

US EPA ARCHIVE DOCUMENT

Appendix C.4
 Johnson & Ettlinger Model - Data Entry Screen
 Inhalation of Volatiles from Groundwater
 Current Adult Residential Scenario - CT
 Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
 Aberjona Auto Parts

ENTER Chemical CAS No. (numbers only, no dashes)	Enter X in appro Chemical	ENTER Vadose zone soil water-filled porosity, θ_w^v (cm ³ /cm ³)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	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)	ENTER Exposure time ET (hrs/day)	ENTER Conversion factor CF (hrs/yr)
75354	1,1-Dichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
106467	1,4-Dichlorobenzene	0.3	1.0E-06	1	70	7	7	350	16	8760
71432	Benzene	0.3	1.0E-06	1	70	7	7	350	16	8760
67663	Chloroform	0.3	1.0E-06	1	70	7	7	350	16	8760
156592	cis-1,2-Dichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
127184	Tetrachloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
79016	Trichloroethylene	0.3	1.0E-06	1	70	7	7	350	16	8760
75014	Vinyl chloride	0.3	1.0E-06	1	70	7	7	350	16	8760
91203	Naphthalene	0.3	1.0E-06	1	70	7	7	350	16	8760
85018	Phenanthrene	0.3	1.0E-06	1	70	7	7	350	16	8760

1 soil dry bulk density (ρ_b).

Appendix C.4
 Johnson & Ettinger Model - Chemical Properties Screen
 Inhalation of Volatiles from Groundwater
 Current Adult Residential Scenario - CT
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Chemical CAS No.	Chemical	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant reference temperature, T_R ($^{\circ}\text{C}$)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B ($^{\circ}\text{K}$)	Critical temperature, T_C ($^{\circ}\text{K}$)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6,247	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9,271	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7,342	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02
67663	Chloroform	1.04E-01	1.00E-05	3.66E-03	25	6,988	334.32	536.40	3.98E+01	7.92E+03	2.3E-05	5.0E-02
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7,192	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8,288	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7,505	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5,250	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1,057	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03

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 Johnson & Ettinger Model - Calculations Screen
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	Source- building separation, L_T (cm)	Vadose zone soil air-filled porosity, $\theta_{a,v}$ (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{wv} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rav} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	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)	Floor- wall seam perimeter, Xcrack (cm)	Bldg. ventilation rate, Q_{bldg} (cm^3/s)	
76354	1,1-Dichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
106467	1,4-Dichlorobenzene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
71432	Benzene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
67663	Chloroform	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
156692	cis-1,2-Dichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
127184	Tetrachloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
79016	Trichloroethylene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
75014	Vinyl chloride	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
91203	Naphthalene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04
85018	Phenanthrene	30.48	0.130	0.659	1.62E-08	0.390	6.33E-09	18.75	0.43	0.127	0.303	4.00E+03	2.54E+04

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		Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ve. groundwat temperature, H_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D_{vz}^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_{ov}^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_c (cm)	Source vapor conc., C_{source} (µg/m ³)
75354	1,1-Dichloroethylene	1.80E+06	2.22E-04	52.12	6,392	1.47E-02	6.34E-01	1.75E-04	5.47E-04	5.12E-04	5.25E-04	30.48	52.12	7.42E+01
108467	1,4-Dichlorobenzene	1.80E+06	2.22E-04	52.12	11,243	8.89E-04	3.83E-02	1.75E-04	4.38E-04	4.12E-04	4.22E-04	30.48	52.12	1.64E+01
71432	Benzene	1.80E+06	2.22E-04	52.12	8,122	2.69E-03	1.16E-01	1.75E-04	5.42E-04	5.07E-04	5.20E-04	30.48	52.12	8.68E+00
87663	Chloroform	1.80E+06	2.22E-04	52.12	7,554	1.86E-03	8.02E-02	1.75E-04	6.43E-04	6.02E-04	6.17E-04	30.48	52.12	
156592	cis-1,2-Dichloroethylene	1.80E+06	2.22E-04	52.12	7,734	2.04E-03	8.77E-02	1.75E-04	4.59E-04	4.30E-04	4.41E-04	30.48	52.12	7.02E+02
127184	Tetrachloroethylene	1.80E+06	2.22E-04	52.12	9,553	7.83E-03	3.37E-01	1.75E-04	4.39E-04	4.11E-04	4.21E-04	30.48	52.12	4.43E+03
79016	Trichloroethylene	1.80E+06	2.22E-04	52.12	8,557	4.79E-03	2.06E-01	1.75E-04	4.83E-04	4.52E-04	4.64E-04	30.48	52.12	1.41E+02
76014	Vinyl chloride	1.80E+06	2.22E-04	52.12	5,000	1.73E-02	7.46E-01	1.75E-04	6.44E-04	6.02E-04	6.18E-04	30.48	52.12	1.47E+02
91203	Naphthalene	1.80E+06	2.22E-04	52.12	12,913	1.52E-04	6.55E-03	1.75E-04	4.70E-04	4.50E-04	4.57E-04	30.48	52.12	8.86E+00
85018	Phenanthrene	1.80E+06	2.22E-04	52.12	1,479	1.14E-04	4.90E-03	1.75E-04	3.50E-04	3.41E-04	3.44E-04	30.48	52.12	1.03E+01

