-05	4.23
Chlordane	2.6E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.8E-09	3.5E-06	1.6E-13	3.2E-10			2.5E-09	5.0E-06	8.5E-06	0.56
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.02
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.04
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.3E-09	2.2E-07	1.2E-13				1.9E-09	3.1E-07	5.3E-07	0.04
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.71
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.71
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.3E-09	4.4E-06	1.2E-13				1.9E-09	6.2E-06	1.1E-05	0.71
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	0.36
Heptachlor	1.6E-03	5.0E-04	5.0E-04	NI	1	0.10		1.1E-09	2.2E-06	9.9E-14				1.5E-09	3.1E-06	5.2E-06	0.35
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	8.35
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.22
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.2E-04		3.2E-10				8.8E-04	1.5E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL155-2

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 Index	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	6.7E-02	3.0E-05	3.0E-05	NI	1	0.10		4.5E-08	1.5E-03	4.1E-12				6.4E-08	2.1E-03	3.6E-03	6.59
Alpha-BHC	7.0E-02	NI	NI	NI	1	0.10		4.7E-08		4.3E-12				6.7E-08			
Beta-BHC	7.0E-02	NI	NI	NI	1	0.10		4.7E-08		4.3E-12				6.7E-08			
4,4-DDD	9.7E-02	NI	NI	NI	1	0.10		6.5E-08		6.0E-12				9.3E-08			
4,4-DDE	5.8E-02	NI	NI	NI	1	0.10		3.9E-08		3.6E-12				5.5E-08			
4,4-DDT	5.5E-01	5.0E-04	5.0E-04	NI	1	0.10		3.7E-07	7.4E-04	3.4E-11				5.2E-07	1.0E-03	1.8E-03	3.24
Delta-BHC	7.0E-02	NI	NI	NI	1	0.10		4.7E-08		4.3E-12				6.7E-08			
Dieldrin	1.1E+00	5.0E-05	5.0E-05	NI	1	0.10		7.4E-07	1.5E-02	6.8E-11				1.0E-06	2.1E-02	3.6E-02	64.86
Chlordane	1.2E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		8.2E-07	1.6E-03	7.5E-11	1.5E-07			1.2E-06	2.3E-03	3.9E-03	7.14
Endosulfan I	7.0E-02	6.0E-03	6.0E-03	NI	1	0.10		4.7E-08	7.9E-06	4.3E-12				6.7E-08	1.1E-05	1.9E-05	0.03
Endosulfan II	1.1E-01	6.0E-03	6.0E-03	NI	1	0.10		7.4E-08	1.2E-05	6.8E-12				1.0E-07	1.7E-05	3.0E-05	0.05
Endosulfan sulfate	1.4E-01	6.0E-03	6.0E-03	NI	1	0.10		9.1E-08	1.5E-05	8.3E-12				1.3E-07	2.1E-05	3.7E-05	0.07
Endrin	1.5E-02	3.0E-04	3.0E-04	NI	1	0.10		1.0E-08	3.4E-05	9.3E-13				1.4E-08	4.8E-05	8.1E-05	0.15
Endrin aldehyde	1.4E-01	3.0E-04	3.0E-04	NI	1	0.10		9.1E-08	3.0E-04	8.3E-12				1.3E-07	4.3E-04	7.3E-04	1.33
Endrin ketone	4.7E-02	3.0E-04	3.0E-04	NI	1	0.10		3.2E-08	1.1E-04	2.9E-12				4.5E-08	1.5E-04	2.6E-04	0.46
Gamma-BHC (Lindane)	7.0E-02	3.0E-04	3.0E-04	NI	1	0.10		4.7E-08	1.6E-04	4.3E-12				6.7E-08	2.2E-04	3.8E-04	0.69
Heptachlor	2.3E-01	5.0E-04	5.0E-04	NI	1	0.10		1.6E-07	3.1E-04	1.4E-11				2.2E-07	4.4E-04	7.5E-04	1.36
Heptachlor epoxide	6.0E-02	1.3E-05	1.3E-05	NI	1	0.10		4.1E-08	3.1E-03	3.7E-12				5.7E-08	4.4E-03	7.5E-03	13.61
Methoxychlor	7.0E-01	5.0E-03	5.0E-03	NI	1	0.10		4.7E-07	9.5E-05	4.3E-11				6.7E-07	1.3E-04	2.3E-04	0.41
Toxaphene	7.0E+00	NI	NI	NI	1	0.10		4.7E-06		4.3E-10				6.7E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.3E-02		1.5E-07				3.2E-02	5.5E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL156-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HOD), 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	NI	1	0.10		4.8E-09	1.6E-04	4.4E-13				6.8E-09	2.3E-04	3.9E-04	18.78
Alpha-BHC	1.3E-03	NI	NI	NI	1	0.10		8.8E-10		8.0E-14				1.2E-09			
Beta-BHC	1.3E-03	NI	NI	NI	1	0.10		8.8E-10		8.0E-14				1.2E-09			
4,4-DDD	2.5E-03	NI	NI	NI	1	0.10		1.7E-09		1.5E-13				2.4E-09			
4,4-DDE	2.5E-03	NI	NI	NI	1	0.10		1.7E-09		1.5E-13				2.4E-09			
4,4-DDT	5.7E-03	5.0E-04	5.0E-04	NI	1	0.10		3.8E-09	7.7E-06	3.5E-13				5.4E-09	1.1E-05	1.9E-05	0.90
Delta-BHC	1.3E-03	NI	NI	NI	1	0.10		8.8E-10		8.0E-14				1.2E-09			
Dieldrin	4.1E-02	5.0E-05	5.0E-05	NI	1	0.10		2.8E-08	5.5E-04	2.5E-12				3.9E-08	7.8E-04	1.3E-03	65.06
Chlordane	2.5E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.7E-08	3.3E-05	1.5E-12	3.1E-09			2.4E-08	4.7E-05	8.1E-05	3.94
Endosulfan I	1.3E-03	6.0E-03	6.0E-03	NI	1	0.10		8.8E-10	1.5E-07	8.0E-14				1.2E-09	2.1E-07	3.5E-07	0.02
Endosulfan II	2.5E-03	6.0E-03	6.0E-03	NI	1	0.10		1.7E-09	2.8E-07	1.5E-13				2.4E-09	4.0E-07	6.8E-07	0.03
Endosulfan sulfate	2.5E-03	6.0E-03	6.0E-03	NI	1	0.10		1.7E-09	2.8E-07	1.5E-13				2.4E-09	4.0E-07	6.8E-07	0.03
Endrin	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.6E-06	1.5E-13				2.4E-09	7.9E-06	1.4E-05	0.66
Endrin aldehyde	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.6E-06	1.5E-13				2.4E-09	7.9E-06	1.4E-05	0.66
Endrin ketone	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.6E-06	1.5E-13				2.4E-09	7.9E-06	1.4E-05	0.66
Gamma-BHC (Lindane)	1.3E-03	3.0E-04	3.0E-04	NI	1	0.10		8.8E-10	2.9E-06	8.0E-14				1.2E-09	4.1E-06	7.1E-06	0.34
Heptachlor	4.9E-03	5.0E-04	5.0E-04	NI	1	0.10		3.3E-09	6.6E-06	3.0E-13				4.7E-09	9.3E-06	1.6E-05	0.78
Heptachlor epoxide	1.3E-03	1.3E-05	1.3E-05	NI	1	0.10		8.8E-10	6.8E-05	8.0E-14				1.2E-09	9.5E-05	1.6E-04	7.93
Methoxychlor	1.3E-02	5.0E-03	5.0E-03	NI	1	0.10		8.8E-09	1.8E-06	8.0E-13				1.2E-08	2.5E-06	4.2E-06	0.21
Toxaphene	1.3E-01	NI	NI	NI	1	0.10		8.8E-08		8.0E-12				1.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									8.5E-04		3.1E-09				1.2E-03	2.1E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL157-2

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	1.3E-03	3.0E-05	3.0E-05	NI	1	0.10		8.4E-10	2.8E-05	7.7E-14				1.2E-09	4.0E-05	6.8E-05	17.05
Alpha-BHC	1.3E-03	NI	NI	NI	1	0.10		8.4E-10		7.7E-14				1.2E-09			
Beta-BHC	1.3E-03	NI	NI	NI	1	0.10		8.4E-10		7.7E-14				1.2E-09			
4,4-DDD	2.5E-03	NI	NI	NI	1	0.10		1.7E-09		1.5E-13				2.3E-09			
4,4-DDE	2.5E-03	NI	NI	NI	1	0.10		1.7E-09		1.5E-13				2.3E-09			
4,4-DDT	2.5E-03	5.0E-04	5.0E-04	NI	1	0.10		1.7E-09	3.3E-06	1.5E-13				2.3E-09	4.7E-06	8.0E-06	2.00
Delta-BHC	1.3E-03	NI	NI	NI	1	0.10		8.4E-10		7.7E-14				1.2E-09			
Dieldrin	3.1E-03	5.0E-05	5.0E-05	NI	1	0.10		2.1E-09	4.2E-05	1.9E-13				3.0E-09	5.9E-05	1.0E-04	25.37
Chlordane	2.5E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.7E-09	3.4E-06	1.5E-13	3.1E-10			2.4E-09	4.8E-06	8.1E-06	2.05
Endosulfan I	1.3E-03	6.0E-03	6.0E-03	NI	1	0.10		8.4E-10	1.4E-07	7.7E-14				1.2E-09	2.0E-07	3.4E-07	0.09
Endosulfan II	2.5E-03	6.0E-03	6.0E-03	NI	1	0.10		1.7E-09	2.8E-07	1.5E-13				2.3E-09	3.9E-07	6.7E-07	0.17
Endosulfan sulfate	2.5E-03	6.0E-03	6.0E-03	NI	1	0.10		1.7E-09	2.8E-07	1.5E-13				2.3E-09	3.9E-07	6.7E-07	0.17
Endrin	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.5E-06	1.5E-13				2.3E-09	7.8E-06	1.3E-05	3.34
Endrin aldehyde	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.5E-06	1.5E-13				2.3E-09	7.8E-06	1.3E-05	3.34
Endrin ketone	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.5E-06	1.5E-13				2.3E-09	7.8E-06	1.3E-05	3.34
Gamma-BHC (Lindane)	1.3E-03	3.0E-04	3.0E-04	NI	1	0.10		8.4E-10	2.8E-06	7.7E-14				1.2E-09	4.0E-06	6.8E-06	1.70
Heptachlor	1.3E-03	5.0E-04	5.0E-04	NI	1	0.10		8.4E-10	1.7E-06	7.7E-14				1.2E-09	2.4E-06	4.1E-06	1.02
Heptachlor epoxide	1.3E-03	1.3E-05	1.3E-05	NI	1	0.10		8.4E-10	6.5E-05	7.7E-14				1.2E-09	9.2E-05	1.6E-04	39.34
Methoxychlor	1.3E-02	5.0E-03	5.0E-03	NI	1	0.10		8.4E-09	1.7E-06	7.7E-13				1.2E-08	2.4E-06	4.1E-06	1.02
Toxaphene	1.3E-01	NI	NI	NI	1	0.10		8.4E-08		7.7E-12				1.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.6E-04		3.1E-10				2.3E-04	4.0E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL158-2

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 Index	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	3.6E-03	3.0E-05	3.0E-05	NI	1	0.10		2.4E-09	8.1E-05	2.2E-13				3.4E-09	1.1E-04	2.0E-04	0.77
Alpha-BHC	1.3E-02	NI	NI	NI	1	0.10		8.8E-09		8.0E-13				1.2E-08			
Beta-BHC	1.3E-02	NI	NI	NI	1	0.10		8.8E-09		8.0E-13				1.2E-08			
4,4-DDD	2.7E-02	NI	NI	NI	1	0.10		1.8E-08		1.7E-12				2.6E-08			
4,4-DDE	8.4E-03	NI	NI	NI	1	0.10		5.7E-09		5.2E-13				8.0E-09			
4,4-DDT	6.8E-02	5.0E-04	5.0E-04	NI	1	0.10		4.6E-08	9.2E-05	4.2E-12				6.5E-08	1.3E-04	2.2E-04	0.87
Delta-BHC	1.3E-02	NI	NI	NI	1	0.10		8.8E-09		8.0E-13				1.2E-08			
Dieldrin	6.2E-01	5.0E-05	5.0E-05	NI	1	0.10		4.2E-07	8.4E-03	3.8E-11				5.9E-07	1.2E-02	2.0E-02	79.50
Chlordane	2.2E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.5E-07	3.0E-04	1.4E-11	2.7E-08			2.1E-07	4.2E-04	7.2E-04	2.83
Endosulfan I	1.3E-02	6.0E-03	6.0E-03	NI	1	0.10		8.8E-09	1.5E-06	8.0E-13				1.2E-08	2.1E-06	3.5E-06	0.01
Endosulfan II	6.6E-03	6.0E-03	6.0E-03	NI	1	0.10		4.5E-09	7.4E-07	4.1E-13				6.3E-09	1.0E-06	1.8E-06	0.01
Endosulfan sulfate	2.5E-02	6.0E-03	6.0E-03	NI	1	0.10		1.7E-08	2.8E-06	1.5E-12				2.4E-08	4.0E-06	6.8E-06	0.03
Endrin	3.9E-03	3.0E-04	3.0E-04	NI	1	0.10		2.6E-09	8.8E-06	2.4E-13				3.7E-09	1.2E-05	2.1E-05	0.08
Endrin aldehyde	2.5E-02	3.0E-04	3.0E-04	NI	1	0.10		1.7E-08	5.6E-05	1.5E-12				2.4E-08	7.9E-05	1.4E-04	0.53
Endrin ketone	2.0E-02	3.0E-04	3.0E-04	NI	1	0.10		1.4E-08	4.5E-05	1.2E-12				1.9E-08	6.4E-05	1.1E-04	0.43
Gamma-BHC (Lindane)	1.3E-02	3.0E-04	3.0E-04	NI	1	0.10		8.8E-09	2.9E-05	8.0E-13				1.2E-08	4.1E-05	7.1E-05	0.28
Heptachlor	6.3E-02	5.0E-04	5.0E-04	NI	1	0.10		4.3E-08	8.5E-05	3.9E-12				6.0E-08	1.2E-04	2.1E-04	0.81
Heptachlor epoxide	2.8E-02	1.3E-05	1.3E-05	NI	1	0.10		1.9E-08	1.5E-03	1.7E-12				2.7E-08	2.1E-03	3.5E-03	13.81
Methoxychlor	3.3E-02	5.0E-03	5.0E-03	NI	1	0.10		2.2E-08	4.5E-06	2.0E-12				3.1E-08	6.3E-06	1.1E-05	0.04
Toxaphene	1.3E+00	NI	NI	NI	1	0.10		8.8E-07		8.0E-11				1.2E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-02		2.7E-08				1.5E-02	2.5E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m³/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm²/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL159-1

