

Appendix L

Vapour risk assessment

Appendix L1

Soil vapour results

Field_ID	SV01 SC	SV02 SC	SV03 SC	SV04 SC	SV05 SC	SV06 SC	SV07 SC	SV08 SC	SV09 SC	SV10 SC	SV11 SC	SV12 SC	SV13 SC	SV14 SC	SV15 SC	SV16 SC	SV17 SC
	1121	2910	1125	1052	2912	1061	1103	1097	1079	1107	1056	1055	1114	1070	2900	1085	2893
Sampled_Date	19/03/2014	19/03/2014	19/03/2014	20/03/2014	20/03/2014	19/03/2014	19/03/2014	19/03/2014	20/03/2014	19/03/2014	19/03/2014	19/03/2014	19/03/2014	19/03/2014	22/03/2014	22/03/2014	19/03/2014

ChemName	output unit	EQL	SV01 SC	SV02 SC	SV03 SC	SV04 SC	SV05 SC	SV06 SC	SV07 SC	SV08 SC	SV09 SC	SV10 SC	SV11 SC	SV12 SC	SV13 SC	SV14 SC	SV15 SC	SV16 SC	SV17 SC
Ethene	% by Vol	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,1-dichloroethene	µg/m3	0	<150	<160	<3.1	<3.5	<3.1	<31	<15	<3	<6.2	2000	<6.3	<3.6	<160	<6.6	<16	<2.9	<15
cis-1,2-dichloroethene	µg/m3	0	<200	1800	<4.1	44	<4.2	<41	<19	<4	280	920	<8.4	<4.8	12000	<8.8	<21	<3.9	<20
TCE	µg/m3	0	510	1100	52	5200	<4.7	780	72	<4.5	700	16000	<9.4	110	450	<9.9	1400	<4.3	200
Tetrachloroethene	µg/m3	0	21000	26000	32	7.1	<5.7	2700	1600	56	1000	1300	160	<6.6	3000	<12	<29	<5.3	2900
trans-1,2-dichloroethene	µg/m3	0	<150	<160	<3.1	<3.5	<3.1	<31	<15	<3	110	71	<6.3	<3.6	260	<6.6	<16	<2.9	<15
Vinyl chloride	µg/m3	1.8	<100	<110	<2.1	<2.3	<2.1	<21	<9.7	<2	<4.1	<13	<4.2	<2.4	<110	<4.4	<10	<1.9	<10

Appendix L2

Sub-slab and crawl space vapour results – First
Steps Child Care Centre

Sub-Slab sampling Using Canister

		Field ID	Sub Slab 1 SC 2895
		Sampled Date	22/03/2014
ChemName	output unit	EQL	
Ethene	% by Vol	0.01	<0.01
1,1-dichloroethene	µg/m3	0	<3.1
cis-1,2-dichloroethene	µg/m3	0	<4.2
TCE	µg/m3	0	<4.7
Tetrachloroethene	µg/m3	0	<5.7
trans-1,2-dichloroethene	µg/m3	0	<3.1
Vinyl chloride	µg/m3	1.8	<2.1