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		Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{vack} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3 \cdot yr$) ⁻¹	Reference conc., RfC (mg/m^3)
76354	1,1-Dichloroethylene	0.10	5.22E+00	5.47E-04	4.00E+02	3.87E+155	1.76E-04	1.31E-02	N/A	2.0E-01
106467	1,4-Dichlorobenzene	0.10	5.22E+00	4.38E-04	4.00E+02	1.36E+184	1.70E-04	2.79E-03	N/A	8.0E-01
71432	Benzene	0.10	5.22E+00	6.42E-04	4.00E+02	1.40E+157	1.76E-04	1.53E-03	7.8E-06	3.0E-02
87663	Chloroform	0.10	5.22E+00	6.43E-04	4.00E+02	2.93E+132	1.80E-04	N/A	2.3E-05	6.0E-02
156592	cis-1,2-Dichloroethylene	0.10	5.22E+00	4.59E-04	4.00E+02	3.62E+185	1.71E-04	1.20E-01	N/A	2.0E-01
127184	Tetrachloroethylene	0.10	5.22E+00	4.39E-04	4.00E+02	9.93E+193	1.70E-04	2.39E-02	5.9E-06	N/A
79016	Trichloroethylene	0.10	5.22E+00	4.63E-04	4.00E+02	1.52E+176	1.73E-04	7.66E-01	1.1E-04	4.0E-02
75014	Vinyl chloride	0.10	5.22E+00	6.44E-04	4.00E+02	1.44E+132	1.80E-04	2.64E-02	8.8E-06	1.0E-01
91203	Naphthalene	0.10	5.22E+00	4.70E-04	4.00E+02	1.34E+181	1.72E-04	1.53E-03	N/A	3.0E-03
85018	Phenanthrene	0.10	5.22E+00	3.50E-04	4.00E+02	3.05E+243	1.64E-04	1.68E-03	N/A	3.0E-03

Appendix C.4
 Johnson & Ettinger Model - Results
 Inhalation of Volatiles from Groundwater
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RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

75354 1,1-Dichloroethylene
 106467 1,4-Dichlorobenzene
 71432 Benzene
 67663 Chloroform
 156592 cis-1,2-Dichloroethylene
 127184 Tetrachloroethylene
 79016 Trichloroethylene
 75014 Vinyl chloride
 91203 Naphthalene
 85018 Phenanthrene

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.25E+06	NA
NA	NA	NA	7.38E+04	NA
NA	NA	NA	1.75E+06	NA
NA	NA	NA	7.92E+06	NA
NA	NA	NA	3.50E+06	NA
NA	NA	NA	2.00E+05	NA
NA	NA	NA	1.10E+06	NA
NA	NA	NA	2.76E+06	NA
NA	NA	NA	3.10E+04	NA
NA	NA	NA	1.28E+03	NA

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	4.2E-05
NA	2.2E-06
7.6E-10	3.2E-05
NA	NA
NA	3.8E-04
9.0E-09	NA
5.4E-06	1.2E-02
1.5E-08	1.7E-04
NA	3.3E-04
NA	3.6E-04

	95% UCL Cancer Risk	95% UCL HI
TOTAL:	5E-06	1E-02

= Cancer risk > 1E-05 or HQ/HI > 1E+00

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

YES OR

SL-SCREEN
 Version 2.3.03/01

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

YES

Enter initial soil concentration

ENTER Chemical CAS No. (numbers only, no 000780)	Chemical	ENTER Mean soil conc. OR (ppm)	ENTER Depth below ground to bottom of enclosed storage floor, Lr (ft or 300 cm)	ENTER Depth below ground to top of contamination, Lr (ft)	ENTER Average soil temperature, Ts (°C)	ENTER Vadose zone SO2 soil flow (used to estimate soil vapor permeability) Note	ENTER User-defined vadose zone soil vapor permeability, K _v (cm ²)	ENTER Vadose zone SO2 dry bulk density, ρ _d (g/cm ³)	ENTER Vadose zone soil total porosity, n _t (unitless)	ENTER Vadose zone soil water-filled porosity, n _w (cm ³ /cm ³)	ENTER Vadose zone soil organic carbon fraction, f _{oc} (unitless)	ENTER Average time for calculation, ATC (min)	ENTER Average time for noncalculation, ATNC (min)	ENTER Exposure duration, ED (hr)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time ET (hr/yr)	ENTER Concentration factor CF (mg/L)	ENTER Towel ink for carcinogens, TR (unitless)	ENTER Towel hazard quotient for noncarcinogens, THQ (unitless)
9999	Trimethylbenzene, 1,2,4	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
14080	Dichlorobenzene, 1,2- (o,d)	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10673	Trimethylbenzene, 1,3,5	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10413	n-Butylbenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8100	Naphthalene	2.74E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8629	Isopropyltoluene, 4-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
13060	Bulkybenzene, sec.	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7407	Chlorobenzene	2.49E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7904	Vinyl chloride	2.81E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7430	Bromobenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7900	Ethyl chloride	8.90E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7004	1,1-Dichloroethane	1.20E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7021	Trichloro-1,2,2-trichloroethane, 1,1,2-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8791	Acetone	3.24E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7908	Carbon Disulfide	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7500	Methyl acetate	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7900	Methylene chloride	7.27E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10000	Isane-1,2-Dichloroethane	7.75E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10044	Methyl-Tertiary-Butyl Ether	5.76E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7003	1,1-Dichloroethane	3.56E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
14080	cis-1,2-Dichloroethane	1.80E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7900	Butane, 2- (MEK)	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7100	1,1,1-Trichloroethane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7100	Cyclohexane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
14007	Benzene	2.10E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7004	Trichloroethylene	2.91E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
14473	Methyl cyclohexane	4.45E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10040	Toluene	5.85E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
12716	Tetrachloroethylene	1.47E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10007	Chlorobenzene	3.11E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10010	Ethylbenzene	1.84E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
13307	Xylene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10009	Xylene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
14020	Styrene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7004	Isopropylbenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
7004	1,1,2,2-Tetrachloroethane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
54731	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10047	1,4-Dichlorobenzene	2.30E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8801	1,2-Dichlorobenzene	8.10E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10001	1,2,4-Trichlorobenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10002	Benzaldehyde	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8476	Methylnaphthalene, 2-	8.41E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8204	Benzene, 1,1-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
30066	Acenaphthylene	8.00E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
6100	Acenaphthene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10000	Diethylurea	1.75E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8070	Fluorene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
8974	Phenanthrene	3.89E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
10007	Anthracene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
CS-20	CS-C8 Aromatics	8.35E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
CS-10	CS-C12 Aromatics	8.11E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
CS-20	CS-C10 Aromatics	4.31E+06	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
CS-10	CS-C18 Aromatics	8.04E+08	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1
111-020	C11-C22 Aromatics	4.10E+08	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	25	25	250	5	5750	1.0E-06	1