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Drm (ABS)		Amount Absorbed (IDD), mg/kg-d	Lifetime HQ (HOD), 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+02	3.0E-05	3.0E-05	NI	1	0.10		1.0E-04	3.4E+00	9.3E-09				1.4E-04	4.8E+00	8.1E+00	62.98
Alpha-BHC	2.2E+01	NI	NI	NI	1	0.10		1.5E-05		1.3E-09				2.1E-05			
Beta-BHC	9.2E+00	NI	NI	NI	1	0.10		6.2E-06		5.7E-10				8.8E-06			
4,4-DDD	2.0E+01	NI	NI	NI	1	0.10		1.4E-05		1.2E-09				1.9E-05			
4,4-DDE	4.2E+01	NI	NI	NI	1	0.10		2.8E-05		2.6E-09				4.0E-05			
4,4-DDT	1.4E+01	5.0E-04	5.0E-04	NI	1	0.10		9.5E-06	1.9E-02	8.7E-10				1.3E-05	2.7E-02	4.6E-02	0.35
Delta-BHC	2.2E+01	NI	NI	NI	1	0.10		1.5E-05		1.3E-09				2.1E-05			
Dieldrin	3.0E+01	5.0E-05	5.0E-05	NI	1	0.10		2.0E-05	4.1E-01	1.9E-09				2.9E-05	5.7E-01	9.8E-01	7.56
Chlordane	4.8E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.2E-05	6.4E-02	2.9E-09	5.9E-06			4.5E-05	9.1E-02	1.5E-01	1.20
Endosulfan I	2.2E+01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-05	2.4E-03	1.3E-09				2.1E-05	3.4E-03	5.8E-03	0.05
Endosulfan II	4.2E+01	6.0E-03	6.0E-03	NI	1	0.10		2.8E-05	4.7E-03	2.6E-09				4.0E-05	6.6E-03	1.1E-02	0.09
Endosulfan sulfate	4.2E+01	6.0E-03	6.0E-03	NI	1	0.10		2.8E-05	4.7E-03	2.6E-09				4.0E-05	6.6E-03	1.1E-02	0.09
Endrin	4.2E+01	3.0E-04	3.0E-04	NI	1	0.10		2.8E-05	9.3E-02	2.6E-09				4.0E-05	1.3E-01	2.3E-01	1.74
Endrin aldehyde	4.2E+01	3.0E-04	3.0E-04	NI	1	0.10		2.8E-05	9.3E-02	2.6E-09				4.0E-05	1.3E-01	2.3E-01	1.74
Endrin ketone	4.2E+01	3.0E-04	3.0E-04	NI	1	0.10		2.8E-05	9.3E-02	2.6E-09				4.0E-05	1.3E-01	2.3E-01	1.74
Gamma-BHC (Lindane)	2.2E+01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-05	4.8E-02	1.3E-09				2.1E-05	6.8E-02	1.2E-01	0.90
Heptachlor	7.7E+00	5.0E-04	5.0E-04	NI	1	0.10		5.2E-06	1.0E-02	4.8E-10				7.3E-06	1.5E-02	2.5E-02	0.19
Heptachlor epoxide	2.2E+01	1.3E-05	1.3E-05	NI	1	0.10		1.5E-05	1.1E+00	1.3E-09				2.1E-05	1.6E+00	2.7E+00	20.83
Methoxychlor	2.2E+02	5.0E-03	5.0E-03	NI	1	0.10		1.5E-04	2.9E-02	1.3E-08				2.1E-04	4.1E-02	7.0E-02	0.54
Toxaphene	2.2E+03	NI	NI	NI	1	0.10		1.5E-03		1.3E-07				2.1E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.4E+00		5.9E-06				7.6E+00	1.3E+01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL160-2

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 Index	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-03	3.0E-05	3.0E-05	NI	1	0.10		3.9E-09	1.3E-04	3.6E-13				5.5E-09	1.8E-04	3.1E-04	43.61
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	1.5E-02	NI	NI	NI	1	0.10		1.0E-08		9.3E-13				1.4E-08			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	0.90
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	6.0E-03	5.0E-05	5.0E-05	NI	1	0.10		4.1E-09	8.1E-05	3.7E-13				5.7E-09	1.1E-04	2.0E-04	27.07
Chlordane	6.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		4.3E-09	8.6E-06	4.0E-13	7.9E-10			6.1E-09	1.2E-05	2.1E-05	2.89
Endosulfan I	1.5E-03	6.0E-03	6.0E-03	NI	1	0.10		1.0E-09	1.7E-07	9.3E-14				1.4E-09	2.4E-07	4.1E-07	0.06
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.08
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.08
Endrin	4.4E-03	3.0E-04	3.0E-04	NI	1	0.10		3.0E-09	9.9E-06	2.7E-13				4.2E-09	1.4E-05	2.4E-05	3.31
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	1.50
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	1.50
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	0.75
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	0.45
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	17.35
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.45
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.0E-04		7.9E-10				4.2E-04	7.2E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL161-2

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 Index	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-01	3.0E-05	3.0E-05	NI	1	0.10		6.8E-08	2.3E-03	6.2E-12				9.5E-08	3.2E-03	5.4E-03	16.33
Alpha-BHC	2.5E-02	NI	NI	NI	1	0.10		1.7E-08		1.5E-12				2.4E-08			
Beta-BHC	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
4,4-DDD	2.0E-01	NI	NI	NI	1	0.10		1.4E-07		1.2E-11				1.9E-07			
4,4-DDE	2.0E-01	NI	NI	NI	1	0.10		1.4E-07		1.2E-11				1.9E-07			
4,4-DDT	2.0E-01	5.0E-04	5.0E-04	NI	1	0.10		1.4E-07	2.7E-04	1.2E-11				1.9E-07	3.8E-04	6.5E-04	1.96
Delta-BHC	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
Dieldrin	2.6E-01	5.0E-05	5.0E-05	NI	1	0.10		1.8E-07	3.5E-03	1.6E-11				2.5E-07	5.0E-03	8.5E-03	25.47
Chlordane	9.3E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		6.3E-08	1.3E-04	5.7E-12	1.1E-08			8.9E-08	1.8E-04	3.0E-04	0.91
Endosulfan I	1.0E-01	6.0E-03	6.0E-03	NI	1	0.10		6.8E-08	1.1E-05	6.2E-12				9.5E-08	1.6E-05	2.7E-05	0.08
Endosulfan II	7.5E-02	6.0E-03	6.0E-03	NI	1	0.10		5.1E-08	8.4E-06	4.6E-12				7.2E-08	1.2E-05	2.0E-05	0.06
Endosulfan sulfate	2.0E-01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-07	2.3E-05	1.2E-11				1.9E-07	3.2E-05	5.4E-05	0.16
Endrin	5.3E-01	3.0E-04	3.0E-04	NI	1	0.10		3.6E-07	1.2E-03	3.3E-11				5.1E-07	1.7E-03	2.9E-03	8.65
Endrin aldehyde	2.0E-01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-07	4.5E-04	1.2E-11				1.9E-07	6.4E-04	1.1E-03	3.27
Endrin ketone	2.0E-01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-07	4.5E-04	1.2E-11				1.9E-07	6.4E-04	1.1E-03	3.27
Gamma-BHC (Lindane)	1.3E-02	3.0E-04	3.0E-04	NI	1	0.10		8.8E-09	2.9E-05	8.0E-13				1.2E-08	4.1E-05	7.1E-05	0.21
Heptachlor	1.0E-01	5.0E-04	5.0E-04	NI	1	0.10		6.8E-08	1.4E-04	6.2E-12				9.5E-08	1.9E-04	3.3E-04	0.98
Heptachlor epoxide	1.0E-01	1.3E-05	1.3E-05	NI	1	0.10		6.8E-08	5.2E-03	6.2E-12				9.5E-08	7.3E-03	1.3E-02	37.68
Methoxychlor	1.0E+00	5.0E-03	5.0E-03	NI	1	0.10		6.8E-07	1.4E-04	6.2E-11				9.5E-07	1.9E-04	3.3E-04	0.98
Toxaphene	1.0E+01	NI	NI	NI	1	0.10		6.8E-06		6.2E-10				9.5E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E-02		1.1E-08				1.9E-02	3.3E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL162-4

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 Index	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+00	3.0E-05	3.0E-05	NI	1	0.10		1.2E-06	4.1E-02	1.1E-10				1.7E-06	5.7E-02	9.8E-02	3.61
Alpha-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
Beta-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
4,4-DDD	1.5E+02	NI	NI	NI	1	0.10		1.0E-04		9.3E-09				1.4E-04			
4,4-DDE	4.7E+00	NI	NI	NI	1	0.10		3.2E-06		2.9E-10				4.5E-06			
4,4-DDT	2.8E+00	5.0E-04	5.0E-04	NI	1	0.10		1.9E-06	3.8E-03	1.7E-10				2.7E-06	5.3E-03	9.1E-03	0.34
Delta-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
Dieldrin	2.5E+01	5.0E-05	5.0E-05	NI	1	0.10		1.7E-05	3.4E-01	1.5E-09				2.4E-05	4.8E-01	8.1E-01	30.04
Chlordane	4.7E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.2E-06	6.3E-03	2.9E-10	5.8E-07			4.5E-06	9.0E-03	1.5E-02	0.56
Endosulfan I	1.1E+01	6.0E-03	6.0E-03	NI	1	0.10		7.4E-06	1.2E-03	6.8E-10				1.0E-05	1.7E-03	3.0E-03	0.11
Endosulfan II	7.7E+00	6.0E-03	6.0E-03	NI	1	0.10		5.2E-06	8.7E-04	4.8E-10				7.3E-06	1.2E-03	2.1E-03	0.08
Endosulfan sulfate	2.2E+01	6.0E-03	6.0E-03	NI	1	0.10		1.5E-05	2.5E-03	1.4E-09				2.1E-05	3.5E-03	6.0E-03	0.22
Endrin	2.2E+01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-05	5.0E-02	1.4E-09				2.1E-05	7.0E-02	1.2E-01	4.41
Endrin aldehyde	2.7E+00	3.0E-04	3.0E-04	NI	1	0.10		1.8E-06	6.1E-03	1.7E-10				2.6E-06	8.6E-03	1.5E-02	0.54
Endrin ketone	2.2E+01	3.0E-04	3.0E-04	NI	1	0.10		1.5E-05	5.0E-02	1.4E-09				2.1E-05	7.0E-02	1.2E-01	4.41
Gamma-BHC (Lindane)	1.1E+01	3.0E-04	3.0E-04	NI	1	0.10		7.4E-06	2.5E-02	6.8E-10				1.0E-05	3.5E-02	6.0E-02	2.20
Heptachlor	1.1E+01	5.0E-04	5.0E-04	NI	1	0.10		7.4E-06	1.5E-02	6.8E-10				1.0E-05	2.1E-02	3.6E-02	1.32
Heptachlor epoxide	1.1E+01	1.3E-05	1.3E-05	NI	1	0.10		7.4E-06	5.7E-01	6.8E-10				1.0E-05	8.1E-01	1.4E+00	50.84
Methoxychlor	1.1E+02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-05	1.5E-02	6.8E-09				1.0E-04	2.1E-02	3.6E-02	1.32
Toxaphene	1.1E+03	NI	NI	NI	1	0.10		7.4E-04		6.8E-08				1.0E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E+00		5.8E-07				1.6E+00	2.7E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL162-6

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 Index	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	4.2E-03	3.0E-05	3.0E-05	NI	1	0.10		2.8E-09	9.3E-05	2.6E-13				4.0E-09	1.3E-04	2.3E-04	8.10
Alpha-BHC	4.2E-03	NI	NI	NI	1	0.10		2.8E-09		2.6E-13				4.0E-09			
Beta-BHC	4.2E-03	NI	NI	NI	1	0.10		2.8E-09		2.6E-13				4.0E-09			
4,4-DDD	3.5E-01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.3E-07			
4,4-DDE	*9.7E-03*	*NI*	*NI*	*NI*	1	*0.10*		*6.5E-09*		*6.0E-13*				9.3E-09			
4,4-DDT	8.0E-03	5.0E-04	5.0E-04	NI	1	0.10		5.4E-09	1.1E-05	4.9E-13				7.6E-09	1.5E-05	2.6E-05	0.94
Delta-BHC	4.2E-03	NI	NI	NI	1	0.10		2.8E-09		2.6E-13				4.0E-09			
Dieldrin	4.9E-02	5.0E-05	5.0E-05	NI	1	0.10		3.3E-08	6.6E-04	3.0E-12				4.7E-08	9.3E-04	1.6E-03	57.37
Chlordane	*1.2E-02*	*5.0E-04*	*5.0E-04*	*5.0E-04*	1	*0.10*		*8.1E-09*	*1.6E-05*	7.4E-13	*1.5E-09*			*1.1E-08*	*2.3E-05*	*3.9E-05*	*1.41*
Endosulfan I	8.0E-02	6.0E-03	6.0E-03	NI	1	0.10		5.4E-08	9.0E-06	4.9E-12				7.6E-08	1.3E-05	2.2E-05	0.78
Endosulfan II	1.3E-02	6.0E-03	6.0E-03	NI	1	0.10		8.8E-09	1.5E-06	8.0E-13				1.2E-08	2.1E-06	3.5E-06	0.13
Endosulfan sulfate	8.0E-03	6.0E-03	6.0E-03	NI	1	0.10		5.4E-09	9.0E-07	4.9E-13				7.6E-09	1.3E-06	2.2E-06	0.08
Endrin	3.9E-02	3.0E-04	3.0E-04	NI	1	0.10		2.6E-08	8.8E-05	2.4E-12				3.7E-08	1.2E-04	2.1E-04	7.61
Endrin aldehyde	8.0E-03	3.0E-04	3.0E-04	NI	1	0.10		5.4E-09	1.8E-05	4.9E-13				7.6E-09	2.5E-05	4.3E-05	1.56
Endrin ketone	8.0E-03	3.0E-04	3.0E-04	NI	1	0.10		5.4E-09	1.8E-05	4.9E-13				7.6E-09	2.5E-05	4.3E-05	1.56
Gamma-BHC (Lindane)	4.2E-03	3.0E-04	3.0E-04	NI	1	0.10		2.8E-09	9.3E-06	2.6E-13				4.0E-09	1.3E-05	2.3E-05	0.81
Heptachlor	4.2E-03	5.0E-04	5.0E-04	NI	1	0.10		2.8E-09	5.6E-06	2.6E-13				4.0E-09	7.9E-06	1.4E-05	0.49
Heptachlor epoxide	4.2E-03	1.3E-05	1.3E-05	NI	1	0.10		2.8E-09	2.2E-04	2.6E-13				4.0E-09	3.0E-04	5.2E-04	18.69
Methoxychlor	*4.2E-02*	*5.0E-03*	*5.0E-03*	*NI*	1	*0.10*		*2.8E-08*	*5.6E-06*	*2.6E-12*				4.0E-08	7.9E-06	*1.4E-05*	*0.49*
Toxaphene	4.2E-01	NI	NI	NI	1	0.10		2.8E-07		2.6E-11				4.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-03		1.5E-09				1.6E-03	2.8E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL163-2