Appendix L3

Indoor and outdoor air results – First Steps Child Care Centre

Appendix L4

Toxicity and risk-based criteria

Chemical	WHO Carcinogenicity Classification ¹	Toxicity Criteria										Toxicity Based Assessment Criteria for Indoor Air Adopted for this VRA	Calculated Risk-Based Assessment Criteria for Indoor Air		Adopted Risk-Based Assessment Criteria for Indoor Air ⁸
		Threshold Approach					Non-Threshold Approach						Threshold	Non-threshold	
		TC/RfC ²				Background	Adj TC/RfC	Unit Risk			RSC ⁷ at tolerable ILCR of 1 x10 ⁻⁵		[ug/m ³]	[ug/m ³]	[ug/m ³]
		WHO ³	USEPA ⁴	RIVM ⁵	NEPM			WHO ³	USEPA ⁴	NEPM			NEPM	[ug/m ³]	[ug/m ³]
[ug/m ³]	[ug/m ³]	[ug/m ³]	[ug/m ³]			[(ug/m ³) ⁻¹]	[(ug/m ³) ⁻¹]	[(ug/m ³) ⁻¹]	[ug/m ³]						
Tetrachloroethene (PCE)	2A	-	-	-	200	10%	180	NA ⁸	-	-	-	-	180	216	216
Trichloroethene (TCE)	1	-	-	-	2	10%	1.8	-	-	4.00E-06	2.5E+00	1.8	2.2	2.2	
1,1 Dichloroethene	NA	NA	2.0E+02	NA	NA		2.0E+02	NA	NA			200	240	240	
cis 1,2 Dichloroethene (DCE)	NA	-	-	-	7		7	NA	NA			7.0	8.4	8.4	
trans 1,2 Dichloroethene	NA	NA	6.0E+01	6.0E+01	NA		6.0E+01	NA	NA			60	72	72	
Vinyl Chloride (VC)	1	-	-	-	-		-	-	-					2.7	
from birth															
adulthood														2.7	
														2.3	
														1.1	
														2.3	

Exposure factor for deriving RBL

Exp parameters	Residential
EF	365
ED	35
ET	20
AT	
	Threshold 35
	Non-threshold 70
Exp factor	Threshold 0.83
	Non-threshold 0.42
Target Risk	Threshold 1
	Non-threshold 0.00001

Appendix L5

Groundwater screening assessment

Screening Assessment of Vapour Intrusion Risks from Groundwater

Step 1 Screening	Groundwater		COPC
	ADWG	Max Conc (March 2014)	
Chemicals	ug/L	ug/L	
Tetrachloroethene (PCE)	50	54.3	Yes
Trichloroethene (TCE)	NA	366	Yes
1,1 Dichloroethene	30	11.5	No
cis 1,2 Dichloroethene (DCE)	60	217	Yes
trans 1,2 Dichloroethene	NA	4.6	Yes
Vinyl Chloride (VC)	0.3	<0.3	No

Step 2 Screening	Indoor Air		Subslab ($\alpha=0.005$)		Groundwater Conc, Max (March 2014)	Soil Vapour @ source	COPC	
	<i>H'</i>	Tox Criteria	Risk-Based Level	Tox Based Subslab Level				Risk-Based Subslab Level
		ug/m3	ug/m3	ug/m3				ug/m3
Tetrachloroethene (PCE)	0.724	180	216	3.6E+04	4.3E+04	5.4E+01	3.9E+04	No
Trichloroethene (TCE)	0.403	1.8	2.2	3.6E+02	4.3E+02	3.7E+02	1.5E+05	Yes
1,1 Dichloroethene	1.07	200	240	4.0E+04	4.8E+04	1.2E+01	1.2E+04	No
cis 1,2 Dichloroethene (DCE)	0.167	7	8.4	1.4E+03	1.7E+03	2.2E+02	3.6E+04	Yes
trans 1,2 Dichloroethene	0.167	60	72	1.2E+04	1.4E+04	4.6E+00	7.7E+02	No
Vinyl Chloride (VC)	1.14	1.1	2.7	2.3E+02	5.4E+02	<0.3	NC	No

Step 3- Screening	Tox-Based Criteria	α (GW@3.6 m)	SV screening level @ source	GW screening level (SL) @ source	Groundwater Conc (max)	Conc/SL (Groundwater)	COPC
	ug/m3		ug/m3	ug/L	ug/L		
Tetrachloroethene (PCE)	180	1.4E-05	1.3E+07	1.8E+04	54.3	0.003	No
Trichloroethene (TCE)	1.8	1.8E-05	1.0E+05	2.5E+02	366	1.47	Yes
1,1 Dichloroethene	200	1.7E-05	1.2E+07	1.1E+04	11.5	0.001	No
cis 1,2 Dichloroethene (DCE)	7	2.8E-05	2.5E+05	1.5E+03	217	0.14	No
trans 1,2 Dichloroethene	60	1.9E-05	3.2E+06	1.9E+04	4.6	0.0002	No
Vinyl Chloride (VC)	1.1	1.9E-05	6.0E+04	5.2E+01	<0.3	NC	No