Note: 1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled porosity (n_w), soil organic carbon fraction (f_{oc}), soil total porosity (n_t) and soil dry bulk density (ρ_d).

Appendix C.4

Johnson & Ellinger Model - Data Entry Screen

Inhalation of Volatiles from Soil

Future Commercial Scenario - RME

Southwest Properties, Wells G&H Superfund Site, Operable Unit 2

Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Normal boiling point, T _B (°K)	Critical temperature, T _C (°K)	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., R/C (mg/m ³)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.26E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	578.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,1,2-trifluoroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.80	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-08	N/A	L
108807	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	767.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Chemical CAS No. (numbers only, no dashes)	Chemical	Source building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_e (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k_i (cm ²)	Vadose zone soil relative air permeability, k_{ra} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, Xorack (cm)	Initial soil concentration used, CR (ug/kg)	Bldg. ventilation rate, Q_{vent} (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{L,T}$ (cal/mol)	Henry's law constant at ave. soil temperature, $H_{L,T}$ (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{ms} (g/cm-s)	Vadose zone effective diffusion coefficient, D_{eff}^v (cm ² /s)
95638	Trimethylbenzene, 1,2,4-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	4.30E+06	2.62E+06	9.50E+06	1.30E-04	15	1.65E+03	4.99E-03	2.13E-01	1.75E-04	4.77E-04
540690	Dichloroethylene, 1,2- (total)	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	5.90E+02	2.62E+06	9.50E+06	1.30E-04	15	1.75E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
109678	Trimethylbenzene, 1,3,5-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.62E+06	9.50E+06	1.30E-04	15	1.65E+03	6.80E-03	2.93E-01	1.75E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	6.93E+03	2.62E+06	9.50E+06	1.30E-04	15	1.63E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.62E+06	9.50E+06	1.30E-04	15	1.29E+04	1.62E-04	6.55E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	7.31E+06	2.62E+06	9.50E+06	1.30E-04	15	1.67E+03	7.49E+00	3.22E+02	1.75E-04	4.39E-04
135988	Bulbuzene, sec-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.62E+06	9.50E+06	1.30E-04	15	1.63E+03	1.46E-02	6.27E-01	1.75E-04	4.86E-04
74873	Chloromethane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.62E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.68E-04
75014	Vinyl chloride	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.61E+02	2.62E+06	9.50E+06	1.30E-04	15	6.00E+03	1.73E-02	7.48E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.99E+06	2.62E+06	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	8.60E+01	2.62E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.68E-04
75354	1,1-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.20E+02	2.62E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	6.47E-04
75131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.39E+05	2.62E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.96E+01	1.75E-04	1.75E-04
75150	Carbon Disulfide	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.62E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
67841	Acetone	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.62E+06	9.50E+06	1.30E-04	15	6.68E+03	6.99E-03	3.01E-01	1.75E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	6.93E+07	2.62E+06	9.50E+06	1.30E-04	15	1.60E+03	9.89E-05	4.25E-03	1.75E-04	6.81E-04
75092	Methylene chloride	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	7.07E+02	2.62E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.63E-02	1.75E-04	4.35E-04
169806	trans-1,2-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	7.72E+01	2.62E+06	9.50E+06	1.30E-04	15	1.47E+03	8.27E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.62E+06	9.50E+06	1.30E-04	15	1.45E+03	5.18E-04	2.22E-02	1.75E-04	6.87E-04
76343	1,1-Dichloroethane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.62E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.22E-01	1.75E-04	4.56E-04
156582	cis-1,2-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.80E+02	2.62E+06	9.50E+06	1.30E-04	15	7.79E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78833	Butanone, 2- (MEK)	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	4.63E+07	2.62E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-06	2.11E-03	1.75E-04	6.45E-04
71556	1,1,1-Trichloroethane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	8.01E+06	2.62E+06	9.50E+06	1.30E-04	15	7.89E+03	8.50E-03	3.69E-01	1.75E-04	4.75E-04
110627	Cyclohexane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.98E+06	2.62E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E+01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.10E+02	2.62E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.62E+06	9.50E+06	1.30E-04	15	8.98E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108872	Methyl cyclohexane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	3.70E-01	1.59E+01	1.75E-04	5.82E-04
108883	Toluene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	5.89E+02	2.62E+06	9.50E+06	1.30E-04	15	9.15E+03	2.92E-03	1.26E-01	1.75E-04	5.34E-04
127194	Tetrachloroethylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.62E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.62E+06	9.50E+06	1.30E-04	15	9.80E+03	1.64E-03	6.85E-02	1.75E-04	4.65E-04
130614	Ethylbenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.62E+06	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.50E+05	2.62E+06	9.50E+06	1.30E-04	15	1.54E+03	5.86E-06	2.52E-04	1.75E-04	3.75E-03
100426	Styrene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	8.44E+05	2.62E+06	9.50E+06	1.30E-04	15	1.05E+04	1.09E-03	4.67E-02	1.75E-04	4.47E-04
99828	Isopropylbenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.62E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.92E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.62E+06	9.50E+06	1.30E-04	15	1.06E+04	1.34E-04	5.77E-03	1.75E-04	5.85E-04
641731	Dichlorobenzene, 1,3-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.62E+06	9.50E+06	1.30E-04	15	1.60E+03	4.11E-03	1.77E-01	1.75E-04	2.56E-04
106467	1,4-Dichlorobenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.50E+02	2.62E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.39E-04
85501	1,2-Dichlorobenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.62E+06	9.50E+06	1.30E-04	15	1.21E+04	6.51E-07	2.37E-06	1.75E-04	3.94E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.62E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.95E-04
100927	Benzaldehyde	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.62E+06	9.50E+06	1.30E-04	15	1.63E+03	2.29E-06	9.84E-04	1.75E-04	1.95E-08
81576	Methylnaphthalene, 2-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	6.41E+03	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	8.80E-04	3.81E-02	1.75E-04	3.13E-04
82524	Biocetyl, 1,1'-	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.62E+06	9.50E+06	1.30E-04	15	1.47E+03	2.66E-04	1.14E-02	1.75E-04	3.15E-04
208968	Acenaphthylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.62E+06	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.09E-02	1.75E-04	3.95E-04
83320	Acenaphthylene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.62E+06	9.50E+06	1.30E-04	15	1.81E+04	3.67E-05	1.68E-03	1.75E-04	7.33E-04
132849	Dibenzofuran	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.62E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	1.66E-04
65737	Fluorene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	2.97E+04	2.62E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-08	6.48E-07	1.75E-04	8.16E-01
85018	Phenanthrene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.62E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.80E-03	1.75E-04	3.50E-03
120127	Anthracene	1	0.130	0.859	1.82E-08	0.390	6.33E-09	1.72E+04										

