

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
CASE STUDY #1

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Soil	Surface Soil	Residence	Resident	Child/Adult	Ingestion Dermal	Quant. Quant.	Complete exposure pathway Complete exposure pathway

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CASE STUDY #1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
EU01	50328	benzo(a)pyrene	1 U	50	mg/kg	B-37	24/25	.5 - 1	50		8.75E-02 c			Y	max > SL
EU01	309002	aldrin	1 U	25	mg/kg	B-22	24/25	0.5 - 1	25		3.8E-02 c			Y	max > SL
EU01	75014	vinyl chloride	1 U	75	mg/kg	B-34	24/25	0.5 - 1	75		9E-02 c			Y	max > SL

Footnote Instructions:

- (1) Define the "(Qualifier)" codes used for the "Minimum Concentration" and "Maximum Concentration".
- (2) Maximum detected concentration.
- (3) Background not available for the site.
- (4) Region III Screening Tables; soil screening level for residential soil. Target cancer (c) risk of 1E-06.
- (5) Maximum detected concentration exceeds screening level (SL).

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
CASE STUDY #1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution) (1)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic (2)	Rationale
EU01	benzo(a)pyrene	mg/kg	18	44	50	44	mg/kg	student's t	Pro UCL
EU01	aldrin	mg/kg	5	18	25	18	mg/kg	95% H-UCL	Pro UCL
EU01	vinyl chloride	mg/kg	22	52	75	52	mg/kg	approximate gamma	Pro UCL

Footnote Instructions:

- Specify any assumptions made in calculating the "95% UCL" term.
- (1) Define the codes describing the type of distribution for the "95% UCL" term.
- (2) Define the codes used for the "EPC Statistic".

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CASE STUDY #1

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name (1)
Ingestion	Resident	Child/Adult	EU01	IR-S _c	Soil Ingestion Rate (child 0-6)	200	mg/kg	USEPA 1993	
				IR-S _a	Soil Ingestion Rate (adult 7-30)	100	mg/kg	USEPA 1993	
				BW _c	Body Weight (child 0-6)	15	kg	USEPA 1993	
				BW _a	Body Weight (adult 7-30)	70	kg	USEPA 1993	
				EF	Exposure Frequency	350	days/year	USEPA 1993	
				CF	Conversion Factor	1.00E-06	kg/mg		
				ED _c	Exposure Duration (child)	6	years	USEPA 1993	
				ED _a	Exposure Duration (adult)	24	years	USEPA 1993	
				AT	Averaging Time	25,550	days		
Dermal	Resident	Child/Adult	EU01	SA _c	Surface Area (child 0-6)	2800	cm ²	USEPA 2004	
				SA _a	Surface Area (adult 7-30)	5700	cm ²	USEPA 2004	
				AF _c	Absorbed Fraction (child 0-6)	0.2	ng/cm2-event	USEPA 2004	
				AF _a	Absorbed Fraction (child 7-30)	0.07	ng/cm2-event	USEPA 2004	
				EV	Event Frequency	1	event/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1993	
				CF	Conversion Factor	1.00E-06	kg/mg		
				ABS _d	Dermal Absorbed Fraction	emical spec	(unitless)	USEPA 2004	
				ED _c	Exposure Duration (child)	6	years	USEPA 1993	
				ED _a	Exposure Duration (adult)	24	years	USEPA 1993	
				AT	Averaging Time	25,550	days		

Footnote Instructions:

(1) Reference the section of the risk assessment text where information regarding modeled intake development can be found.

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
CASE STUDY #1

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
benzo(a)pyrene	7.3E+00 [a]	(mg/kg-day) ⁻¹	NA	NA	(mg/kg-day) ⁻¹	xxx	IRIS	2/1/2006
aldrin	1.7E+01	(mg/kg-day) ⁻¹	1.0	1.7E+01	(mg/kg-day) ⁻¹	xxx	IRIS	2/1/2006
vinyl chloride	7.2E-01 [b]	(mg/kg-day) ⁻¹	1.0	7.2E-01 [b]	(mg/kg-day) ⁻¹	xxx	IRIS	2/1/2006

a This chemical operates with a mutagenic mode of action (USEPA 2005). Chemical-specific data are not available, thus, USEPA (2005) default age-dependant adjustment factors (ADAF) will be applied to the slope factor as follows:

AGE	ADAF
0-<2	10
2-<16	3
16-30	1

b Slope factor for less than lifetime exposure.