Step 3- Screening	Indoor Air Risk-Based Level	α (GW@3.6m)	SV screening level @ source	GW screening level (SL) @ source	Groundwater Conc (max)	Conc/SL (Groundwater)	COPC
	ug/m3		ug/m3	ug/L	ug/L		
Tetrachloroethene (PCE)	216	1.4E-05	1.5E+07	2.1E+04	54.3	0.003	No
Trichloroethene (TCE)	2.2	1.8E-05	1.2E+05	3.0E+02	366	1.23	Yes
1,1 Dichloroethene	240	1.7E-05	1.4E+07	1.3E+04	11.5	0.001	No
cis 1,2 Dichloroethene (DCE)	8.4	2.8E-05	3.0E+05	1.8E+03	217	0.12	No
trans 1,2 Dichloroethene	72	1.9E-05	3.8E+06	2.3E+04	4.6	0.0002	No
Vinyl Chloride (VC)	2.7	1.9E-05	1.4E+05	1.3E+02	<0.3	NC	No

Note:
 -only groundwater results from residential area were used. This excluded GW1, GW2 and GW9 from the industrial area.
 - Vapour attenuation factor (α) derived using USEPA JE Model based on site-specific assumptions- Soil profile: Sandy soil (2.37m)/Silty soils (1.23m). Depth to groundwater: 3.6 m bgl.

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to Defaults

ENTER	ENTER											
Chemical CAS No. (numbers only, no dashes)	Initial groundwater conc., C_w ($\mu\text{g/L}$)	Chemical										
127184	5.43E+01	Tetrachloroethylene										
ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	
Average soil/groundwater temperature, T_s ($^{\circ}\text{C}$)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to water table, L_{WT} (cm)	Totals must add up to value of L_{WT} (cell G28)			Soil stratum directly above water table, (Enter A, B, or C)	SCS soil type directly above water table	Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	User-defined stratum A soil vapor permeability, k_v (cm^2)		
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)							
20	10	360	123	237	0	B		SIC				

MORE
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ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Stratum A SCS soil type	Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	Stratum A soil total porosity, n^A (unitless)	Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	Stratum B SCS soil type	Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	Stratum B soil total porosity, n^B (unitless)	Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	Stratum C SCS soil type	Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	Stratum C soil total porosity, n^C (unitless)	Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Enclosed space floor thickness, L_{crack} (cm)	Soil-bldg. pressure differential, ΔP (g/cm^2)	Enclosed space floor length, L_B (cm)	Enclosed space floor width, W_B (cm)	Enclosed space height, H_B (cm)	Floor-wall seam crack width, w (cm)	Indoor air exchange rate, ER (1/h)	Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
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ENTER	ENTER	ENTER	ENTER
Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

RESULT
Infinite source indoor attenuation coefficient, α (unitless)

RESULT
Infinite source bldg. conc., C_{building} ($\mu\text{g/m}^3$)

1.4E-05 4.5E-01

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to Defaults

ENTER	ENTER											
Chemical CAS No. (numbers only, no dashes)	Initial groundwater conc., C_w ($\mu\text{g/L}$)	Chemical										
79016	3.66E+02	Trichloroethylene										
ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	
Average soil/groundwater temperature, T_s ($^{\circ}\text{C}$)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to water table, L_{WT} (cm)	Totals must add up to value of L_{WT} (cell G28)			Soil stratum directly above water table, (Enter A, B, or C)	SCS soil type directly above water table	Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	User-defined stratum A soil vapor permeability, k_v (cm^2)		
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)							
20	10	360	123	237	0	B		SIC				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Stratum A SCS soil type	Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	Stratum A soil total porosity, n^A (unitless)	Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	Stratum B SCS soil type	Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	Stratum B soil total porosity, n^B (unitless)	Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	Stratum C SCS soil type	Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	Stratum C soil total porosity, n^C (unitless)	Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
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ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Enclosed space floor thickness, L_{crack} (cm)	Soil-bldg. pressure differential, ΔP (g/cm^2)	Enclosed space floor length, L_B (cm)	Enclosed space floor width, W_B (cm)	Enclosed space height, H_B (cm)	Floor-wall seam crack width, w (cm)	Indoor air exchange rate, ER (1/h)	Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER	ENTER	ENTER	ENTER
Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