Appendix C 4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Commercial Scenario - RME
 Southwest Properties, Wells G&H Superfund Site, Operable
 Whitney Barn

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L _d (cm)	Convection path length, L _c (cm)	Soil-water partition coefficient, K _d (cm ³ /g)	Source vapor conc., C _{soil} (µg/m ³)	Crack radius, r _{crack} (cm)	Average vapor flow rate into bldg., Q _{avg} (cm ³ /s)	Crack effective diffusion coefficient, D _{crack} (cm ² /s)	Area of crack, A _{crack} (cm ²)	Exponent of equivalent roundation Peclet number, exp(Pe) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source blkg. conc., C _{blkg} (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
96936	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.79E+303	1.08E-05	N/A	N/A	8.0E-03
5400690	Dichloroethylene, 1,2-(1,1-d)	1	16	2.67E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	8.0E-03
104518	n-Butylbenzene	1	15	6.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91303	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.67E+307	1.08E-05	4.61E-02	N/A	3.0E-03
96978	Isopropylbenzene, 4-	1	15	3.18E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135988	Butylbenzene, sec-	1	15	6.22E-01	N/A	0.10	2.74E+01	4.98E-04	1.23E+03	6.47E+287	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.86E-02	3.24E+06	0.10	2.74E+01	7.68E-04	1.23E+03	1.14E+189	1.08E-05	3.81E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+06	0.10	2.74E+01	8.44E-04	1.23E+03	5.27E+224	1.08E-05	6.99E+00	8.8E-06	1.0E-01
74838	Bromomethane	1	15	2.86E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	16	2.86E-02	1.12E+06	0.10	2.74E+01	7.68E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.18E-01	2.04E+06	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+284	1.08E-05	2.21E+00	N/A	2.0E-01
78131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	16	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
87841	Acetone	1	16	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+69	1.08E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	16	1.03E-01	N/A	0.10	2.74E+01	8.34E-04	1.23E+03	1.26E+228	1.08E-05	N/A	N/A	7.0E-01
79206	Methyl Acetate	1	16	6.84E-03	N/A	0.10	2.74E+01	8.81E-04	1.23E+03	1.17E+188	1.08E-05	N/A	#N/A	N/A
75092	Methylene chloride	1	16	2.34E-02	1.80E+06	0.10	2.74E+01	8.35E-04	1.23E+03	8.56E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
158005	trans-1,2-Dichloroethylene	1	16	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	16	7.68E-02	4.58E+03	0.10	2.74E+01	8.87E-04	1.23E+03	9.48E+216	1.08E-05	4.98E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	16	8.32E-02	1.82E+06	0.10	2.74E+01	4.59E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	6.0E-01
156502	cis-1,2-Dichloroethylene	1	16	7.10E-02	8.85E+04	0.10	2.74E+01	4.69E-04	1.23E+03	#NUM!	1.08E-05	8.13E-01	N/A	2.0E-01
78633	Butane, 2- (MEK)	1	16	7.88E-03	N/A	0.10	2.74E+01	9.49E-04	1.23E+03	1.18E+183	1.08E-05	N/A	N/A	N/A
71666	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.78E-04	1.23E+03	4.39E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.18E+298	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	7.41E+04	0.10	2.74E+01	5.43E-04	1.23E+03	1.81E+267	1.08E-05	8.02E-01	7.8E-06	3.0E-02
79010	Trichloroethylene	1	15	3.32E-01	1.09E+06	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	6.36E-01	3.35E+06	0.10	2.74E+01	5.98E-04	1.23E+03	1.50E+242	1.08E-05	3.82E+01	N/A	3.0E+00
108883	Toluene	1	15	3.64E-01	1.28E+06	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.82E-01	5.9E-08	N/A
108907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.55E-04	1.23E+03	#NUM!	1.08E-05	3.48E-01	N/A	8.0E-02
100414	Ethylbenzene	1	15	7.28E-01	2.88E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.76E-03	1.23E+03	4.03E+38	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.65E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	N/A
98826	Isopropylbenzene	1	15	1.88E+01	N/A	0.10	2.74E+01	3.85E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79346	1,1,3,3-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.98E+259	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.59E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
109487	1,4-Dichlorobenzene	1	15	1.21E+00	6.96E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.84E+00	0.10	2.74E+01	3.84E-02	1.23E+03	4.74E+03	1.09E-05	4.29E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.59E+00	N/A	0.10	2.74E+01	2.29E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100827	Benzaldehyde	1	15	8.54E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.80E+107	1.08E-05	N/A	#N/A	#N/A
91577	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	1.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1'-	1	15	1.25E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
208968	Acenaphthylene	1	15	9.67E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.84E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+187	1.08E-05	N/A	N/A	3.0E-03
132849	Dibenzofuran	1	15	1.83E+03	1.94E+04	0.10	2.74E+01	1.05E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
86737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.18E-01	1.23E+03	1.60E+00	3.24E-06	N/A	N/A	3.0E-03
85016	Phenanthrene	1	15	2.83E+01	8.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	#NUM!	1.08E-05	8.78E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.90E-03	1.23E+03	5.14E+90	1.08E-05	N/A	N/A	3.0E-03
CS-C8	CS-C8 Aliphatics	1	15	4.53E+00	3.84E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
CB-C12	CB-C12 Aliphatics	1	15	3.00E+02	6.78E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	7.28E+01	N/A	2.0E-01
CB-C10	CB-C10 Aromatics	1	15	3.56E+00	1.95E+07	0.10	2.74E+01	3.89E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
CB-C18	CB-C18 Aliphatics	1	15	1.39E+03	1.89E+08	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	1.70E+03	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	8.23E+08	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	6.72E+01	N/A	5.0E-02

Appendix C.4
 Johnson & Edgar Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Commercial Scenario - RME
 Southwest Petroleum, Well O&H Superfund Site, Downable Unit 2
 Whitney Barrel