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 Index	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	4.3E-01	3.0E-05	3.0E-05	NI	1	0.10		2.9E-07	9.7E-03	2.7E-11				4.1E-07	1.4E-02	2.3E-02	77.44
Alpha-BHC	3.5E-03	NI	NI	NI	1	0.10		2.4E-09		2.2E-13				3.3E-09			
Beta-BHC	3.5E-03	NI	NI	NI	1	0.10		2.4E-09		2.2E-13				3.3E-09			
4,4-DDD	8.4E-02	NI	NI	NI	1	0.10		5.7E-08		5.2E-12				8.0E-08			
4,4-DDE	1.6E-02	NI	NI	NI	1	0.10		1.2E-08		1.1E-12				1.7E-08			
4,4-DDT	3.1E-02	5.0E-04	5.0E-04	NI	1	0.10		2.1E-08	4.2E-05	1.9E-12				3.0E-08	5.9E-05	1.0E-04	0.33
Delta-BHC	3.5E-03	NI	NI	NI	1	0.10		2.4E-09		2.2E-13				3.3E-09			
Dieldrin	1.1E-01	5.0E-05	5.0E-05	NI	1	0.10		7.4E-08	1.5E-03	6.8E-12				1.0E-07	2.1E-03	3.6E-03	11.89
Chlordane	3.3E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.2E-07	4.5E-04	2.1E-11	4.1E-08			3.2E-07	6.3E-04	1.1E-03	3.59
Endosulfan I	3.5E-03	6.0E-03	6.0E-03	NI	1	0.10		2.4E-09	3.9E-07	2.2E-13				3.3E-09	5.6E-07	9.5E-07	0.00
Endosulfan II	7.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.7E-09	7.9E-07	4.3E-13				6.7E-09	1.1E-06	1.9E-06	0.01
Endosulfan sulfate	7.0E-03	6.0E-03	6.0E-03	NI	1	0.10		4.7E-09	7.9E-07	4.3E-13				6.7E-09	1.1E-06	1.9E-06	0.01
Endrin	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.13
Endrin aldehyde	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.13
Endrin ketone	7.0E-03	3.0E-04	3.0E-04	NI	1	0.10		4.7E-09	1.6E-05	4.3E-13				6.7E-09	2.2E-05	3.8E-05	0.13
Gamma-BHC (Lindane)	3.5E-03	3.0E-04	3.0E-04	NI	1	0.10		2.4E-09	7.9E-06	2.2E-13				3.3E-09	1.1E-05	1.9E-05	0.06
Heptachlor	3.1E-01	5.0E-04	5.0E-04	NI	1	0.10		2.1E-07	4.2E-04	1.9E-11				3.0E-07	5.9E-04	1.0E-03	3.35
Heptachlor epoxide	7.0E-03	1.3E-05	1.3E-05	NI	1	0.10		4.7E-09	3.6E-04	4.3E-13				6.7E-09	5.1E-04	8.8E-04	2.91
Methoxychlor	3.5E-02	5.0E-03	5.0E-03	NI	1	0.10		2.4E-08	4.7E-06	2.2E-12				3.3E-08	6.7E-06	1.1E-05	0.04
Toxaphene	3.5E-01	NI	NI	NI	1	0.10		2.4E-07		2.2E-11				3.3E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E-02		4.1E-08				1.8E-02	3.0E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL164-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDD)	Inhalation (RFDI)	Oral (ABO)	Derm (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+01	3.0E-05	3.0E-05	NI	1	0.10		1.8E-05	6.1E-01	1.7E-09				2.6E-05	8.6E-01	1.5E+00	26.34
Alpha-BHC	3.5E-01	NI	NI	NI	1	0.10		2.3E-07		2.1E-11				3.3E-07			
Beta-BHC	3.5E-01	NI	NI	NI	1	0.10		2.3E-07		2.1E-11				3.3E-07			
4,4-DDD	2.3E+00	NI	NI	NI	1	0.10		1.6E-06		1.4E-10				2.2E-06			
4,4-DDE	2.9E+00	NI	NI	NI	1	0.10		2.0E-06		1.8E-10				2.8E-06			
4,4-DDT	1.4E+01	5.0E-04	5.0E-04	NI	1	0.10		9.5E-06	1.9E-02	8.7E-10				1.3E-05	2.7E-02	4.6E-02	0.82
Delta-BHC	1.3E+00	NI	NI	NI	1	0.10		8.8E-07		8.0E-11				1.2E-06			
Dieldrin	1.1E+02	5.0E-05	5.0E-05	NI	1	0.10		7.4E-05	1.5E+00	6.8E-09				1.0E-04	2.1E+00	3.6E+00	64.39
Chlordane	3.5E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.3E-05	4.7E-02	2.1E-09	4.3E-06			3.3E-05	6.6E-02	1.1E-01	2.02
Endosulfan I	3.5E-01	6.0E-03	6.0E-03	NI	1	0.10		2.3E-07	3.9E-05	2.1E-11				3.3E-07	5.5E-05	9.4E-05	0.00
Endosulfan II	9.9E-01	6.0E-03	6.0E-03	NI	1	0.10		6.7E-07	1.1E-04	6.1E-11				9.4E-07	1.6E-04	2.7E-04	0.00
Endosulfan sulfate	6.5E-01	6.0E-03	6.0E-03	NI	1	0.10		4.4E-07	7.3E-05	4.0E-11				6.2E-07	1.0E-04	1.8E-04	0.00
Endrin	1.0E+00	3.0E-04	3.0E-04	NI	1	0.10		6.8E-07	2.3E-03	6.2E-11				9.5E-07	3.2E-03	5.4E-03	0.10
Endrin aldehyde	6.5E-01	3.0E-04	3.0E-04	NI	1	0.10		4.4E-07	1.5E-03	4.0E-11				6.2E-07	2.1E-03	3.5E-03	0.06
Endrin ketone	5.3E+00	3.0E-04	3.0E-04	NI	1	0.10		3.6E-06	1.2E-02	3.3E-10				5.1E-06	1.7E-02	2.9E-02	0.52
Gamma-BHC (Lindane)	4.7E-01	3.0E-04	3.0E-04	NI	1	0.10		3.2E-07	1.1E-03	2.9E-11				4.5E-07	1.5E-03	2.6E-03	0.05
Heptachlor	2.0E+01	5.0E-04	5.0E-04	NI	1	0.10		1.4E-05	2.7E-02	1.2E-09				1.9E-05	3.8E-02	6.5E-02	1.17
Heptachlor epoxide	2.0E+00	1.3E-05	1.3E-05	NI	1	0.10		1.4E-06	1.0E-01	1.2E-10				1.9E-06	1.5E-01	2.5E-01	4.50
Methoxychlor	3.5E+00	5.0E-03	5.0E-03	NI	1	0.10		2.3E-06	4.7E-04	2.1E-10				3.3E-06	6.6E-04	1.1E-03	0.02
Toxaphene	3.5E+01	NI	NI	NI	1	0.10		2.3E-05		2.1E-09				3.3E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.3E+00		4.3E-06				3.3E+00	5.6E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL165-2

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 Index	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+02	3.0E-05	3.0E-05	NI	1	0.10		1.1E-04	3.8E+00	1.1E-08				1.6E-04	5.4E+00	9.2E+00	35.27
Alpha-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
Beta-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
4,4-DDD	3.1E+01	NI	NI	NI	1	0.10		2.1E-05		1.9E-09				3.0E-05			
4,4-DDE	2.1E+01	NI	NI	NI	1	0.10		1.4E-05		1.3E-09				2.0E-05			
4,4-DDT	9.2E+01	5.0E-04	5.0E-04	NI	1	0.10		6.2E-05	1.2E-01	5.7E-09				8.8E-05	1.8E-01	3.0E-01	1.15
Delta-BHC	1.1E+01	NI	NI	NI	1	0.10		7.4E-06		6.8E-10				1.0E-05			
Dieldrin	3.1E+02	5.0E-05	5.0E-05	NI	1	0.10		2.1E-04	4.2E+00	1.9E-08				3.0E-04	5.9E+00	1.0E+01	38.59
Chlordane	5.3E+02	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.6E-04	7.1E-01	3.3E-08	6.5E-05			5.0E-04	1.0E+00	1.7E+00	6.55
Endosulfan I	1.1E+01	6.0E-03	6.0E-03	NI	1	0.10		7.4E-06	1.2E-03	6.8E-10				1.0E-05	1.7E-03	3.0E-03	0.01
Endosulfan II	2.1E+01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-05	2.4E-03	1.3E-09				2.0E-05	3.3E-03	5.7E-03	0.02
Endosulfan sulfate	2.1E+01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-05	2.4E-03	1.3E-09				2.0E-05	3.3E-03	5.7E-03	0.02
Endrin	2.1E+01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-05	4.7E-02	1.3E-09				2.0E-05	6.7E-02	1.1E-01	0.44
Endrin aldehyde	2.1E+01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-05	4.7E-02	1.3E-09				2.0E-05	6.7E-02	1.1E-01	0.44
Endrin ketone	2.1E+01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-05	4.7E-02	1.3E-09				2.0E-05	6.7E-02	1.1E-01	0.44
Gamma-BHC (Lindane)	1.1E+01	3.0E-04	3.0E-04	NI	1	0.10		7.4E-06	2.5E-02	6.8E-10				1.0E-05	3.5E-02	6.0E-02	0.23
Heptachlor	9.2E+02	5.0E-04	5.0E-04	NI	1	0.10		6.2E-04	1.2E+00	5.7E-08				8.8E-04	1.8E+00	3.0E+00	11.45
Heptachlor epoxide	1.1E+01	1.3E-05	1.3E-05	NI	1	0.10		7.4E-06	5.7E-01	6.8E-10				1.0E-05	8.1E-01	1.4E+00	5.27
Methoxychlor	1.1E+02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-05	1.5E-02	6.8E-09				1.0E-04	2.1E-02	3.6E-02	0.14
Toxaphene	1.1E+03	NI	NI	NI	1	0.10		7.4E-04		6.8E-08				1.0E-03			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E+01		6.5E-05				1.5E+01	2.6E+01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION SL166-2

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 Index	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	2.9E+01	3.0E-05	3.0E-05	NI	1	0.10		2.0E-05	6.5E-01	1.8E-09				2.8E-05	9.2E-01	1.6E+00	10.71
Alpha-BHC	7.0E+00	NI	NI	NI	1	0.10		4.7E-06		4.3E-10				6.7E-06			
Beta-BHC	7.0E+00	NI	NI	NI	1	0.10		4.7E-06		4.3E-10				6.7E-06			
4,4-DDD	8.4E+01	NI	NI	NI	1	0.10		5.7E-05		5.2E-09				8.0E-05			
4,4-DDE	4.3E+01	NI	NI	NI	1	0.10		2.9E-05		2.7E-09				4.1E-05			
4,4-DDT	1.9E+03	5.0E-04	5.0E-04	NI	1	0.10		1.3E-03	2.6E+00	1.2E-07				1.8E-03	3.6E+00	6.2E+00	42.10
Delta-BHC	7.0E+00	NI	NI	NI	1	0.10		4.7E-06		4.3E-10				6.7E-06			
Dieldrin	1.6E+02	5.0E-05	5.0E-05	NI	1	0.10		1.1E-04	2.2E+00	9.9E-09				1.5E-04	3.1E+00	5.2E+00	35.45
Chlordane	1.4E+02	5.0E-04	5.0E-04	5.0E-04	1	0.10		9.4E-05	1.9E-01	8.6E-09	1.7E-05			1.3E-04	2.7E-01	4.5E-01	3.08
Endosulfan I	7.0E+00	6.0E-03	6.0E-03	NI	1	0.10		4.7E-06	7.9E-04	4.3E-10				6.7E-06	1.1E-03	1.9E-03	0.01
Endosulfan II	1.7E+01	6.0E-03	6.0E-03	NI	1	0.10		1.1E-05	1.9E-03	1.1E-09				1.6E-05	2.7E-03	4.6E-03	0.03
Endosulfan sulfate	1.4E+01	6.0E-03	6.0E-03	NI	1	0.10		9.1E-06	1.5E-03	8.3E-10				1.3E-05	2.1E-03	3.7E-03	0.02
Endrin	1.4E+01	3.0E-04	3.0E-04	NI	1	0.10		9.1E-06	3.0E-02	8.3E-10				1.3E-05	4.3E-02	7.3E-02	0.50
Endrin aldehyde	1.4E+01	3.0E-04	3.0E-04	NI	1	0.10		9.1E-06	3.0E-02	8.3E-10				1.3E-05	4.3E-02	7.3E-02	0.50
Endrin ketone	1.4E+01	3.0E-04	3.0E-04	NI	1	0.10		9.1E-06	3.0E-02	8.3E-10				1.3E-05	4.3E-02	7.3E-02	0.50
Gamma-BHC (Lindane)	7.0E+00	3.0E-04	3.0E-04	NI	1	0.10		4.7E-06	1.6E-02	4.3E-10				6.7E-06	2.2E-02	3.8E-02	0.26
Heptachlor	3.2E+01	5.0E-04	5.0E-04	NI	1	0.10		2.2E-05	4.3E-02	2.0E-09				3.1E-05	6.1E-02	1.0E-01	0.71
Heptachlor epoxide	7.0E+00	1.3E-05	1.3E-05	NI	1	0.10		4.7E-06	3.6E-01	4.3E-10				6.7E-06	5.1E-01	8.8E-01	5.97
Methoxychlor	7.0E+01	5.0E-03	5.0E-03	NI	1	0.10		4.7E-05	9.5E-03	4.3E-09				6.7E-05	1.3E-02	2.3E-02	0.16
Toxaphene	7.0E+02	NI	NI	NI	1	0.10		4.7E-04		4.3E-08				6.7E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									6.1E+00		1.7E-05				8.6E+00	1.5E+01	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL167-2