RESULT
Infinite source indoor attenuation coefficient, α (unitless)

RESULT
Infinite source bldg. conc., $C_{building}$ ($\mu\text{g/m}^3$)

1.8E-05 2.2E+00

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_W
($\mu\text{g/L}$)

Chemical

75354 | 1.15E+01

1,1-Dichloroethylene

MORE
↓

ENTER Average soil/ groundwater temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
20	10	360	123	237	0	B		SIC		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER Thickness of capillary zone, L_{cz} (cm)	ENTER Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	ENTER Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	ENTER Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

RESULT Infinite source indoor attenuation coefficient, α (unitless)	RESULT Infinite source bldg. conc., C_{building} ($\mu\text{g}/\text{m}^3$)
1.7E-05	1.7E-01

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to Defaults

ENTER	ENTER										
Chemical CAS No. (numbers only, no dashes)	Initial groundwater conc., C_w ($\mu\text{g/L}$)	Chemical									
156592	2.17E+02	cis-1,2-Dichloroethylene									
ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Average soil/groundwater temperature, T_s ($^{\circ}\text{C}$)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to water table, L_{WT} (cm)	Totals must add up to value of L_{WT} (cell G28)			Soil stratum directly above water table, (Enter A, B, or C)	SCS soil type directly above water table	Soil stratum A SCS soil type (used to estimate soil vapor permeability)		OR	User-defined stratum A soil vapor permeability, k_v (cm^2)
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)						
20	10	360	123	237	0	B		SIC			

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Stratum A SCS soil type	Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	Stratum A soil total porosity, n^A (unitless)	Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	Stratum B SCS soil type	Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	Stratum B soil total porosity, n^B (unitless)	Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	Stratum C SCS soil type	Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	Stratum C soil total porosity, n^C (unitless)	Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Enclosed space floor thickness, L_{crack} (cm)	Soil-bldg. pressure differential, ΔP (g/cm^2)	Enclosed space floor length, L_B (cm)	Enclosed space floor width, W_B (cm)	Enclosed space height, H_B (cm)	Floor-wall seam crack width, w (cm)	Indoor air exchange rate, ER (1/h)	Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER	ENTER	ENTER	ENTER
Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

RESULT
Infinite source indoor attenuation coefficient, α (unitless)

RESULT
Infinite source bldg. conc., $C_{building}$ ($\mu\text{g/m}^3$)

2.8E-05 8.1E-01

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to Defaults

ENTER	ENTER	Chemical								ENTER	ENTER
Chemical CAS No. (numbers only, no dashes)	Initial groundwater conc., C_w ($\mu\text{g/L}$)	trans-1,2-Dichloroethylene								Soil stratum A SCS soil type (used to estimate soil vapor permeability)	User-defined stratum A soil vapor permeability, k_v (cm^2)
156605	4.60E+00										
ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	
Average soil/groundwater temperature, T_s ($^{\circ}\text{C}$)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to water table, L_{WT} (cm)	Totals must add up to value of L_{WT} (cell G28)			Soil stratum directly above water table, (Enter A, B, or C)	SCS soil type directly above water table				
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)						
20	10	360	123	237	0	B			SIC		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Stratum A SCS soil type	Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	Stratum A soil total porosity, n^A (unitless)	Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	Stratum B SCS soil type	Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	Stratum B soil total porosity, n^B (unitless)	Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	Stratum C SCS soil type	Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	Stratum C soil total porosity, n^C (unitless)	Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Enclosed space floor thickness, L_{crack} (cm)	Soil-bldg. pressure differential, ΔP (g/cm^2)	Enclosed space floor length, L_B (cm)	Enclosed space floor width, W_B (cm)	Enclosed space height, H_B (cm)	Floor-wall seam crack width, w (cm)	Indoor air exchange rate, ER (1/h)	Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER	ENTER	ENTER	ENTER
Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