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Chemical CAS No. (numbers only, no dashes)	Chemical	Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based Indoor exposure soil conc., (µg/kg)	Soil saturation conc., (µg/kg)	Final indoor exposure soil conc., (µg/kg)
95936	Trimethylbenzene, 1,2,4-	NA	NA	NA	4.38E+05	NA
64090	Dichloroethene, 1,2- (total)	NA	NA	NA	5.96E+02	NA
104678	Trimethylbenzene, 1,3,5-	NA	NA	NA	7.13E+04	NA
104518	n-Butylbenzene	NA	NA	NA	8.63E+03	NA
91203	Naphthalene	NA	NA	NA	1.30E+05	NA
96876	Isopropyltoluene, 4-	NA	NA	NA	7.31E+05	NA
135668	Butylbenzene, sec-	NA	NA	NA	1.10E+08	NA
74873	Chloroethene	NA	NA	NA	1.37E+09	NA
75014	Vinyl chloride	NA	NA	NA	8.33E+05	NA
74830	Bromomethane	NA	NA	NA	3.89E+06	NA
75003	Ethyl Chloride	NA	NA	NA	1.37E+09	NA
75354	1,1-Dichloroethene	NA	NA	NA	6.39E+05	NA
70131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	NA	NA	3.99E+05	NA
67641	Acetone	NA	NA	NA	2.01E+08	NA
75160	Carbon Dioxide	NA	NA	NA	6.78E+05	NA
79208	Methyl Acetate	NA	NA	NA	6.03E+07	NA
76092	Methylene chloride	NA	NA	NA	2.96E+08	NA
169606	trans-1,2-Dichloroethane	NA	NA	NA	2.12E+06	NA
1834044	Methyl Tertiary-Butyl Ether	NA	NA	NA	1.42E+07	NA
75343	1,1-Dichloroethane	NA	NA	NA	1.39E+06	NA
159592	cis-1,2-Dichloroethane	NA	NA	NA	9.75E+05	NA
78933	Butanone, 2- (MEK)	NA	NA	NA	4.63E+07	NA
71566	1,1,1-Trichloroethane	NA	NA	NA	6.01E+05	NA
110627	Cyclohexane	NA	NA	NA	1.95E+05	NA
71432	Benzene	NA	NA	NA	5.74E+05	NA
79018	Trichloroethylene	NA	NA	NA	6.95E+05	NA
106872	Methyl cyclohexane	NA	NA	NA	2.95E+04	NA
106983	Toluene	NA	NA	NA	3.02E+05	NA
127184	Tetrachloroethylene	NA	NA	NA	1.65E+05	NA
106907	Chlorobenzene	NA	NA	NA	3.04E+05	NA
100414	Ethylbenzene	NA	NA	NA	1.58E+05	NA
1330207	Xylenes	NA	NA	NA	1.50E+05	NA
100426	Styrene	NA	NA	NA	6.44E+05	NA
96628	Isopropylbenzene	NA	NA	NA	1.65E+06	NA
79345	1,1,2,2-Tetrachloroethane	NA	NA	NA	1.13E+06	NA
541731	Dichlorobenzene, 1,3-	NA	NA	NA	3.82E+04	NA
104647	1,4-Dichlorobenzene	NA	NA	NA	1.08E+05	NA
96501	1,2-Dichlorobenzene	NA	NA	NA	8.50E+05	NA
130321	1,2,4-Trichlorobenzene	NA	NA	NA	1.13E+06	NA
100927	Benzonitrile	NA	NA	NA	1.74E+05	NA
91578	Methylnaphthalene, 2-	NA	NA	NA	4.24E+05	NA
92524	Biphenyl, 1,1'-	NA	NA	NA	8.81E+04	NA
209988	Acenaphthylene	NA	NA	NA	3.84E+04	NA
83336	Acenaphthene	NA	NA	NA	8.69E+04	NA
132849	Dibenzofuran	NA	NA	NA	1.85E+05	NA
96737	Fluorene	NA	NA	NA	2.97E+04	NA
86018	Phenanthrene	NA	NA	NA	3.84E+04	NA
120127	Anthracene	NA	NA	NA	2.37E+03	NA
C9-C9	C9-C9 Aromatics	NA	NA	NA	7.89E+07	NA
C9-C12	C9-C12 Aromatics	NA	NA	NA	2.12E+07	NA
C9-C10	C9-C10 Aromatics	NA	NA	NA	1.92E+08	NA
C9-C18	C9-C18 Aromatics	NA	NA	NA	1.35E+07	NA
C11-C22	C11-C22 Aromatics	NA	NA	NA	6.92E+07	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from Intrusion to Indoor air, carcinogen (unitless)	Hazard quotient from vapor Intrusion to Indoor air, noncarcinogen (unitless)
NA	NA
NA	3.5E-03
NA	NA
NA	NA
NA	NA
NA	8.8E-03
5.0E-06	1.6E-02
NA	NA
NA	2.6E-06
NA	2.5E-03
NA	NA
NA	NA
NA	NA
6.0E-06	1.3E-04
NA	1.0E-03
NA	3.8E-06
NA	8.0E-04
NA	7.0E-04
NA	NA
NA	NA
5.1E-07	6.1E-03
1.1E-05	6.7E-03
NA	2.8E-03
NA	1.9E-04
4.8E-07	NA
NA	1.5E-03
NA	9.8E-05
NA	NA
NA	2.1E-03
NA	NA
NA	3.5E-04
NA	NA
NA	NA
NA	NA
NA	5.1E-03
NA	NA
NA	4.7E+00
NA	8.3E-02
NA	8.5E-01
NA	1.8E+00
NA	3.1E-01

95% UCL
 Cancer
 Risk
 2E-05

95% UCL
 HI
 8.1E+00

TOTAL: 2E-05 8.1E+00

☐ = Cancer risk > 1E-05
 or HQ/HT > 1E+00

Trimethylbenzene, 1,2,4-
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Dichloroethene, 1,2- (total)
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Trimethylbenzene, 1,3,5-
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 n-Butylbenzene
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Naphthalene
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Isopropyltoluene, 4-
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Butylbenzene, sec-
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Chloroethene
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Vinyl chloride
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Bromomethane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Ethyl Chloride
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 1,1-Dichloroethene
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Trichloro-1,2,2-trifluoroethane, 1,1,2-
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Acetone
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Carbon Dioxide
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Methyl Acetate
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Methylene chloride
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 trans-1,2-Dichloroethane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Methyl Tertiary-Butyl Ether
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 1,1-Dichloroethane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 cis-1,2-Dichloroethane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Butanone, 2- (MEK)
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 1,1,1-Trichloroethane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Cyclohexane
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Benzene
 MESSAGE: Soil conc. >= saturation (Cas). Risk/HQ calculated at Cas.
 Trichloroethylene

Accordis, C.A.
Johnson & Johnson Model - Data Entry Screen
Installation of Facilities from Soil
Future Commercial Scenario - CT
Southwest Property, Wells O&H Superfund Site, Quabbin Unit 2
Whitney Barre