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	8.3E-01	3.0E-05	3.0E-05	NI	1	0.10		5.6E-07	1.9E-02	5.1E-11				7.9E-07	2.6E-02	4.5E-02	72.01
Alpha-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
Beta-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
4,4-DDD	6.3E-01	NI	NI	NI	1	0.10		4.3E-07		3.9E-11				6.0E-07			
4,4-DDE	2.2E-02	NI	NI	NI	1	0.10		1.5E-08		1.3E-12				2.1E-08			
4,4-DDT	1.9E+00	5.0E-04	5.0E-04	NI	1	0.10		1.3E-06	2.6E-03	1.2E-10				1.8E-06	3.6E-03	6.2E-03	9.89
Delta-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
Dieldrin	2.5E-01	5.0E-05	5.0E-05	NI	1	0.10		1.7E-07	3.4E-03	1.5E-11				2.4E-07	4.8E-03	8.1E-03	13.01
Chlordane	3.4E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.3E-07	4.6E-04	2.1E-11	4.2E-08			3.2E-07	6.5E-04	1.1E-03	1.77
Endosulfan I	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.4E-09	1.2E-06	6.8E-13				1.0E-08	1.7E-06	3.0E-06	0.00
Endosulfan II	2.2E-02	6.0E-03	6.0E-03	NI	1	0.10		1.5E-08	2.4E-06	1.3E-12				2.1E-08	3.4E-06	5.8E-06	0.01
Endosulfan sulfate	2.2E-02	6.0E-03	6.0E-03	NI	1	0.10		1.5E-08	2.4E-06	1.3E-12				2.1E-08	3.4E-06	5.8E-06	0.01
Endrin	2.2E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	4.8E-05	1.3E-12				2.1E-08	6.8E-05	1.2E-04	0.19
Endrin aldehyde	2.2E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	4.8E-05	1.3E-12				2.1E-08	6.8E-05	1.2E-04	0.19
Endrin ketone	2.2E-02	3.0E-04	3.0E-04	NI	1	0.10		1.5E-08	4.8E-05	1.3E-12				2.1E-08	6.8E-05	1.2E-04	0.19
Gamma-BHC (Lindane)	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.4E-09	2.5E-05	6.8E-13				1.0E-08	3.5E-05	6.0E-05	0.10
Heptachlor	7.3E-02	5.0E-04	5.0E-04	NI	1	0.10		4.9E-08	9.9E-05	4.5E-12				7.0E-08	1.4E-04	2.4E-04	0.38
Heptachlor epoxide	1.1E-02	1.3E-05	1.3E-05	NI	1	0.10		7.4E-09	5.7E-04	6.8E-13				1.0E-08	8.1E-04	1.4E-03	2.20
Methoxychlor	1.1E-01	5.0E-03	5.0E-03	NI	1	0.10		7.4E-08	1.5E-05	6.8E-12				1.0E-07	2.1E-05	3.6E-05	0.06
Toxaphene	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.6E-02		4.2E-08				3.7E-02	6.3E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL168-2

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 Index	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+02	3.0E-05	3.0E-05	NI	1	0.10		1.0E-04	3.4E+00	9.3E-09				1.4E-04	4.8E+00	8.1E+00	96.63
Alpha-BHC	1.2E+00	NI	NI	NI	1	0.10		7.8E-07		7.1E-11				1.1E-06			
Beta-BHC	1.2E+00	NI	NI	NI	1	0.10		7.8E-07		7.1E-11				1.1E-06			
4,4-DDD	2.3E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
4,4-DDE	2.3E+00	NI	NI	NI	1	0.10		1.5E-06		1.4E-10				2.1E-06			
4,4-DDT	2.3E+00	5.0E-04	5.0E-04	NI	1	0.10		1.5E-06	3.0E-03	1.4E-10				2.1E-06	4.3E-03	7.3E-03	0.09
Delta-BHC	1.2E+00	NI	NI	NI	1	0.10		7.8E-07		7.1E-11				1.1E-06			
Dieldrin	2.3E+00	5.0E-05	5.0E-05	NI	1	0.10		1.5E-06	3.0E-02	1.4E-10				2.1E-06	4.3E-02	7.3E-02	0.87
Chlordane	2.3E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-06	3.1E-03	1.4E-10	2.8E-07			2.2E-06	4.4E-03	7.5E-03	0.09
Endosulfan I	1.2E+00	6.0E-03	6.0E-03	NI	1	0.10		7.8E-07	1.3E-04	7.1E-11				1.1E-06	1.8E-04	3.1E-04	0.00
Endosulfan II	2.3E+00	6.0E-03	6.0E-03	NI	1	0.10		1.5E-06	2.5E-04	1.4E-10				2.1E-06	3.6E-04	6.1E-04	0.01
Endosulfan sulfate	2.3E+00	6.0E-03	6.0E-03	NI	1	0.10		1.5E-06	2.5E-04	1.4E-10				2.1E-06	3.6E-04	6.1E-04	0.01
Endrin	2.3E+00	3.0E-04	3.0E-04	NI	1	0.10		1.5E-06	5.1E-03	1.4E-10				2.1E-06	7.2E-03	1.2E-02	0.14
Endrin aldehyde	2.3E+00	3.0E-04	3.0E-04	NI	1	0.10		1.5E-06	5.1E-03	1.4E-10				2.1E-06	7.2E-03	1.2E-02	0.14
Endrin ketone	2.3E+00	3.0E-04	3.0E-04	NI	1	0.10		1.5E-06	5.1E-03	1.4E-10				2.1E-06	7.2E-03	1.2E-02	0.14
Gamma-BHC (Lindane)	1.2E+00	3.0E-04	3.0E-04	NI	1	0.10		7.8E-07	2.6E-03	7.1E-11				1.1E-06	3.7E-03	6.2E-03	0.07
Heptachlor	1.2E+00	5.0E-04	5.0E-04	NI	1	0.10		7.8E-07	1.6E-03	7.1E-11				1.1E-06	2.2E-03	3.7E-03	0.04
Heptachlor epoxide	1.2E+00	1.3E-05	1.3E-05	NI	1	0.10		7.8E-07	6.0E-02	7.1E-11				1.1E-06	8.4E-02	1.4E-01	1.71
Methoxychlor	1.2E+01	5.0E-03	5.0E-03	NI	1	0.10		7.8E-06	1.6E-03	7.1E-10				1.1E-05	2.2E-03	3.7E-03	0.04
Toxaphene	1.2E+02	NI	NI	NI	1	0.10		7.8E-05		7.1E-09				1.1E-04			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.5E+00		2.8E-07				4.9E+00	6.4E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL168-4

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 Index	Risk Percentage %
		Oral (RfDO)	Dermal (RfDD)	Inhalation (RfDI)	Oral (ABSo)	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	NI	1	0.10		8.1E-08	2.7E-03	7.4E-12				1.1E-07	3.8E-03	6.5E-03	87.13
Alpha-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Beta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
4,4-DDD	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	0.09
Delta-BHC	1.0E-03	NI	NI	NI	1	0.10		6.8E-10		6.2E-14				9.5E-10			
Dieldrin	2.2E-02	5.0E-05	5.0E-05	NI	1	0.10		1.5E-08	3.0E-04	1.4E-12				2.1E-08	4.2E-04	7.2E-04	9.58
Chlordane	2.0E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-08	2.7E-05	1.2E-12	2.5E-09			1.9E-08	3.8E-05	6.5E-05	0.87
Endosulfan I	1.0E-03	6.0E-03	6.0E-03	NI	1	0.10		6.8E-10	1.1E-07	6.2E-14				9.5E-10	1.6E-07	2.7E-07	0.00
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.01
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.01
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.15
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.15
Endrin ketone	2.5E-03	3.0E-04	3.0E-04	NI	1	0.10		1.7E-09	5.6E-06	1.5E-13				2.4E-09	7.9E-06	1.4E-05	0.18
Gamma-BHC (Lindane)	1.0E-03	3.0E-04	3.0E-04	NI	1	0.10		6.8E-10	2.3E-06	6.2E-14				9.5E-10	3.2E-06	5.4E-06	0.07
Heptachlor	1.0E-03	5.0E-04	5.0E-04	NI	1	0.10		6.8E-10	1.4E-06	6.2E-14				9.5E-10	1.9E-06	3.3E-06	0.04
Heptachlor epoxide	1.0E-03	1.3E-05	1.3E-05	NI	1	0.10		6.8E-10	5.2E-05	6.2E-14				9.5E-10	7.3E-05	1.3E-04	1.68
Methoxychlor	1.0E-02	5.0E-03	5.0E-03	NI	1	0.10		6.8E-09	1.4E-06	6.2E-13				9.5E-09	1.9E-06	3.3E-06	0.04
Toxaphene	1.0E-01	NI	NI	NI	1	0.10		6.8E-08		6.2E-12				9.5E-08			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.1E-03		2.5E-09				4.4E-03	7.5E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL169-2

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 Index	Risk Percentage %
PESTICIDES/PCBs																	
Aldrin	7.2E-02	3.0E-05	3.0E-05	NI	1	0.10		4.9E-08	1.6E-03	4.5E-12				6.9E-08	2.3E-03	3.9E-03	77.47
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	4.3E-03	NI	NI	NI	1	0.10		2.9E-09		2.7E-13				4.1E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	1.5E-02	5.0E-04	5.0E-04	NI	1	0.10		1.0E-08	2.0E-05	9.3E-13				1.4E-08	2.9E-05	4.9E-05	0.97
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	1.9E-02	5.0E-05	5.0E-05	NI	1	0.10		1.3E-08	2.6E-04	1.2E-12				1.8E-08	3.6E-04	6.2E-04	12.27
Chlordane	3.3E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.2E-08	4.5E-05	2.1E-12	4.1E-09			3.2E-08	6.3E-05	1.1E-04	2.14
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.01
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.01
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.01
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.23
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.23
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	0.23
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	0.12
Heptachlor	4.6E-03	5.0E-04	5.0E-04	NI	1	0.10		3.1E-09	6.2E-06	2.8E-13				4.4E-09	8.8E-06	1.5E-05	0.30
Heptachlor epoxide	2.4E-03	1.3E-05	1.3E-05	NI	1	0.10		1.6E-09	1.2E-04	1.5E-13				2.3E-09	1.8E-04	3.0E-04	5.96
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.07
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.1E-03		4.1E-09				3.0E-03	5.0E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL170-2

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 Index	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+00	3.0E-05	3.0E-05	NI	1	0.10		4.9E-06	1.6E-01	4.5E-10				6.9E-06	2.3E-01	3.9E-01	29.62
Alpha-BHC	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
Beta-BHC	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
4,4-DDD	7.0E-01	NI	NI	NI	1	0.10		4.7E-07		4.3E-11				6.7E-07			
4,4-DDE	8.7E-01	NI	NI	NI	1	0.10		5.9E-07		5.4E-11				8.3E-07			
4,4-DDT	7.1E+00	5.0E-04	5.0E-04	NI	1	0.10		4.8E-06	9.6E-03	4.4E-10				6.8E-06	1.4E-02	2.3E-02	1.75
Delta-BHC	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
Dieldrin	2.4E+01	5.0E-05	5.0E-05	NI	1	0.10		1.6E-05	3.2E-01	1.5E-09				2.3E-05	4.6E-01	7.8E-01	59.24
Chlordane	5.0E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		3.4E-06	6.8E-03	3.1E-10	6.2E-07			4.8E-06	9.5E-03	1.6E-02	1.23
Endosulfan I	1.1E-01	6.0E-03	6.0E-03	NI	1	0.10		7.1E-08	1.2E-05	6.5E-12				1.0E-07	1.7E-05	2.9E-05	0.00
Endosulfan II	3.2E-01	6.0E-03	6.0E-03	NI	1	0.10		2.2E-07	3.6E-05	2.0E-11				3.1E-07	5.1E-05	8.7E-05	0.01
Endosulfan sulfate	2.0E-01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-07	2.3E-05	1.2E-11				1.9E-07	3.2E-05	5.4E-05	0.00
Endrin	2.0E-01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-07	4.5E-04	1.2E-11				1.9E-07	6.4E-04	1.1E-03	0.08
Endrin aldehyde	2.0E-01	3.0E-04	3.0E-04	NI	1	0.10		1.4E-07	4.5E-04	1.2E-11				1.9E-07	6.4E-04	1.1E-03	0.08
Endrin ketone	5.9E-01	3.0E-04	3.0E-04	NI	1	0.10		4.0E-07	1.3E-03	3.6E-11				5.6E-07	1.9E-03	3.2E-03	0.24
Gamma-BHC (Lindane)	1.1E-01	3.0E-04	3.0E-04	NI	1	0.10		7.1E-08	2.4E-04	6.5E-12				1.0E-07	3.3E-04	5.7E-04	0.04
Heptachlor	3.2E+00	5.0E-04	5.0E-04	NI	1	0.10		2.2E-06	4.3E-03	2.0E-10				3.1E-06	6.1E-03	1.0E-02	0.79
Heptachlor epoxide	6.8E-01	1.3E-05	1.3E-05	NI	1	0.10		4.6E-07	3.5E-02	4.2E-11				6.5E-07	5.0E-02	8.5E-02	6.46
Methoxychlor	1.8E+01	5.0E-03	5.0E-03	NI	1	0.10		1.2E-05	2.4E-03	1.1E-09				1.7E-05	3.4E-03	5.9E-03	0.44
Toxaphene	1.1E+01	NI	NI	NI	1	0.10		7.1E-06		6.5E-10				1.0E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									5.5E-01		6.2E-07				7.7E-01	1.3E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL171-2

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 Index	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	4.1E+01	3.0E-05	3.0E-05	NI	1	0.10		2.8E-05	9.2E-01	2.5E-09				3.9E-05	1.3E+00	2.2E+00	77.27
Alpha-BHC	4.3E-01	NI	NI	NI	1	0.10		2.9E-07		2.6E-11				4.1E-07			
Beta-BHC	4.3E-01	NI	NI	NI	1	0.10		2.9E-07		2.6E-11				4.1E-07			
4,4-DDD	8.0E-01	NI	NI	NI	1	0.10		5.4E-07		4.9E-11				7.6E-07			
4,4-DDE	8.0E-01	NI	NI	NI	1	0.10		5.4E-07		4.9E-11				7.6E-07			
4,4-DDT	1.3E+00	5.0E-04	5.0E-04	NI	1	0.10		8.8E-07	1.8E-03	8.0E-11				1.2E-06	2.5E-03	4.2E-03	0.15
Delta-BHC	4.3E-01	NI	NI	NI	1	0.10		2.9E-07		2.6E-11				4.1E-07			
Dieldrin	1.5E+01	5.0E-05	5.0E-05	NI	1	0.10		1.0E-05	2.0E-01	9.3E-10				1.4E-05	2.9E-01	4.9E-01	16.96
Chlordane	3.8E+00	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.6E-06	5.1E-03	2.3E-10	4.7E-07			3.6E-06	7.2E-03	1.2E-02	0.43
Endosulfan I	4.3E-01	6.0E-03	6.0E-03	NI	1	0.10		2.9E-07	4.8E-05	2.6E-11				4.1E-07	6.8E-05	1.2E-04	0.00
Endosulfan II	8.0E-01	6.0E-03	6.0E-03	NI	1	0.10		5.4E-07	9.0E-05	4.9E-11				7.6E-07	1.3E-04	2.2E-04	0.01
Endosulfan sulfate	8.0E-01	6.0E-03	6.0E-03	NI	1	0.10		5.4E-07	9.0E-05	4.9E-11				7.6E-07	1.3E-04	2.2E-04	0.01
Endrin	8.0E-01	3.0E-04	3.0E-04	NI	1	0.10		5.4E-07	1.8E-03	4.9E-11				7.6E-07	2.5E-03	4.3E-03	0.15
Endrin aldehyde	8.0E-01	3.0E-04	3.0E-04	NI	1	0.10		5.4E-07	1.8E-03	4.9E-11				7.6E-07	2.5E-03	4.3E-03	0.15
Endrin ketone	8.0E-01	3.0E-04	3.0E-04	NI	1	0.10		5.4E-07	1.8E-03	4.9E-11				7.6E-07	2.5E-03	4.3E-03	0.15
Gamma-BHC (Lindane)	1.2E+01	3.0E-04	3.0E-04	NI	1	0.10		8.1E-06	2.7E-02	7.4E-10				1.1E-05	3.8E-02	6.5E-02	2.26
Heptachlor	5.0E+00	5.0E-04	5.0E-04	NI	1	0.10		3.4E-06	6.8E-03	3.1E-10				4.8E-06	9.5E-03	1.6E-02	0.57
Heptachlor epoxide	4.3E-01	1.3E-05	1.3E-05	NI	1	0.10		2.9E-07	2.2E-02	2.6E-11				4.1E-07	3.1E-02	5.3E-02	1.85
Methoxychlor	4.3E+00	5.0E-03	5.0E-03	NI	1	0.10		2.9E-06	5.7E-04	2.6E-10				4.1E-06	8.1E-04	1.4E-03	0.05
Toxaphene	4.3E+01	NI	NI	NI	1	0.10		2.9E-05		2.6E-09				4.1E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.2E+00		4.7E-07				1.7E+00	2.9E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL171-4