MORE
↓

RESULT	RESULT
Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g/m}^3$)
1.9E-05	2.7E-02

DATA ENTRY SHEET

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CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to Defaults

ENTER	ENTER											
Chemical CAS No. (numbers only, no dashes)	Initial groundwater conc., C_w ($\mu\text{g/L}$)	Chemical										
75014	3.00E-01	Vinyl chloride (chloroethene)										
ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	
Average soil/groundwater temperature, T_s ($^{\circ}\text{C}$)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to water table, L_{WT} (cm)	Totals must add up to value of L_{WT} (cell G28)			Soil stratum directly above water table, (Enter A, B, or C)	SCS soil type directly above water table	Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	User-defined stratum A soil vapor permeability, k_v (cm^2)		
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)							
20	10	360	123	237	0	B		SIC				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Stratum A SCS soil type	Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	Stratum A soil total porosity, n^A (unitless)	Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	Stratum B SCS soil type	Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	Stratum B soil total porosity, n^B (unitless)	Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	Stratum C SCS soil type	Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	Stratum C soil total porosity, n^C (unitless)	Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
Lookup Soil Parameters				Lookup Soil Parameters				Lookup Soil Parameters			
	1.37	0.484	0.304		1.63	0.387	0.13				

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Enclosed space floor thickness, L_{crack} (cm)	Soil-bldg. pressure differential, ΔP (g/cm^2)	Enclosed space floor length, L_B (cm)	Enclosed space floor width, W_B (cm)	Enclosed space height, H_B (cm)	Floor-wall seam crack width, w (cm)	Indoor air exchange rate, ER (1/h)	Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER	ENTER	ENTER	ENTER
Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)
20.00	0.387	0.039	0.348

RESULT
Infinite source indoor attenuation coefficient, α (unitless)

RESULT
Infinite source bldg. conc., $C_{building}$ ($\mu\text{g/m}^3$)

1.9E-05 5.6E-03

Appendix L6

Soil vapour screening assessment

Screening Assessment of Measured Soil vapour

Step 1 Screening Chemicals	NEPM (A) Interim Soil Vapour HIL (ug/m3)	Max Soil Vapour Conc (March 2014) (ug/m3)	COPC
Tetrachloroethene (PCE)	2000	26000	Yes
Trichloroethene (TCE)	20	16000	Yes
1,1 Dichloroethene	NA	2000	Yes
cis 1,2 Dichloroethene (DCE)	80	12000	Yes
trans 1,2 Dichloroethene	NA	260	Yes
Vinyl Chloride (VC)	30	<LOR (2-110)	Yes ¹

Step 2 Screening Chemicals	Max Soil Vapour Conc (ug/m3)	Indoor Air		Subslab ($\alpha= 0.005$)		
		Tox Criteria (ug/m3)	Risk-Based Level (ug/m3)	Tox Based Subslab Level ug/m3	Risk-Based Subslab Level ug/m3	COPC
Tetrachloroethene (PCE)	26000	180	216	3.6E+04	4.3E+04	No
Trichloroethene (TCE)	16000	1.8	2.16	3.6E+02	4.3E+02	Yes
1,1 Dichloroethene	2000	200	240	4.0E+04	4.8E+04	No
cis 1,2 Dichloroethene (DCE)	12000	7	8.4	1.4E+03	1.7E+03	Yes
trans 1,2 Dichloroethene	260	60	72	1.2E+04	1.4E+04	No
Vinyl Chloride (VC)	<LOR (2-110)	1.1	2.7	2.3E+02	5.4E+02	No