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

SL-SCREEN
Version 2.3.03D1

YES OR

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

YES X

ENTER Chemical CAS No. (Inorganic only, no dppms)	ENTER Mean soil conc. OR (ppm)	ENTER Depth below grade to bottom of exposed soil floor L ₁ (ft or 200 cm)	ENTER Depth below grade to top of contamination L ₂ (ft)	ENTER Average soil temperature T _s (°C)	ENTER Vadose zone SCS soil type used to estimate soil vapor permeability (cm ² /sec) OR Note	ENTER User-defined vadose zone soil vapor permeability k _v (cm ² /sec)	ENTER Vadose zone soil dry bulk density ρ _d (g/cm ³)	ENTER Vadose zone soil total porosity n _t (unitless)	ENTER Vadose zone soil water-filled porosity f _w (unitless)	ENTER Vadose zone soil organic carbon fraction f _{oc} (unitless)	ENTER Averaging time for contaminant ATC (hrs)	ENTER Averaging time for noncancerous ATNC (hrs)	ENTER Exposure duration ED (hrs)	ENTER Exposure frequency EF (days/yr)	ENTER Exposure time ET (hr/days)	ENTER Conversion factor CF (hr/days)	ENTER Target level for cancerous TL _C (µg/kg)	ENTER Target level for noncancerous TL _{NC} (µg/kg)	
																			Chemical
9804	Trinitrobenzene, 1,2,4	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
94860	Dichloroethene, 1,2 (total)	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
10667	Trinitrobenzene, 1,3,5	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
146818	n-Butylbenzene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
9180	Naphthalene	2.74E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
96876	Isopropylbenzene, 4-	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
126688	Butylbenzene, sec-	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F4073	Chloroethane	2.49E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
73014	Vinyl chloride	2.67E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F4030	Bromobenzene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
79000	Ethyl chloride	8.80E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F5044	1,1-Dichloroethene	8.34E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F6131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
97961	Acetone	3.24E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F3199	Carbon Dioxide	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
73069	Methyl acetate	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F5090	Methylene chloride	7.27E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
104668	trans-1,2-Dichloroethene	7.73E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
103004	Methyl-Tertiary-Butyl Ether	8.79E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F3343	1,1-Dichloroethane	3.58E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
104888	cis-1,2-Dichloroethene	1.80E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F4683	Butanone, 2- (MEK)	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F1769	1,1,1-Trichloroethane	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
11437	Cyclohexane	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F1632	Benzene	8.09E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F4916	Trichloroethylene	2.91E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
104672	Methyl cyclohexane	4.45E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
104888	Toluene	3.93E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
F2164	Tetrachloroethene	1.47E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
106907	Chlorobenzene	3.11E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
103144	Ethylbenzene	1.84E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
103997	Xylene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
103929	Styrene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
9436	Isopropylbenzene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F5046	1,1,2,2-Tetrachloroethane	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
94173	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
104887	1,4-Dichlorobenzene	2.84E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
99991	1,2-Dichlorobenzene	9.10E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
103021	1,2,4-Trichlorobenzene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
106907	Benzonitrile	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
F1719	Methylnaphthalene, 2-	8.41E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
20834	Biphenyl, 1,1'	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
20498	Acenaphthylene	4.90E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
6228	Acenaphthene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
63888	Ortho-xylene	1.76E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
6072	Fluorene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
8916	Phenanthrene	3.86E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
106107	Anthracene	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1	
6414	CS-20 Aliphatics	8.80E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
6414	CS-C12 Aliphatics	6.11E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
6414	CS-C18 Aliphatics	4.31E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
6414	CS-C19 Aliphatics	8.25E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1
61100	C11-C22 Aromatics	9.24E+06	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	9	9	210	8	8760	1.0E-06	1

Note: 1) Default soil permeability from Table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 18, 2001) were used for soil water filled porosity (f_w), soil organic carbon fraction (f_{oc}), soil total porosity (n_t), and soil dry bulk density (ρ_d).