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 Index	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	5.0E-02	3.0E-05	3.0E-05	NI	1	0.10		3.4E-08	1.1E-03	3.1E-12				4.8E-08	1.6E-03	2.7E-03	23.47
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	9.7E-03	NI	NI	NI	1	0.10		6.5E-09		6.0E-13				9.3E-09			
4,4-DDE	2.2E-03	NI	NI	NI	1	0.10		1.5E-09		1.4E-13				2.1E-09			
4,4-DDT	4.0E-02	5.0E-04	5.0E-04	NI	1	0.10		2.7E-08	5.4E-05	2.5E-12				3.8E-08	7.6E-05	1.3E-04	1.13
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	2.3E-01	5.0E-05	5.0E-05	NI	1	0.10		1.6E-07	3.1E-03	1.4E-11				2.2E-07	4.4E-03	7.5E-03	64.79
Chlordane	3.4E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.3E-08	4.6E-05	2.1E-12	4.2E-09			3.2E-08	6.5E-05	1.1E-04	0.96
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.00
Endosulfan II	3.5E-03	6.0E-03	6.0E-03	NI	1	0.10		2.4E-09	3.9E-07	2.2E-13				3.3E-09	5.6E-07	9.5E-07	0.01
Endosulfan sulfate	2.2E-03	6.0E-03	6.0E-03	NI	1	0.10		1.5E-09	2.4E-07	1.3E-13				2.1E-09	3.4E-07	5.8E-07	0.01
Endrin	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	5.0E-06	1.4E-13				2.1E-09	7.0E-06	1.2E-05	0.10
Endrin aldehyde	2.2E-03	3.0E-04	3.0E-04	NI	1	0.10		1.5E-09	4.8E-06	1.3E-13				2.1E-09	6.8E-06	1.2E-05	0.10
Endrin ketone	3.2E-02	3.0E-04	3.0E-04	NI	1	0.10		2.2E-08	7.2E-05	2.0E-12				3.1E-08	1.0E-04	1.7E-04	1.50
Gamma-BHC (Lindane)	3.9E-03	3.0E-04	3.0E-04	NI	1	0.10		2.6E-09	8.8E-06	2.4E-13				3.7E-09	1.2E-05	2.1E-05	0.18
Heptachlor	2.0E-02	5.0E-04	5.0E-04	NI	1	0.10		1.4E-08	2.7E-05	1.2E-12				1.9E-08	3.8E-05	6.5E-05	0.56
Heptachlor epoxide	6.6E-03	1.3E-05	1.3E-05	NI	1	0.10		4.5E-09	3.4E-04	4.1E-13				6.3E-09	4.8E-04	8.3E-04	7.15
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.03
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									4.8E-03		4.2E-09				6.8E-03	1.2E-02	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL172-2

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 Index	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+01	3.0E-05	3.0E-05	NI	1	0.10		6.8E-06	2.3E-01	6.2E-10				9.5E-06	3.2E-01	5.4E-01	15.68
Alpha-BHC	2.1E-01	NI	NI	NI	1	0.10		1.4E-07		1.3E-11				2.0E-07			
Beta-BHC	2.1E-01	NI	NI	NI	1	0.10		1.4E-07		1.3E-11				2.0E-07			
4,4-DDD	1.0E+00	NI	NI	NI	1	0.10		6.8E-07		6.2E-11				9.5E-07			
4,4-DDE	1.7E+00	NI	NI	NI	1	0.10		1.1E-06		1.1E-10				1.6E-06			
4,4-DDT	1.2E+01	5.0E-04	5.0E-04	NI	1	0.10		8.1E-06	1.6E-02	7.4E-10				1.1E-05	2.3E-02	3.9E-02	1.13
Delta-BHC	2.1E-01	NI	NI	NI	1	0.10		1.4E-07		1.3E-11				2.0E-07			
Dieldrin	7.8E+01	5.0E-05	5.0E-05	NI	1	0.10		5.3E-05	1.1E+00	4.8E-09				7.4E-05	1.5E+00	2.5E+00	73.38
Chlordane	1.1E+01	5.0E-04	5.0E-04	5.0E-04	1	0.10		7.4E-06	1.5E-02	6.7E-10	1.3E-06			1.0E-05	2.1E-02	3.6E-02	1.03
Endosulfan I	2.1E-01	6.0E-03	6.0E-03	NI	1	0.10		1.4E-07	2.4E-05	1.3E-11				2.0E-07	3.3E-05	5.7E-05	0.00
Endosulfan II	8.5E-01	6.0E-03	6.0E-03	NI	1	0.10		5.7E-07	9.6E-05	5.3E-11				8.1E-07	1.4E-04	2.3E-04	0.01
Endosulfan sulfate	4.1E-01	6.0E-03	6.0E-03	NI	1	0.10		2.8E-07	4.6E-05	2.5E-11				3.9E-07	6.5E-05	1.1E-04	0.00
Endrin	4.6E-01	3.0E-04	3.0E-04	NI	1	0.10		3.1E-07	1.0E-03	2.8E-11				4.4E-07	1.5E-03	2.5E-03	0.07
Endrin aldehyde	4.1E-01	3.0E-04	3.0E-04	NI	1	0.10		2.8E-07	9.2E-04	2.5E-11				3.9E-07	1.3E-03	2.2E-03	0.06
Endrin ketone	2.8E+00	3.0E-04	3.0E-04	NI	1	0.10		1.9E-06	6.3E-03	1.7E-10				2.7E-06	8.9E-03	1.5E-02	0.44
Gamma-BHC (Lindane)	6.9E-01	3.0E-04	3.0E-04	NI	1	0.10		4.7E-07	1.6E-03	4.3E-11				6.6E-07	2.2E-03	3.7E-03	0.11
Heptachlor	8.8E+00	5.0E-04	5.0E-04	NI	1	0.10		5.9E-06	1.2E-02	5.4E-10				8.4E-06	1.7E-02	2.9E-02	0.83
Heptachlor epoxide	2.0E+00	1.3E-05	1.3E-05	NI	1	0.10		1.4E-06	1.0E-01	1.2E-10				1.9E-06	1.5E-01	2.5E-01	7.24
Methoxychlor	2.1E+00	5.0E-03	5.0E-03	NI	1	0.10		1.4E-06	2.8E-04	1.3E-10				2.0E-06	4.0E-04	6.8E-04	0.02
Toxaphene	2.1E+01	NI	NI	NI	1	0.10		1.4E-05		1.3E-09				2.0E-05			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.4E+00		1.3E-06				2.0E+00	3.5E+00	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL172-4

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 Index	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	2.0E-03	3.0E-05	3.0E-05	NI	1	0.10		1.4E-09	4.5E-05	1.2E-13				1.9E-09	6.4E-05	1.1E-04	21.43
Alpha-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
Beta-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
4,4-DDD	2.3E-03	NI	NI	NI	1	0.10		1.6E-09		1.4E-13				2.2E-09			
4,4-DDE	2.3E-03	NI	NI	NI	1	0.10		1.6E-09		1.4E-13				2.2E-09			
4,4-DDT	2.3E-03	5.0E-04	5.0E-04	NI	1	0.10		1.6E-09	3.1E-06	1.4E-13				2.2E-09	4.4E-06	7.5E-06	1.48
Delta-BHC	1.2E-03	NI	NI	NI	1	0.10		8.1E-10		7.4E-14				1.1E-09			
Dieldrin	5.5E-03	5.0E-05	5.0E-05	NI	1	0.10		3.7E-09	7.4E-05	3.4E-13				5.2E-09	1.0E-04	1.8E-04	35.35
Chlordane	2.4E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-09	3.2E-06	1.5E-13	3.0E-10			2.3E-09	4.6E-06	7.8E-06	1.54
Endosulfan I	1.2E-03	6.0E-03	6.0E-03	NI	1	0.10		8.1E-10	1.4E-07	7.4E-14				1.1E-09	1.9E-07	3.3E-07	0.06
Endosulfan II	2.3E-03	6.0E-03	6.0E-03	NI	1	0.10		1.6E-09	2.6E-07	1.4E-13				2.2E-09	3.7E-07	6.2E-07	0.12
Endosulfan sulfate	2.3E-03	6.0E-03	6.0E-03	NI	1	0.10		1.6E-09	2.6E-07	1.4E-13				2.2E-09	3.7E-07	6.2E-07	0.12
Endrin	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	2.46
Endrin aldehyde	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	2.46
Endrin ketone	2.3E-03	3.0E-04	3.0E-04	NI	1	0.10		1.6E-09	5.2E-06	1.4E-13				2.2E-09	7.3E-06	1.2E-05	2.46
Gamma-BHC (Lindane)	1.2E-03	3.0E-04	3.0E-04	NI	1	0.10		8.1E-10	2.7E-06	7.4E-14				1.1E-09	3.8E-06	6.5E-06	1.29
Heptachlor	1.2E-03	5.0E-04	5.0E-04	NI	1	0.10		8.1E-10	1.6E-06	7.4E-14				1.1E-09	2.3E-06	3.9E-06	0.77
Heptachlor epoxide	1.2E-03	1.3E-05	1.3E-05	NI	1	0.10		8.1E-10	6.2E-05	7.4E-14				1.1E-09	8.8E-05	1.5E-04	29.67
Methoxychlor	1.2E-02	5.0E-03	5.0E-03	NI	1	0.10		8.1E-09	1.6E-06	7.4E-13				1.1E-08	2.3E-06	3.9E-06	0.77
Toxaphene	1.2E-01	NI	NI	NI	1	0.10		8.1E-08		7.4E-12				1.1E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.1E-04		3.0E-10				3.0E-04	5.1E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL173-2

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 Index	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	NI	1	0.10		7.4E-10	2.5E-05	6.8E-14				1.0E-09	3.5E-05	6.0E-05	16.83
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	4.0E-06	6.8E-06	1.93
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	2.9E-03	5.0E-05	5.0E-05	NI	1	0.10		2.0E-09	3.9E-05	1.8E-13				2.8E-09	5.5E-05	9.4E-05	26.63
Chlordane	2.2E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.5E-09	3.0E-06	1.4E-13	2.7E-10			2.1E-09	4.2E-06	7.2E-06	2.02
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.08
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.16
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.16
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	3.21
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	3.21
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	3.21
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	1.68
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.4E-10	1.5E-06	6.8E-14				1.0E-09	2.1E-06	3.6E-06	1.01
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.4E-10	5.7E-05	6.8E-14				1.0E-09	8.1E-05	1.4E-04	38.84
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	1.01
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.5E-04		2.7E-10				2.1E-04	3.5E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL174-2

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 Index	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	NI	1	0.10		7.4E-09	2.5E-04	6.8E-13				1.0E-08	3.5E-04	6.0E-04	8.43
Alpha-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
Beta-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
4,4-DDD	7.9E-01	NI	NI	NI	1	0.10		5.3E-07		4.9E-11				7.5E-07			
4,4-DDE	2.1E-02	NI	NI	NI	1	0.10		1.4E-08		1.3E-12				2.0E-08			
4,4-DDT	5.1E-02	5.0E-04	5.0E-04	NI	1	0.10		3.4E-08	6.9E-05	3.2E-12				4.9E-08	9.7E-05	1.7E-04	2.35
Delta-BHC	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
Dieldrin	9.1E-02	5.0E-05	5.0E-05	NI	1	0.10		6.1E-08	1.2E-03	5.6E-12				8.7E-08	1.7E-03	3.0E-03	41.86
Chlordane	3.6E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.4E-07	4.9E-04	2.2E-11	4.5E-08			3.4E-07	6.9E-04	1.2E-03	16.56
Endosulfan I	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.4E-09	1.2E-06	6.8E-13				1.0E-08	1.7E-06	3.0E-06	0.04
Endosulfan II	1.8E-01	6.0E-03	6.0E-03	NI	1	0.10		1.2E-07	2.0E-05	1.1E-11				1.7E-07	2.9E-05	4.9E-05	0.69
Endosulfan sulfate	2.5E-02	6.0E-03	6.0E-03	NI	1	0.10		1.7E-08	2.8E-06	1.5E-12				2.4E-08	4.0E-06	6.8E-06	0.10
Endrin	7.1E-02	3.0E-04	3.0E-04	NI	1	0.10		4.8E-08	1.6E-04	4.4E-12				6.8E-08	2.3E-04	3.9E-04	5.44
Endrin aldehyde	2.1E-02	3.0E-04	3.0E-04	NI	1	0.10		1.4E-08	4.7E-05	1.3E-12				2.0E-08	6.7E-05	1.1E-04	1.61
Endrin ketone	2.1E-02	3.0E-04	3.0E-04	NI	1	0.10		1.4E-08	4.7E-05	1.3E-12				2.0E-08	6.7E-05	1.1E-04	1.61
Gamma-BHC (Lindane)	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.4E-09	2.5E-05	6.8E-13				1.0E-08	3.5E-05	6.0E-05	0.84
Heptachlor	1.1E-02	5.0E-04	5.0E-04	NI	1	0.10		7.4E-09	1.5E-05	6.8E-13				1.0E-08	2.1E-05	3.6E-05	0.51
Heptachlor epoxide	1.1E-02	1.3E-05	1.3E-05	NI	1	0.10		7.4E-09	5.7E-04	6.8E-13				1.0E-08	8.1E-04	1.4E-03	19.46
Methoxychlor	1.1E-01	5.0E-03	5.0E-03	NI	1	0.10		7.4E-08	1.5E-05	6.8E-12				1.0E-07	2.1E-05	3.6E-05	0.51
Toxaphene	1.1E+00	NI	NI	NI	1	0.10		7.4E-07		6.8E-11				1.0E-06			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.9E-03		4.5E-08				4.1E-03	7.1E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL175-2