Note:

1 Vinyl chloride is selected as COPC in the Step 1 Screening because the LOR exceeded the screening criteria.

Appendix L7

Site specific assessment – residential

Site-Specific Assessment for Soil Vapour- Residential Area

Geotech analysis for soil samples collected from residential area						
Location	Depth	Moisture (%)	Total Porosity (θ_T)	Water Porosity (θ_w)	Air Porosity (θ_a)	Material
SV01	0.3-0.8	12	0.304	0.221	0.083	Clayey sand
SV01	0.8-1.5	22	0.414	0.344	0.07	Silty sandy clay
SV02	1.0-1.5	26	0.424	0.403	0.021	Silty sandy clay
Adopted for modelling						
Soil profile 1		12	0.304	0.221	0.083	Sand/sandy soil
Soil profile 2*		24	0.419	0.374	0.046	Silty soil

Note: Soil profile 2 is based on the average of geotech data for silty sandy clay at SVo1 and SV02.

**Assessment Criteria
(Residential indoor air, ug/m3)**

**Tox -based
Risk-based**

**1.8
2.2**

**7.0
8.4**

Vapour Intrusion in Residential Area									
Vapour sampling Depth (mbgl)	Vadose zone material and thickness (m)		Vapour Attenuation Factor (unitless)		Bore location	Max Soil Vapour Conc (March 2014) (ug/m3)		Predicted Indoor Air Conc (ug/m3)	
	Silt/Silty Clay <i>(Soil profile 2)</i>	Sand/ Sandy Clay <i>(Soil profile 1)</i>	TCE	cis 12 DCE		TCE	cis 12 DCE	TCE	cis 12 DCE
1.0 m	0.5	0.5	9.55E-06	1.41E-05	SV04	5200	44	0.05	0.001
1.5 m	0.5	1	8.78E-06	1.24E-05	SV 01,07,08,09,10,11,12,13,14	16000	12000	0.14	0.15
2.0 m	0.5	1.5	8.12E-06	1.10E-05	SV02,03,05,06,16,17	1100	1800	0.01	0.02

Note: Only 0.5 m of silty soil is assumed with sandy materials made up the rest of the vadose zone to the sampling depth.

DATA ENTRY SHEET

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Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
9.55E-06	4.97E-02

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.60E+04			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
8.78E-06	1.40E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.10E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	200	20	150	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
8.12E-06	8.93E-03

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	4.40E+01			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

MORE
↓

RESULTS α (unitless)	RESULTS Cair (ug/m3)
1.41E-05	6.18E-04

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.20E+04			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)						
10	150	20	100	50	0	s		

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.24E-05	1.48E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.80E+03			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)						
10	200	20	150	50	0	s		

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.221		1.58	0.419	0.374				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.10E-05	1.99E-02

END

Appendix L8

Summary of indoor and outdoor TCE concentrations

Summary of TCE Vapour Concentrations¹ in Various Locations at the First Steps Child Care Centre

24 Hour Canister	Unit	Location			
		CS1	CS2	CS3	CS4
Crawl Space	µg/m3	8.6 ²	9.1	4	6.4

Indoor Air	Unit	IAC1	IAC2	IAC3	IAC4	IAC5
		<1	1.3	1.2 ³	1.3	<1
	µg/m3					

Outdoor Air	Unit	OAC1
		µg/m3

Note:

¹ Based on samples collected in April 2014.

² Average of CS1B, CS1C and CS1D

³ Based on result of IAC3B, the only one of three sample at IAC3 that shown concentrations above PQL.