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Commercial Scenario - CT
 Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
 Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Normal boiling point, T _b (°K)	Critical temperature, T _c (°K)	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99976	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135986	Butylbenzene, sec.	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	689.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74673	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	8.22E-03	25	5.49E+03	278.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E+01	L
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
87641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	8.30E+03	N/A	2.0E-01	L
163404	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.65	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
158592	dis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.60	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110627	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108983	Toluene	8.70E-02	8.80E-06	6.03E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.67	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.83E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.80	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	448.00	683.96	1.70E+02	8.88E+01	N/A	N/A	L
108467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	694.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	488.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	8.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	614.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.86E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.58E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Commercial Scenario - CT
 Southwest Properties, Walls GS-1 Superfund Site, Operable Unit 2
 Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_w (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k_i (cm ²)	Vadose zone soil relative air permeability, k_{ra} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, X _w (cm)	Initial soil concentration used, C _R (µg/kg)	Bldg. ventilation rate, Q _{vent} (cm ³ /s)	Area of enclosed space below grade, A _e (cm ²)	Crack- to-total area ratio, τ (unitless)	Crack depth below grade, Z _{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, ΔH _{v,so} (cal/mol)	Henry's law constant at ave. soil temperature, H _{so} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ _{so} (cP-cm)	Vadose zone effective diffusion coefficient, D _v (cm ² /s)
96836	Trimethylbenzene, 1,2,4-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	4.38E+05	2.52E+08	9.50E+06	1.30E-04	15	1.56E+03	4.96E-03	2.13E-01	1.76E-04	4.77E-04
540590	Dichloroethylene, 1,2- (total)	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.96E+02	2.52E+08	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.76E-04	3.77E-04
106678	Trimethylbenzene, 1,3,5-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+08	9.50E+06	1.30E-04	15	1.58E+03	6.80E-03	2.93E-01	1.76E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.03E+03	2.52E+08	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.68E-01	1.76E-04	4.41E-04
91203	Naphthalene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+08	9.50E+06	1.30E-04	15	1.29E+04	1.62E-04	8.65E-03	1.76E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+05	2.52E+08	9.50E+06	1.30E-04	15	1.67E+03	7.48E+00	3.22E+02	1.76E-04	4.39E-04
135988	Butylbenzene, sec-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+08	2.52E+08	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	8.27E-01	1.76E-04	4.66E-04
74873	Chloroethane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+08	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.76E-04	7.66E-04
75014	Vinyl chloride	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.81E+02	2.52E+08	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.48E-01	1.76E-04	6.44E-04
74839	Bromomethane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.89E+06	2.52E+08	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.66E-01	1.76E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.80E+01	2.52E+08	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.76E-04	7.66E-04
75354	1,1-Dichloroethylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	6.34E+01	2.52E+08	9.50E+06	1.30E-04	15	6.36E+03	1.47E-02	6.34E-01	1.76E-04	5.47E-04
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.96E+05	2.52E+08	9.50E+06	1.30E-04	15	1.44E+03	4.65E-01	1.06E+01	1.76E-04	1.76E-04