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 Index	Risk Percentage %
		Oral (RFDO)	Dermal (RFDO)	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	7.9E-03	3.0E-05	3.0E-05	NI	1	0.10		5.3E-09	1.8E-04	4.9E-13				7.5E-09	2.5E-04	4.3E-04	15.75
Alpha-BHC	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
Beta-BHC	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDD	9.5E-02	NI	NI	NI	1	0.10		6.4E-08		5.9E-12				9.1E-08			
4,4-DDE	1.1E-02	NI	NI	NI	1	0.10		7.4E-09		6.8E-13				1.0E-08			
4,4-DDT	2.9E-01	5.0E-04	5.0E-04	NI	1	0.10		2.0E-07	3.9E-04	1.8E-11				2.8E-07	5.5E-04	9.4E-04	34.70
Delta-BHC	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
Dieldrin	2.7E-02	5.0E-05	5.0E-05	NI	1	0.10		1.8E-08	3.6E-04	1.7E-12				2.6E-08	5.2E-04	8.8E-04	32.30
Chlordane	2.4E-02	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.6E-08	3.2E-05	1.5E-12	3.0E-09			2.3E-08	4.6E-05	7.8E-05	2.86
Endosulfan I	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.02
Endosulfan II	8.8E-03	6.0E-03	6.0E-03	NI	1	0.10		5.9E-09	9.9E-07	5.4E-13				8.4E-09	1.4E-06	2.4E-06	0.09
Endosulfan sulfate	3.9E-03	6.0E-03	6.0E-03	NI	1	0.10		2.6E-09	4.4E-07	2.4E-13				3.7E-09	6.2E-07	1.1E-06	0.04
Endrin	1.0E-02	3.0E-04	3.0E-04	NI	1	0.10		6.8E-09	2.3E-05	6.2E-13				9.5E-09	3.2E-05	5.4E-05	1.99
Endrin aldehyde	3.9E-03	3.0E-04	3.0E-04	NI	1	0.10		2.6E-09	8.8E-06	2.4E-13				3.7E-09	1.2E-05	2.1E-05	0.78
Endrin ketone	3.9E-03	3.0E-04	3.0E-04	NI	1	0.10		2.6E-09	8.8E-06	2.4E-13				3.7E-09	1.2E-05	2.1E-05	0.78
Gamma-BHC (Lindane)	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.40
Heptachlor	7.1E-03	5.0E-04	5.0E-04	NI	1	0.10		4.8E-09	9.6E-06	4.4E-13				6.8E-09	1.4E-05	2.3E-05	0.85
Heptachlor epoxide	2.0E-03	1.3E-05	1.3E-05	NI	1	0.10		1.4E-09	1.0E-04	1.2E-13				1.9E-09	1.5E-04	2.5E-04	9.20
Methoxychlor	2.0E-02	5.0E-03	5.0E-03	NI	1	0.10		1.4E-08	2.7E-06	1.2E-12				1.9E-08	3.8E-06	6.5E-06	0.24
Toxaphene	2.0E-01	NI	NI	NI	1	0.10		1.4E-07		1.2E-11				1.9E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.1E-03		3.0E-09				1.6E-03	2.7E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherance Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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 (m^3/d)	30
Ingestion Rate, IGR (mg/d)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDD$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

RME ADULT CONSTRUCTION WORKER NON-CANCER UNIT RISK FROM EXPOSURE TO COPCs IN SUBSURFACE SOIL
SAMPLING LOCATION: SL176-2

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 Index	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-02	3.0E-05	3.0E-05	NI	1	0.10		8.1E-09	2.7E-04	7.4E-13				1.1E-08	3.8E-04	6.5E-04	14.80
Alpha-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Beta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
4,4-DDD	9.7E-01	NI	NI	NI	1	0.10		6.5E-07		6.0E-11				9.3E-07			
4,4-DDE	1.1E-02	NI	NI	NI	1	0.10		7.1E-09		6.5E-13				1.0E-08			
4,4-DDT	2.6E-01	5.0E-04	5.0E-04	NI	1	0.10		1.8E-07	3.5E-04	1.6E-11				2.5E-07	5.0E-04	8.5E-04	19.25
Delta-BHC	5.5E-03	NI	NI	NI	1	0.10		3.7E-09		3.4E-13				5.2E-09			
Dieldrin	2.6E-02	5.0E-05	5.0E-05	NI	1	0.10		1.8E-08	3.5E-04	1.6E-12				2.5E-08	5.0E-04	8.5E-04	19.25
Chlordane	1.3E-01	5.0E-04	5.0E-04	5.0E-04	1	0.10		8.8E-08	1.8E-04	8.0E-12	1.6E-08			1.2E-07	2.5E-04	4.2E-04	9.62
Endosulfan I	5.5E-03	6.0E-03	6.0E-03	NI	1	0.10		3.7E-09	6.2E-07	3.4E-13				5.2E-09	8.7E-07	1.5E-06	0.03
Endosulfan II	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.1E-09	1.2E-06	6.5E-13				1.0E-08	1.7E-06	2.9E-06	0.06
Endosulfan sulfate	1.1E-02	6.0E-03	6.0E-03	NI	1	0.10		7.1E-09	1.2E-06	6.5E-13				1.0E-08	1.7E-06	2.9E-06	0.06
Endrin	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.1E-09	2.4E-05	6.5E-13				1.0E-08	3.3E-05	5.7E-05	1.30
Endrin aldehyde	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.1E-09	2.4E-05	6.5E-13				1.0E-08	3.3E-05	5.7E-05	1.30
Endrin ketone	1.1E-02	3.0E-04	3.0E-04	NI	1	0.10		7.1E-09	2.4E-05	6.5E-13				1.0E-08	3.3E-05	5.7E-05	1.30
Gamma-BHC (Lindane)	5.5E-03	3.0E-04	3.0E-04	NI	1	0.10		3.7E-09	1.2E-05	3.4E-13				5.2E-09	1.7E-05	3.0E-05	0.68
Heptachlor	2.2E-01	5.0E-04	5.0E-04	NI	1	0.10		1.5E-07	3.0E-04	1.4E-11				2.1E-07	4.2E-04	7.2E-04	16.29
Heptachlor epoxide	5.5E-03	1.3E-05	1.3E-05	NI	1	0.10		3.7E-09	2.9E-04	3.4E-13				5.2E-09	4.0E-04	6.9E-04	15.66
Methoxychlor	5.5E-02	5.0E-03	5.0E-03	NI	1	0.10		3.7E-08	7.4E-06	3.4E-12				5.2E-08	1.0E-05	1.8E-05	0.41
Toxaphene	5.5E-01	NI	NI	NI	1	0.10		3.7E-07		3.4E-11				5.2E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									1.8E-03		1.6E-08				2.6E-03	4.4E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm²)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL177-2

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 Index	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	9.1E-02	3.0E-05	3.0E-05	NI	1	0.10		6.1E-08	2.0E-03	5.6E-12				8.7E-08	2.9E-03	4.9E-03	92.84
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
4,4-DDD	2.5E-03	NI	NI	NI	1	0.10		1.7E-09		1.5E-13				2.4E-09			
4,4-DDE	2.0E-03	NI	NI	NI	1	0.10		1.4E-09		1.2E-13				1.9E-09			
4,4-DDT	2.0E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.7E-06	1.2E-13				1.9E-09	3.8E-06	6.5E-06	0.12
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.1E-10		6.5E-14				1.0E-09			
Dieldrin	5.6E-03	5.0E-05	5.0E-05	NI	1	0.10		3.8E-09	7.6E-05	3.5E-13				5.3E-09	1.1E-04	1.8E-04	3.43
Chlordane	4.3E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		2.9E-09	5.8E-06	2.7E-13	5.3E-10			4.1E-09	8.2E-06	1.4E-05	0.26
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.1E-10	1.2E-07	6.5E-14				1.0E-09	1.7E-07	2.9E-07	0.01
Endosulfan II	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.01
Endosulfan sulfate	2.0E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.3E-07	1.2E-13				1.9E-09	3.2E-07	5.4E-07	0.01
Endrin	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.20
Endrin aldehyde	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.20
Endrin ketone	2.0E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.5E-06	1.2E-13				1.9E-09	6.4E-06	1.1E-05	0.20
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.1E-10	2.4E-06	6.5E-14				1.0E-09	3.3E-06	5.7E-06	0.11
Heptachlor	1.1E-03	5.0E-04	5.0E-04	NI	1	0.10		7.1E-10	1.4E-06	6.5E-14				1.0E-09	2.0E-06	3.4E-06	0.06
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.1E-10	5.5E-05	6.5E-14				1.0E-09	7.7E-05	1.3E-04	2.47
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.1E-09	1.4E-06	6.5E-13				1.0E-08	2.0E-06	3.4E-06	0.06
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.1E-08		6.5E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									2.2E-03		5.3E-10				3.1E-03	5.3E-03	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
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: SL178-2

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 Index	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-03	3.0E-05	3.0E-05	NI	1	0.10		1.0E-09	3.4E-05	9.3E-14				1.4E-09	4.8E-05	8.1E-05	9.37
Alpha-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Beta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
4,4-DDD	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDE	2.1E-03	NI	NI	NI	1	0.10		1.4E-09		1.3E-13				2.0E-09			
4,4-DDT	2.1E-03	5.0E-04	5.0E-04	NI	1	0.10		1.4E-09	2.8E-06	1.3E-13				2.0E-09	4.0E-06	6.8E-06	0.79
Delta-BHC	1.1E-03	NI	NI	NI	1	0.10		7.4E-10		6.8E-14				1.0E-09			
Dieldrin	1.8E-02	5.0E-05	5.0E-05	NI	1	0.10		1.2E-08	2.4E-04	1.1E-12				1.7E-08	3.4E-04	5.9E-04	67.47
Chlordane	2.1E-03	5.0E-04	5.0E-04	5.0E-04	1	0.10		1.4E-09	2.8E-06	1.3E-13	2.6E-10			2.0E-09	4.0E-06	6.8E-06	0.79
Endosulfan I	1.1E-03	6.0E-03	6.0E-03	NI	1	0.10		7.4E-10	1.2E-07	6.8E-14				1.0E-09	1.7E-07	3.0E-07	0.03
Endosulfan II	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.07
Endosulfan sulfate	2.1E-03	6.0E-03	6.0E-03	NI	1	0.10		1.4E-09	2.4E-07	1.3E-13				2.0E-09	3.3E-07	5.7E-07	0.07
Endrin	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	1.31
Endrin aldehyde	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	1.31
Endrin ketone	2.1E-03	3.0E-04	3.0E-04	NI	1	0.10		1.4E-09	4.7E-06	1.3E-13				2.0E-09	6.7E-06	1.1E-05	1.31
Gamma-BHC (Lindane)	1.1E-03	3.0E-04	3.0E-04	NI	1	0.10		7.4E-10	2.5E-06	6.8E-14				1.0E-09	3.5E-06	6.0E-06	0.69
Heptachlor	1.4E-03	5.0E-04	5.0E-04	NI	1	0.10		9.5E-10	1.9E-06	8.7E-14				1.3E-09	2.7E-06	4.6E-06	0.52
Heptachlor epoxide	1.1E-03	1.3E-05	1.3E-05	NI	1	0.10		7.4E-10	5.7E-05	6.8E-14				1.0E-09	8.1E-05	1.4E-04	15.86
Methoxychlor	1.1E-02	5.0E-03	5.0E-03	NI	1	0.10		7.4E-09	1.5E-06	6.8E-13				1.0E-08	2.1E-06	3.6E-06	0.41
Toxaphene	1.1E-01	NI	NI	NI	1	0.10		7.4E-08		6.8E-12				1.0E-07			
DIOXIN																	
2,3,7,8-TCDD					1	0.10											
No samples collected																	
Total Noncancer Hazard									3.6E-04		2.6E-10				5.1E-04	8.7E-04	100

NI = No Information Available

ASSUMPTIONS:

Averaging Time, AT (yr)	1
Adherence Factor, AF (mg/cm^2)	0.122
Body Weight, BW (kg)	71.8
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)	100
Particulate Emission Factor, PEF (m^3/kg)	4630000000
Respirable Fraction, RF (unitless)	1
Skin surface area, SA (cm^2/d)	5,800

EQUATIONS

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

$$HQD = IDD / RFDO$$

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

$$HQIS = IDIS / RFDI$$

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

$$HQIV = IDIV / RFDI$$

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

$$HQIG = IDIG / RFDO$$

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivilant Factors

ANALYTE		SL104-2 ng/kg		SL105-2 ng/kg		SL105-4 ng/kg		SL113-2 ng/kg		SL123-5 ng/kg		SL124-5 ng/kg	
	I-TEFs												
2378-TCDD	1	1.10E+01	1.10E+01	3.20E+05	3.20E+05	7.80E+01	7.80E+01	6.90E+03	6.90E+03	1.20E+00	1.20E+00	1.20E+00	1.20E+00
12378-PeCDD	0.5	6.20E+00	3.10E+00	1.50E+04	7.50E+03	8.40E+00	4.20E+00	1.30E+02	6.50E+01	2.50E+00	1.25E+00	2.50E+00	1.25E+00
123478-HxCDD	0.1	2.50E+00	2.50E-01	3.50E+02	3.50E+01	3.30E-01	3.30E-02	1.60E+01	1.60E+00	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDD	0.1	2.50E+00	2.50E-01	9.60E+01	9.60E+00	3.65E-01	3.65E-02	7.80E+02	7.80E+01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123789-HxCDD	0.1	2.50E+00	2.50E-01	9.40E+01	9.40E+00	9.50E-01	9.50E-02	3.10E+02	3.10E+01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
1234678-HpCDD	0.01	2.50E+00	2.50E-02	5.50E+02	5.50E+00	2.60E+00	2.60E-02	5.30E+02	5.30E+00	2.50E+00	2.50E-02	2.50E+00	2.50E-02
OCDD	0.001	2.30E+01	2.30E-02	7.30E+03	7.30E+00	2.10E+01	2.10E-02	4.40E+03	4.40E+00	5.00E+00	5.00E-03	5.00E+00	5.00E-03
2378-TCDF	0.1	5.00E-01	5.00E-02	4.10E+02	4.10E+01	8.60E-01	8.60E-02	3.80E+01	3.80E+00	5.00E-01	5.00E-02	5.00E-01	5.00E-02
12378-PeCDF	0.05	2.50E+00	1.25E-01	2.60E+01	1.30E+00	3.10E-01	1.55E-02	7.10E+00	3.55E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01
23478-PeCDF	0.5	2.50E+00	1.25E+00	9.20E+01	4.60E+01	2.00E-01	1.00E-01	6.80E+00	3.40E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00
123478-HxCDF	0.1	2.50E+00	2.50E-01	2.70E+01	2.70E+00	4.60E-01	4.60E-02	4.00E+01	4.00E+00	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.10E-01	2.10E-02	1.30E+01	1.30E+00	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123789-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	1.50E-01	1.50E-02	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
234678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	1.45E-01	1.45E-02	9.00E+00	9.00E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
1234678-HpCDF	0.01	2.50E+00	2.50E-02	1.20E+02	1.20E+00	6.50E-01	6.50E-03	2.70E+03	2.70E+01	2.50E+00	2.50E-02	2.50E+00	2.50E-02
1234789-HpCDF	0.01	2.50E+00	2.50E-02	7.80E+00	7.80E-02	1.20E-01	1.20E-03	3.50E+01	3.50E-01	2.50E+00	2.50E-02	2.50E+00	2.50E-02
OCDF	0.001	5.00E+00	5.00E-03	4.70E+02	4.70E-01	8.00E-01	8.00E-04	1.40E+03	1.40E+00	5.00E+00	5.00E-03	5.00E+00	5.00E-03
	ng/kg	TEQ	1.74E+01	TEQ	3.28E+05	TEQ	8.27E+01	TEQ	7.13E+03	TEQ	5.71E+00	TEQ	5.71E+00
	mg/kg		1.74E-05		3.3E-01		8.3E-05		7.1E-03		5.7E-06		5.7E-06
	µg/kg		0.0174		330		0.0827		7.1		0.0057		0.0057