10 Day Radiello	Unit	Location			
		CSR1	CSR2	CSR3	CSR4
Crawl Space	µg/m3	7.2	7.4	3.5	4.9

Indoor Air	Unit	IAR1	IAR2	IAR3	IAR4	IAR5
		0.74	0.78	0.9	0.9	0.8
	µg/m3					

Outdoor Air	Unit	OAR1
		µg/m3

Sewer Pit	Unit	SP1
		µg/m3

Appendix L9

Sensitivity analysis – child care centre

Sensitivity Analysis- Childcare centre

	Moisture (%)	Total Porosity (θ_T)	Water Porosity (θ_w)	Air Porosity (θ_a)	Bulk Density t/m ³	Material
HSL Parameters	8	0.387	0.13	0.257	1.625	Sand/sandy clay
HSL Parameter- adjusted	14	0.387	0.228	0.159	1.625	Sand/sandy clay

Assessment Criteria
(Residential indoor air, ug/m³)
TCE
1.8
2.2

Sensitivity Analysis-Vapour intrusion in childcare centre					
Vapour sampling Depth (mbgl)	Vadose zone material and thickness	Vapour Attenuation Factor	Bore Location	Max Soil Vapour Conc (ug/m ³)	Predicted Indoor Air Conc (ug/m ³)
HSL Parameter 1.1 m	Sand 1.1 m	1.11E-03	SV14, SV15	1400	1.55
		1.11E-03	SV04	5200	5.77
HSL Parameter-adjusted 1.1 m	1.1 m	2.73E-04	SV14, SV15	1400	0.38
		2.73E-04	SV04	5200	1.42

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.40E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.11E-03	1.56E+00

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)				OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.11E-03	5.78E+00

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.40E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.228								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
2.73E-04	3.83E-01

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.228								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair (ug/m3)
2.73E-04	1.42E+00

Appendix L10

Sensitivity analysis – residential

Sensitivity Analysis- Residential Area

	Moisture	Total Porosity	Water Porosity	Air Porosity	Bulk density	Material
	(%)	(θ_T)	(θ_w)	(θ_a)	t/m ³	
HSL Parameters	8	0.387	0.13	0.257	1.625	Sand/sandy clay
	22	0.484	0.304	0.18	1.367	Silt/silty clay

Assessment Criteria

(Residential indoor air, ug/m³)

TCE	cis1,2 DCE	
1.8	7.0	Tox -based
2.2	8.4	Risk-based

Sensitivity Analysis- Vapour Intrusion in Residential Area

Vapour sampling Depth (mbgl)	Vadose zone material and thickness (m)		Vapour Attenuation Factor (unitless)		Bore location	Max Soil Vapour Conc (ug/m ³)		Predicted Indoor Air Conc (ug/m ³)	
	Silt/Silty Clay	Sand/ Sandy Clay	(unitless)			TCE	cis 12 DCE	TCE	cis 12 DCE
	(HSL soil profile)		TCE	cis 12 DCE					
1.0 m	0.5	0.5	4.41E-04	4.15E-04	SV04	5200	44	2.29	0.018
1.5 m	0.5	1	3.82E-04	3.59E-04	SV 01,07,08,09,10,11,12,13,14,15	1400	12000	0.53	4.31
1.5 m	0.5	1	3.82E-04	3.59E-04	SV 10	16000	920	6.11	0.33
2.0 m	0.5	1.5	3.37E-04	3.16E-04	SV02,03,05,06	1100	1800	0.37	0.57

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
4.41E-04	2.29E+00

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.40E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.82E-04	5.35E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.60E+04			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS C_{air} ($\mu\text{g}/\text{m}^3$)
3.82E-04	6.11E+00

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.10E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	200	20	150	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER α (unitless)	ENTER Cair ($\mu\text{g}/\text{m}^3$)
3.37E-04	3.71E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	4.40E+01			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)				OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

RESULTS α (unitless)	RESULTS Cair (ug/m3)
4.15E-04	1.83E-02

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.20E+04			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair (ug/m3)
3.59E-04	4.31E+00

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	9.20E+02			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)				OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.59E-04	3.30E-01

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.80E+03			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_s (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	200	20	150	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.63	0.387	0.13		1.37	0.484	0.304				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\cdot\text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space floor height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.16E-04	5.69E-01