(1) USEPA 2004. RAGS Part E, Supplemental Guidance for Dermal Assessment. July.

NA = Not Applicable.

TABLE 7a.1.RME
CALCULATION OF CHEMICAL CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CASE STUDY #1

Scenario Timeframe: Current/Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk
							Value	Units	Value	Units	
Soil	Surface Soil	EU01	Ingestion	benzo(a)pyrene	4E+01	mg/kg	1.6E-06	kg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.2E-03 [a, b]
			Ingestion	aldrin	2E+01	mg/kg	1.6E-06	kg/kg-day	1.7E+01	(mg/kg-day) ⁻¹	4.8E-04
			Ingestion	vinyl chloride	5E+01	mg/kg	1.6E-06	kg/kg-day	7.2E-01	(mg/kg-day) ⁻¹	5.4E-04[c]
			Exp. Route Total								3.2E-03
			Dermal	benzo(a)pyrene	4E+01	mg/kg	6.4E-07	kg/kg-day	NA	(mg/kg-day) ⁻¹	0.0E+00
			Dermal	aldrin	2E+01	mg/kg	4.9E-07	kg/kg-day	1.7E+01	(mg/kg-day) ⁻¹	1.5E-04
			Dermal	vinyl chloride	5E+01	mg/kg	0.0E+00	kg/kg-day	7.2E-01	(mg/kg-day) ⁻¹	0.0E+00
			Exp. Route Total								1.5E-04
			Exposure Point Total								3.4E-03
			Exposure Medium Total								3.4E-03
Total of Receptor Risks Across All Media										3.4E-03	

NA = Not Applicable.

[a] Cancer risk = sum of [(CS x IR x EF x ED x CF x ADAF x CSF) / (BW x AT)] for each life segment where IR, ED, BW and ADAF change per lifetime segment.

[b] Inputs were applied as follows: age 0-2, used child IR and BW, ED = 2, and ADAF = 10; age 2-6, used child IR and BW, ED = 4, and ADAF = 3; for remaining 24 years, used adult IR and BW, ED = 24 and ADAF = 1.

[c] As per the Toxicological Review, Cancer risk = (CS x ((IRc x CF)/BWc) x (EFc/365) x CSF) + [(CS x IRc x EF x EDc x CF x CSF) / (BWc x AT)] + [(CS x IRa x EF x EDa x CF x CSF) / (BWa x AT)].

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
CASE STUDY #1

Scenario Timeframe: Current/Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EU01	benzo(a)pyrene	2.2E-03		0.0E+00		2E-03					
			aldrin	4.8E-04		1.5E-04		6E-04					
			vinyl chloride	5.4E-04		0.0E+00		5E-04					
			Chemical Total	3.2E-03		1.5E-04		3.4E-03					
		Exposure Point Total					3.4E-03						
	Exposure Medium Total						3.4E-03						
Receptor Total							Receptor Risk Total	3.4E-03				Receptor HI Total	

Total Organ 1 HI Across All Media = _____
Total Organ 2 HI Across All Media = _____

TABLE 10.1.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
CASE STUDY #1

Scenario Timeframe: Current/Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EU01	benzo(a)pyrene	2.2E-03		0.0E+00		2.2E-03					
			aldrin	4.8E-04		1.5E-04		6.3E-04					
			vinyl chloride	5.4E-04		0.0E+00		5.4E-04					
			Chemical Total	3.2E-03		9.8E-04		3.4E-03					
		Exposure Point Total					3.4E-03						
	Exposure Medium Total						3.4E-03						
Receptor Total							Receptor Risk Total	3.4E-03				Receptor HI Total	

Total Organ 1 HI Across All Media =
Total Organ 2 HI Across All Media =