Riverdale Chemical
h:/data/projects/Riverdale/Remedy/teqsall.xls

Created by: Brendan McLennan
Checked by: Rae Mindock
6/26/2001

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivilant Factors

ANALYTE		SL127-5 ng/kg		SL129-5 ng/kg		SL133-2 ng/kg		SL136-2 ng/kg		SL160-2 ng/kg		SL162-4 ng/kg	
	I-TEFs												
2378-TCDD	1	2.50E+00	2.50E+00	2.70E+02	2.70E+02	1.10E+00	1.10E+00	1.50E+00	1.50E+00	8.20E+02	8.20E+02	7.30E+04	7.30E+04
12378-PeCDD	0.5	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	6.30E+01	3.15E+01
123478-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.20E+01	2.20E+00
123789-HxCDD	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	6.50E+01	6.50E+00
1234678-HpCDD	0.01	2.50E+00	2.50E-02	9.00E+00	9.00E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	3.10E+01	3.10E-01
OCDD	0.001	5.00E+00	5.00E-03	8.50E+01	8.50E-02	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	1.30E+02	1.30E-01
2378-TCDF	0.1	5.00E-01	5.00E-02	3.60E+00	3.60E-01	5.00E-01	5.00E-02	5.00E-01	5.00E-02	8.00E-01	8.00E-02	1.50E+02	1.50E+01
12378-PeCDF	0.05	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01	2.50E+00	1.25E-01
23478-PeCDF	0.5	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	2.50E+00	1.25E+00	7.80E+00	3.90E+00
123478-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
123789-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
234678-HxCDF	0.1	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01	2.50E+00	2.50E-01
1234678-HpCDF	0.01	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	1.90E+01	1.90E-01
1234789-HpCDF	0.01	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02	2.50E+00	2.50E-02
OCDF	0.001	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	5.00E+00	5.00E-03	3.50E+01	3.50E-02
	ng/kg	TEQ	7.01E+00	TEQ	2.75E+02	TEQ	5.61E+00	TEQ	6.01E+00	TEQ	8.25E+02	TEQ	7.31E+04
	mg/kg		7.01E-06		2.75E-04		5.61E-06		6.01E-06		8.25E-04		7.31E-02
	µg/kg		0.007010		0.275		0.005610		0.006010		0.825		73.06

Riverdale Chemical
h:/data/projects/Riverdale/Remedy/teqsall.xls

Created by: Brendan McLennan
Checked by: Rae Mindock
6/26/2001

Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration Calculations Using International Toxic Equivilant Factors

ANALYTE		SL170-4 ng/kg	
	I-TEFs		
2378-TCDD	1	1.10E+00	1.10E+00
12378-PeCDD	0.5	3.15E-01	1.58E-01
123478-HxCDD	0.1	1.30E-01	1.30E-02
123678-HxCDD	0.1	2.25E-01	2.25E-02
123789-HxCDD	0.1	4.20E-01	4.20E-02
1234678-HpCDD	0.01	1.20E+00	1.20E-02
OCDD	0.001	1.30E+01	1.30E-02
2378-TCDF	0.1	2.70E+00	2.70E-01
12378-PeCDF	0.05	2.70E+00	1.35E-01
23478-PeCDF	0.5	2.60E+00	1.30E+00
123478-HxCDF	0.1	4.10E+00	4.10E-01
123678-HxCDF	0.1	9.00E-01	9.00E-02
123789-HxCDF	0.1	1.30E-01	1.30E-02
234678-HxCDF	0.1	5.00E-01	5.00E-02
1234678-HpCDF	0.01	3.30E+00	3.30E-02
1234789-HpCDF	0.01	1.75E-01	1.75E-03
OCDF	0.001	6.00E-01	6.00E-04
	ng/kg	TEQ	**3.66E+00**
	mg/kg		3.66E-06
	µg/kg		0.00366

Riverdale Chemical
h:/data/projects/Riverdale/Remedy/teqsall.xls

Created by: Brendan McLennan
Checked by: Rae Mindock
6/26/2001

Appendix B
Waste Manifests

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF [redacted] AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM ~~HAZARDOUS~~ WASTE MANIFEST

1. Generator's US EPA ID No. ILD059446153	Manifest Document No. 97972	2. Page 1 of 1	Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Riverdale Chemical
220 E. 17th St
Chicago Heights, IL 60411

Location If Different

A. Illinois Manifest Document Number IL 9297972 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708-756-2010

5. Transporter 1 Company Name: Onyx Environmental Services L.L.C.
6. US EPA ID Number: NJD080631369

C. Transporter's ID Number

D. Transporter's Phone (973) 347-7111

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
WM of IL - CID RDF
138th & I94
Calumet City, IL 60409
10. US EPA ID Number: ILD10284248

G. Facility's IL ID Number

H. Facility's Phone (773) 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Non-Regulated material, NON-RCRA, NON-DOT.	001	CM	00030	Y	EPA HW Number NONE
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
300709 ; CIDJ23914

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
24 hour emergency number : 1-800-535-5035

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Date (Month Day Year)
John A. Fechalos	John A. Fechalos	060501

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
JAY STOB	Jay Stob	060501

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

FACIL.

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
Patricia Aguilera	Patricia Aguilera	060501

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

EPA Form 8700-22 (Rev. 6-89)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

A. Illinois Manifest Document Number: IL 9528457 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*.

C. Transporter's ID Number

5. Transporter 1 Company Name | 6. US EPA ID Number

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number

H. Facility's Phone ( )

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.					EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Date (Month Day Year)

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date (Month Day Year)

GENERATOR

TRANSPORTER

FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202-

The Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 5. GENERATOR MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 R 17th St, Chicago Heights IL 60411

Location If Different

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS: 708 756-2010

A. Illinois Manifest Document Number: IL 9528458 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0310450 9018

C. Transporter's ID Number: 4385

D. Transporter's Phone ( )

E. Transporter's ID Number

F. Transporter's Phone ( ) 0310390001

G. Facility's IL ID Number

H. Facility's Phone ( ) 773 646-3099

5. Transporter 1 Company Name | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: CIR Rm 1, 138th & Bishop Ford Fwy, Calumet City Il 60409 | 10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	CN		T	EPA HW Number: RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

GENERATOR

J. Additional Description for Materials Listed Above: Class A, Profile RF 1124, 28000

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR,** if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: SAM CONSTAS | Signature: [signature] | Date (Month Day Year): 06 13 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Richard Winsted | Signature: [signature] | Date (Month Day Year): 06 14 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

FACI-

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: [signature] | Signature: [signature] | Date (Month Day Year): 06 14 01

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COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Riverdale Chemical
220 East 17th Street
Chicago Heights, IL 6041[illegible]

Location If Different

A. Illinois Manifest Document Number IL 9343869 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

5. Transporter 1 Company Name | 6. US EPA ID Number

C. Transporter's ID Number I L 0 3 1 0 4 5 0 0 1 8

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number 0340

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
CID RDF
138th & Bishop Ford Freeway
Calumet City, IL 60409

10. US EPA ID Number

G. Facility's IL ID Number I L 0 3 1 0 3 9 0 0 0 1

H. Facility's Phone (773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT soil with trace herbicides	001		10		EPA HW Number EPI124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Profile EPI124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: Sam Constay | Signature | Date Month Day Year: 06 28 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: DAVID W. CHAPLEAU | Signature | Date Month Day Year: 062801

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: RASHAN SMITH | Signature | Date Month Day Year: 06 28 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

GENERATOR

3. Generator's Name and Mailing Address / Location If Different
Riverdale Chemical
220 East 17th Street
Chicago Heights, IL 60411

A. Illinois Manifest Document Number: IL 9343870 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0 3 1 0 4 3 0 0 1 8

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

5. Transporter 1 Company Name | 6. US EPA ID Number

C. Transporter's ID Number

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number: 0340

9. Designated Facility Name and Site Address
CID RDF
138th & Bishop Ford Freeway
Calumet City, IL 60409

10. US EPA ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0 3 1 0 3 9 0 0 0 1

H. Facility's Phone (773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT soil with trace herbicides	001		10		EPA HW Number EF1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Profile EF1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed/Typed Name: SAM GONSTAS | Signature | Date: 06 28 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: DAVID W. CHAPLEAU | Signature | Date: 06 28 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date: 06 28 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLU...

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

A. Illinois Manifest Document Number IL 9340414 FEE PAID IF APPLICABLE

Generator's Name and Mailing Address: Ercole Chemical
20 East 17th Street
Chicago Heights, IL 60411

Location If Different

B. Generator's IL ID Number 0 3 1 0 4 5 1 0 0 1 1 8

C. Transporter's ID Number 0340

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

D. Transporter's Phone ( )

5. Transporter 1 Company Name 6. US EPA ID Number

E. Transporter's ID Number

7. Transporter 2 Company Name 8. US EPA ID Number

F. Transporter's Phone 0 3 1 0 3 9 0 0 0 1

9. Designated Facility Name and Site Address: CID KDF
138th & Bishop Ford Freeway
Calumet City, IL 60409

10. US EPA ID Number

G. Facility's IL ID Number

H. Facility's Phone (773 646-3099)

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT soil with trace herbicides	0 0 1		10		EPA HW Number EP1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

K. Handling Codes for Wastes Listed Above In Item #14

Additional Description for Materials Listed Above
File EP1124
1-10

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: GREG JONES — Signature — Date: Month Day Year 06 28 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Sam Constas — Signature — Date: Month Day Year 06 28 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: DAVID W. CHAPLEAU — Signature — Date: Month Day Year 06 28 01

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Thomas Smith — Signature — Date: Month Day Year 06 28 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Verdale Chemical, 1 R 17th Street, Chicago Heights IL 60411

Location If Different

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340435 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0810450018

C. Transporter's ID Number: 3801

D. Transporter's Phone: (708) 254 6173

E. Transporter's ID Number:

F. Transporter's Phone ( ): 0310390001

G. Facility's IL ID Number:

H. Facility's Phone ( ): 773 646-3099

5. Transporter 1 Company Name: THORNCREEK

6. US EPA ID Number: N/A

7. Transporter 2 Company Name:

8. US EPA ID Number:

9. Designated Facility Name and Site Address: CIN RMP 1 138th & Bishop Ford Fwy, Calumet City IL 60409

10. US EPA ID Number:

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

Additional Description for Materials Listed Above: Class A, Profile RF 1124, 27,500

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 ____ Load 6 ____

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Printed/Typed Name: PETER BIBBY | Signature: [signature] | Date: Month Day Year 06 28 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Ken Hochsteiler | Signature: [signature] | Date: Month Day Year 06 28 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: | Signature: | Date: Month Day Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: | Signature: | Date: Month Day Year 06 28 01

GENERATOR

TRANSPORTER

FACIL

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COPY 1. TSD MAIL TO GENERATOR

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STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 E 17th Street
Chicago Heights IL 60414

4. TRANSPORTER EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number IL 9340436 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number 0310450018

D. Transporter's Phone (708) 759-6173

E. Transporter's ID Number 3801

F. Transporter's Phone ( )

G. Facility's ID Number IL0310390001

H. Facility's Phone 773 646-3099

5. Transporter 1 Company Name: Thornwood

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RR 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RR 1124
WT27,000

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 ____ Load 4 ____ Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** *I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.*

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Printed/Typed Name: Peter Barry | Signature: [signature] | Date Month Day Year: 06 28 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Kelly C. Miller | Signature: [signature] | Date Month Day Year: 06 28 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date Month Day Year: 06 28 01

GENERATOR

TRANSPORTER

FACILITY

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COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 60411

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number IL 9340437 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number 0310450018

D. Transporter's Phone 708 754 6173

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0310390001

H. Facility's Phone 773 646-3099

5. Transporter 1 Company Name: THORNCREEK. | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RF 1124
27,500

K. Handling Codes for Wastes Listed Above in Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 ____ Load 5 ____ Load 6 ____

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: PETER BIBBY | Signature: [signature] | Date Month Day Year: 06 28 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: BERNARD BIXENMAN | Signature: [signature] | Date Month Day Year: 6 28 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date Month Day Year

GENERATOR

TRANSPORTER

FACIL

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COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Riverdale Chemical
220 E 17th Street
Chicago Heights IL 60411

Location If Different

A. Illinois Manifest Document Number
IL 9340438 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

5. Transporter 1 Company Name | 6. US EPA ID Number

C. Transporter 1 ILD981045018 ID Number

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

9. Designated Facility Name and Site Address
CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

10. US EPA ID Number

F. Transporter's Phone ( )

G. Facility's IL0310390001 ID Number

H. Facility's Phone 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
GENERATOR a. Not hazardous by DOT contaminated soil	001	DT	1	T	EPA HW Number RP 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Class A
Profile RP 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Load 1 15 Load 2____ Load 3____ Load 4____ Load 5____ Load 6____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

*If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.*

Printed/Typed Name: PETER BIBBY | Signature | Date: Month Day Year 06 28 01

TRANSPORTER 17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: X W. Carter | Signature: X W. Carter | Date: Month Day Year 062801

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY 19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date: Month Day Year 062801

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1969, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 E 17th Street, Chicago Heights IL 60411 — Location If Different

A. Illinois Manifest Document Number: IL 9340441 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

C. Transporter's ID Number: 0310450018

5. Transporter 1 Company Name: THORN CREEK — 6. US EPA ID Number: N/A

D. Transporter's Phone: (708) 754-6173

7. Transporter 2 Company Name — 8. US EPA ID Number

E. Transporter's ID Number: 3801

9. Designated Facility Name and Site Address: CID RDF # 4, 138th & Bishop Ford Fwy, Calumet City IL 60409 — 10. US EPA ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone: 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	RP 1124
b.					
c.					
d.					