Appendix L11

Additional sensitivity analysis – child care centre

Sensitivity Analysis- Childcare centre

Site-specific geotech parameter with moisture adjusted	Moisture (%)	Total Porosity (θ_T)	Water Porosity (θ_w)	Air Porosity (θ_a)	Bulk Density t/m3	Material
	8	0.385	0.129	0.256	1.615	Sand/sandy clay

Assessment Criteria
(Residential indoor air, ug/m3)
TCE
1.8
2.2

Sensitivity Analysis-Vapour intrusion in childcare centre					
Vapour sampling Depth (m)	Vadose zone material and thickness	Vapour Attenuation Factor	Bore Location	Max Soil Vapour Conc (ug/m3)	Predicted Indoor Air Conc (ug/m3)
Site-specific geotech 1.1 m	Sand 1.1 m	1.11E-03 1.11E-03	SV14, SV15 SV04	1400 5200	1.55 5.77

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.40E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.62	0.385	0.129								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.11E-03	1.55E+00

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	110	20	110	0	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.62	0.385	0.129								

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
1.11E-03	5.77E+00

Appendix L12

Additional sensitivity analysis – residential

Sensitivity Analysis- Residential Area

	Moisture	Total Porosity	Water Porosity	Air Porosity	Bulk density	Material
Site-specific geotech parameter with moisture adjusted	(%)	(θ_T)	(θ_w)	(θ_a)	t/m3	
	8	0.304	0.149	0.155	1.860	Sand/sandy clay
	22	0.419	0.347	0.073	1.575	Silt/silty clay

Assessment Criteria

(Residential indoor air, ug/m3)

TCE	cis1,2 DCE	
1.8	7.0	Tox -based
2.2	8.4	Risk-based

Sensitivity Analysis- Vapour Intrusion in Residential Area

Vapour sampling Depth (mbgl)	Vadose zone material and thickness (m)	Vapour Attenuation Factor (unitless)		Bore location	Max Soil Vapour Conc (ug/m3)		Predicted Indoor Air Conc (ug/m3)		
	Silt/Silty Clay Sand/ Sandy Clay (HSL soil profile)	(unitless)			TCE	cis 12 DCE	TCE	cis 12 DCE	
1.0 m	0.5	0.5	3.56E-05	3.80E-05	SV04	5200	44	0.19	0.002
1.5 m	0.5	1	3.46E-05	3.63E-05	SV 01,07,08,09,10,11,12,13,14,15	1400	12000	0.05	0.44
1.5 m	0.5	1	3.45E-05	3.63E-05	SV 10	16000	920	0.55	0.03
2.0 m	0.5	1.5	3.32E-05	3.47E-05	SV02,03,05,06, 16, 17	1100	1800	0.04	0.06

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	5.20E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS C_{air} ($\mu\text{g}/\text{m}^3$)
3.60E-05	1.87E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.40E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS C_{air} ($\mu\text{g}/\text{m}^3$)
3.46E-05	4.84E-02

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.60E+04			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS C_{air} ($\mu\text{g}/\text{m}^3$)
3.46E-05	5.53E-01

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
79016	1.10E+03			Trichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	200	20	150	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

ENTER RESULTS α (unitless)	ENTER RESULTS C_{air} ($\mu\text{g}/\text{m}^3$)
3.32E-05	3.65E-02

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.80E+03			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	200	20	150	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.47E-05	6.25E-02

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	9.20E+02			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	150	20	100	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.63E-05	3.34E-02

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	1.20E+04			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)						
10	150	20	100	50	0	s		

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.63E-05	4.35E-01

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
156592	4.40E+01			cis-1,2-Dichloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Totals must add up to value of L_S (cell F24)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	OR	
10	100	20	50	50	0	s	

MORE
↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
	1.86	0.304	0.149		1.58	0.419	0.347				

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1500	1000	240	0.3	0.6	18

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

MORE
↓

RESULTS α (unitless)	RESULTS Cair ($\mu\text{g}/\text{m}^3$)
3.80E-05	1.67E-03