J. Additional Description for Materials Listed Above: Class A, Profile RP 1124, 27,500

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 10 Load 5 ____ Load 6 ____

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: PETER BIBBY — Signature: [signature] — Date: Month Day Year 06 29 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: KEN HOCHSTETLER — Signature: [signature] — Date: Month Day Year 06 29 0

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera — Signature: [signature] — Date: Month Day Year 06 29 01

GENERATOR — TRANSPORTER — FACILITY

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 E 17th Street, Chicago Heights IL 60411 | Location If Different

4. Transport EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

5. Transporter 1 Company Name: Thorn Creek | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: CID RDF # 4, 138th & Bishop Ford Fwy, Calumet City IL 60409 | 10. US EPA ID Number

A. Illinois Manifest Document Number: IL 9340442 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number: 0310450018

D. Transporter's Phone (708) 754-617

E. Transporter's ID Number: 3801

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone (773) 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Class A, Profile RF 1124, 27,400

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 15 Load 6 ____

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Peter Bibby | Signature: [signature] | Date Month Day Y: 06 29 0

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Tom Watson | Signature: Tom Watson | Date Month Day: 06 29 0

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date Month Day: 06 29

GENERATOR

TRANSPORTER

FACILITY

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

In case of a spill call the Illinois Office of Emergency Response at 217-782-7860

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different

Riverdale Chemical
220 E 17th Street
Chicago Heights IL 60411

A. Illinois Manifest Document Number: IL 9340443 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

C. Transporter's ID Number 0310450018

5. Transporter 1 Company Name | 6. US EPA ID Number

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

F. Transporter's Phone ( )

G. Facility's IL ID Number 0310390001

H. Facility's Phone ( ) 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RF 1124
27,700

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 15 Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date Month Day Year
Peter Bibby	[signature]	06 28 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
W. Carter	W. Carter	06 29 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date Month Day Year
		06 29 0

GENERATOR — TRANSPORTER — FACILITY

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COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

GENERATOR

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 6041[illegible]

A. Illinois Manifest Document Number: IL 9340439 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0 3 1 0 4 5 0 0 1 8

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* [illegible]

5. Transporter 1 Company Name | 6. US EPA ID Number

C. Transporter [illegible] ID Number: 0340

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
1 3 8 t h & B i s h o p F o r d P w y
Calumet City IL 60409

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0 3 1 0 3 9 0 0 0 1

H. Facility's Phone: 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. N o t h a z a r d o u s b y D O T c o n t a m i n a t e d s o i l 001					EPA HW Number RP 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

C l a s s A
Profile RP 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2____ Load 3____ Load 4____ Load 5____ Load 6____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date (Month Day Year)
PETER BIBBY	[signature]	06 28 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
Richard Winsted	[signature]	07 05 0[illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
Patricia Newlin	[signature]	07 05 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1988, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS — ENVIRONMENTAL PROTECTION AGENCY / DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different

Riverdale Chemical
220 E 17th Street
Chicago Heights IL 60411

4. EMERGENCY AND SPILL ASSISTANCE NUMBERS* FOR 156-2010

A. Illinois Manifest Document Number IL 9340440 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number IL0310450018

D. Transporter's Phone ( )

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number IL0310390001

H. Facility's Phone 773 646-3099

5. Transporter 1 Company Name / 6. US EPA ID Number

7. Transporter 2 Company Name / 8. US EPA ID Number

9. Designated Facility Name and Site Address / 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Pwy
Calumet City IL 60409

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT	15	T	EPA HW Number RP 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RP 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2____ Load 3____ Load 4____ Load 5____ Load 6____

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GENERATOR

Printed/Typed Name	Signature	Date Month Day Year
CONRAD T. HARWELL	Conrad T Harwell	07 11 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials		
Printed/Typed Name: LEROY GRACZ	Signature	Date Month Day Year: 07 11 01
18. Transporter 2 Acknowledgement of Receipt of Materials		Date
Printed/Typed Name	Signature	Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.		Date
Printed/Typed Name: Patricia Aguirre	Signature	Month Day Year: 07 11 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/267-2675.

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

GENERATOR

3. Generator's Name and Mailing Address / Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 6041[illegible]

A. Illinois Manifest Document Number: IL 9340445 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-8810

5. Transporter 1 Company Name: #144 | 6. US EPA ID Number

C. Transporter 1 IL ID Number: 0310450018

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's IL ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
1 3 8 t h & B i s h o p F o r d F w y
Calumet City IL 60409

G. Facility's IL ID Number: 0310390001

H. Facility's Phone: 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. N o t h a z a r d o u s b y D O T c o n t a m i n a t e d s o i l 001		D T	45	T	EPA HW Number RR 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

C l a s s A
Profile RR 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 ____ Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: CONRAD T. HARWELL | Signature: Conrad T Harwell | Date Month Day Year: 07 11 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: JAMES M. GRIFFIN | Signature: James M Griffin | Date Month Day Year: 07 11 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera | Signature | Date Month Day Year: 07 11 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

Wt 28,200

In case of a Spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 E 17th Street
Chicago Heights IL 60411

4. EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340444 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

5. Transporter 1 Company Name | 6. US EPA ID Number

OZINGA TRANSPORTATION

C. Transporter's IL ID Number: IL0310450018

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Pwy
Calumet City IL 60409

G. Facility's IL ID Number: IL0310390001

H. Facility's Phone: 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT	000175		EPA HW Number RR 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RR 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 15 Load 6 X

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name	Signature	Date Month Day Year
CONRAD T. HARWELL	Conrad T Harwell	07 12 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials		
Printed/Typed Name: LEROY GROEN	Signature	Date Month Day Year: 07 12 01
18. Transporter 2 Acknowledgement of Receipt of Materials		
Printed/Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
Patricia Aguilera		07 12 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

29500

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/267-2675.

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 E 119th Street
Chicago IL 60628

EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340446 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

5. Transporter 1 Company Name | 6. US EPA ID Number

OZINGA TRANSPORTATION

C. Transporter's ID Number 0310450018

D. Transporter's Phone ( )

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
130th & Bishop Ford Pwy
Calumet City IL 60409

F. Transporter's Phone ( )

G. Facility's IL ID Number 0310390001

H. Facility's Phone (773) 646-3099

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001			T	EPA HW Number RR 1124
b.			45		EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RR 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 ____ Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: PETER BIBBY | Signature | Date: Month 07 Day 13 Year 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: LEROY GROOT | Signature | Date: Month 07 Day 13 Year 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera | Signature | Date: Month 07 Day 13 Year 01

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

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STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address | Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 60411

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340447 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number: 0310450018

D. Transporter's Phone ( )

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone ( ): 773 646-3099

5. Transporter 1 Company Name | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.			45		EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RF 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 ____ Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Peter Bibby | Signature: [signature] | Date: Month 07 Day 13 Year 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: JAMES M GRIFFIN | Signature: James M Griffin | Date: Month 07 Day 13 Year 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera | Signature: [signature] | Date: Month 07 Day 13 Year 01

GENERATOR / TRANSPORTER / FACILITY

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

National Response Center at 800/424-8802 or 202/426-2675.

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

EPA Form 8700-22 (Rev. 6-89)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

GENERATOR

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 E 17th Street, Chicago Heights IL 60411

Location If Different

4. [illegible] AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340448 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

5. Transporter 1 Company Name: OZ Wst Trans | 6. US EPA ID Number: 1070

C. Transporter's ID Number: IL0310450018

D. Transporter's Phone: 1800 786 63[illegible]

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: CID RDF # 4, 13Rth & Bishop Ford Fwy, Calumet City IL 60409 | 10. US EPA ID Number

G. Facility's IL ID Number: IL0310390001

H. Facility's Phone: 773 646-3099

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RP 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Class A, Profile RP 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15y Load 2 15y Load 3 15y Load 4 ____ Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date Month Day Year
CONRAD HARWELL	[signature]	07 13 01

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
Thomas A. Buttema	[signature]	07 13 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
		07 13 01

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COPY 1. TSD MAIL TO GENERATOR

WT26 508

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 E 17th Street, Chicago Heights IL 60411 | Location If Different

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340449 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number: 0310450018

D. Transporter's Phone ( )

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone: 773 646-3099

5. Transporter 1 Company Name: OZINGA TRansportation | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: CID RDF # 4, 138th & Bishop Ford Fwy, Calumet City IL 60409 | 10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT	00045	T	RF 1124
b.					
c.					
d.					

EPA HW Number

J. Additional Description for Materials Listed Above: Class A, Profile RF 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 ____ Load 6 ____

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Printed/Typed Name: CONRAD T. HARWELL | Signature: C T Harwell | Date (Month Day Year): 07 13 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Don Buttema | Signature: Don Buttema | Date (Month Day Year): 07 13 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera | Signature: Patricia Aguilera | Date (Month Day Year): 07 13 01

GENERATOR / TRANSPORTER / FACILITY

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1969, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

WT 26,000

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 60414

4. 24-HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340450 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number: 0310450018

D. Transporter's Phone: (207) 720-6000

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone: 773 646-3099

5. Transporter 1 Company Name: OZINGA | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: CID RDF # 4, 138th & Bishop Ford Fwy, Calumet City IL 60409 | 10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT	30	T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Class A, Profile RF 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 ____ Load 4 ____ Load 5 ____ Load 6 ____

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Printed/Typed Name: Conrad T Harwell | Signature: [signature] | Date: Month 07 Day 13 Year 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: DUWAYNE DRAISMA | Signature: [signature] | Date: Month 07 Day 13 Year 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilera | Signature: [signature] | Date: Month 07 Day 13 Year 01

GENERATOR / TRANSPORTER / FACILITY

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COPY 1. TSD MAIL TO GENERATOR

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

Mosbeck

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address. Location If Different

Riverdale Chemical
220 R 17th Street
Chicago Heights IL 60411

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number IL 9340451 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number 0310450018

D. Transporter's Phone (708) 754-6173

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0310390001

H. Facility's Phone (773) 646-3099

5. Transporter 1 Company Name: Thorncreek Material Haulers | 6. US EPA ID Number: 3801

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

CID RDF # 4
138th & Bishop Ford Fwy
Calumet City IL 60409

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT		T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Class A
Profile RF 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 ____ Load 6 ____

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Printed/Typed Name: Peter Bibby | Signature: [signature] | Date Month Day Year: 07 17 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Kelly C. Miller | Signature: Kelly C. Miller | Date Month Day Year: 07 17 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date Month Day Year: 07 17 01

GENERATOR

TRANSPORTER

FACILITY

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COPY 1. TSD MAIL TO GENERATOR

27000

In case of a spill call the Illinois Office of Emergency Response at 217/782-7000 and the National Response Center

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Riverdale Chemical, 220 R 17th Street, Chicago IL 60614 | Location If Different

4. 24-HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* 708 756-2010

A. Illinois Manifest Document Number: IL 9340452 FEE PAID IF APPLICABLE

B. Generator's IL ID Number

C. Transporter's ID Number: 0310450018

D. Transporter's Phone ( )

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0310390001

H. Facility's Phone: 773 646-3099

5. Transporter 1 Company Name | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: CTD RDF # 4, 138th & Bishop Ford Fwy, Calumet City IL 60409 | 10. US EPA ID Number

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Not hazardous by DOT contaminated soil	001	DT	60	T	EPA HW Number RF 1124
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Class A, Profile RF 1124

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Load 1 15 Load 2 15 Load 3 15 Load 4 15 Load 5 ____ Load 6 ____

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Peter Bibby | Signature: [signature] | Date (Month Day Year): 07 17 01

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: X W. Carter | Signature: X W. Carter | Date (Month Day Year): 07 17 01

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: Patricia Aguilar | Signature: [signature] | Date (Month Day Year): 07 17 01

GENERATOR / TRANSPORTER / FACILITY

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR

WT 30,000

... and the National Response Center at 800/424-8802 or 202/426-2675.

Minutes of Meeting

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

Project Name:	Riverdale Chemical Company		
Project No.:	4962.01	**Location:**	Chicago Heights, IL
Meeting Date(s):	November 20, 2001	**Date Prepared:**	11/28/01
Subject:	Phase II Removal Action Final Walkthrough Meeting Riverdale Chemical Site		
Attendees:	Callie Bolattino/USEPA Peter Bibby/Nufarm Tom Lazowski/Mosbeck Industrial Equipment Matt Anderson/Joseph A. Schudt Rae Mindock/RMT Heather Seus/RMT		
Prepared By:	Rae Mindock	**Title**	Project Manager
Signature:			

The Final Walkthrough Meeting for the Phase II Removal Action at the Riverdale Chemical Site was held at the site on November 20, 2001. The meeting began at 10 am and the following was discussed:

1. Introduction of parties involved with the Phase II Removal Action (RA) including:

- U.S. EPA – On-Scene Coordinator is Callie Bolattino.
- Owner – Nufarm represented by Dr. Peter Bibby, Operations Manager.
- Owner's Representative – RMT , the owner's representative with respect to the USEPA activities, represented by Rae Mindock, Project Manager, and Heather Seus, Project Engineer.
- Engineer/Construction Quality Assurance (CQA) Engineer – Joseph A Schudt (Schudt) represented by Matt Anderson, Project Manager.
- Contractor – Mosbeck Industrial Equipment (Mosbeck) represented by Tom Lazowski , Site Manager.

2. Tour Project Site – The attendees participated in a site tour. During the site tour each area was discussed in general about the construction tasks that took place during the Phase II RA. There are some punch list items that need to be completed at the site. These tasks were mentioned during the tour and are listed below.

3. Remaining Project Tasks – The punch list items include:

    - Installing the fence along the west side of the property.
    - Installing the curved portion of the guardrail along the stormwater retention pond.
    - Repairing small area of asphalt (10 ft by 10 ft) where slight indentation has occurred.
    - Installation of front gate.
    - Repairing erosion at the stormwater retention pond. (Note: Erosion in the pond occurred due to heavy runoff directly to the silty soil. The repair will not occur until the spring when weather conditions are more favorable and the vegetation is well established. Until that time, stone is being placed in runoff areas to minimize further erosion.)

4. Review Construction Changes – After the site tour the attendees returned to have a meeting to discuss the changes made to the original design. The majority of the changes were improvements associated with the addition of concrete in areas that were originally designed to be asphalt and other minor changes that did not affect the overall design of the site.

5. Institutional Controls – A brief discussion was held regarding the deed restrictions that will be filed against the property. A draft of the deed restrictions was reviewed and it was agreed that it represented standard language and would be reviewed in further detail before approval.

6. The meeting was adjourned at approximately 11 am.