87841	Acetone	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+08	9.50E+06	1.30E-04	15	7.98E+03	1.07E-05	8.50E-04	1.76E-04	2.07E-03
75150	Carbon Disulfide	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.52E+08	9.50E+06	1.30E-04	15	6.64E+03	8.99E-03	3.01E-01	1.76E-04	6.34E-04
79209	Methyl Acetate	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.03E+07	2.52E+08	9.50E+06	1.30E-04	15	1.50E+03	9.68E-05	4.25E-03	1.76E-04	8.61E-04
75092	Methylene chloride	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	7.27E+02	2.52E+08	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	6.03E-02	1.76E-04	8.35E-04
158905	trans-1,2-Dichloroethylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+08	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.68E-01	1.76E-04	4.32E-04
1634044	Methyl-Tertiary-Butyl Ether	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+08	9.50E+06	1.30E-04	15	1.45E+03	5.16E-04	2.22E-02	1.76E-04	6.67E-04
72343	1,1-Dichloroethane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.68E+02	2.52E+08	9.50E+06	1.30E-04	15	7.49E+03	2.89E-03	1.24E-01	1.76E-04	4.58E-04
158592	cis-1,2-Dichloroethylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.60E+02	2.52E+08	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.76E-04	4.59E-04
79923	Butane, 2- (MEK)	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	4.83E+07	2.52E+08	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.76E-04	4.45E-04
71558	1,1,1-Trichloroethane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	6.01E+05	2.52E+08	9.50E+06	1.30E-04	15	7.88E+03	8.60E-03	3.66E-01	1.76E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+08	9.50E+06	1.30E-04	15	1.49E+03	1.78E+00	7.64E+01	1.76E-04	4.85E-04
71432	Benzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.08E+01	2.52E+08	9.50E+06	1.30E-04	15	8.12E+03	2.89E-03	1.16E-01	1.76E-04	6.42E-04
78018	Trichloroethylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.52E+08	9.50E+06	1.30E-04	15	8.98E+03	4.79E-03	2.06E-01	1.76E-04	4.83E-04
106872	Methyl cyclohexane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	4.43E+02	2.52E+08	9.50E+06	1.30E-04	15	1.51E+03	3.79E-01	1.54E+01	1.76E-04	5.98E-04
106883	Toluene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.83E+02	2.52E+08	9.50E+06	1.30E-04	15	9.65E+03	7.83E-03	3.87E-01	1.76E-04	4.39E-04
127184	Tetrachloroethylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+08	9.50E+06	1.30E-04	15	8.65E+03	4.54E-03	8.85E-02	1.76E-04	4.55E-04
106907	Chlorobenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+08	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.76E-04	4.60E-04
100414	Ethylbenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+08	9.50E+06	1.30E-04	15	1.54E+03	5.88E-06	2.52E-04	1.76E-04	1.75E-03
1330207	Xylenes	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+08	9.50E+06	1.30E-04	15	1.05E+04	1.08E-03	4.67E-02	1.76E-04	4.47E-04
100425	Styrene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.52E+08	9.50E+06	1.30E-04	15	1.64E+03	1.28E-02	5.61E-01	1.76E-04	3.65E-04
98828	Isopropylbenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.18E+06	2.52E+08	9.50E+06	1.30E-04	15	1.06E+04	1.34E-04	5.77E-03	1.76E-04	5.65E-04
79345	1,1,2,2-Tetrachloroethane	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+08	9.50E+06	1.30E-04	15	1.80E+03	4.11E-03	1.77E-01	1.76E-04	2.58E-04
641731	Dichlorobenzene, 1,3-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.60E+02	2.52E+08	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.76E-04	4.38E-04
106487	1,4-Dichlorobenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+08	9.50E+06	1.30E-04	15	1.21E+04	6.51E-07	2.37E-05	1.76E-04	3.94E-02
96501	1,2-Dichlorobenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+08	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.67E-02	1.76E-04	2.26E-04
120821	1,2,4-Trichlorobenzene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+08	9.50E+06	1.30E-04	15	1.63E+03	2.29E-05	9.84E-04	1.76E-04	1.35E-03
106627	Benzonitrile	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+08	9.50E+06	1.30E-04	15	1.61E+03	8.89E-04	3.81E-02	1.76E-04	3.13E-04
91576	Methylnaphthalene, 2-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.52E+08	9.50E+06	1.30E-04	15	1.47E+03	2.69E-04	1.14E-02	1.76E-04	3.15E-04
92524	Biphenyl, 1,1-	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+08	9.50E+06	1.30E-04	15	1.61E+03	2.45E-04	1.05E-02	1.76E-04	3.38E-04
208964	Acenaphthylene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+08	9.50E+06	1.30E-04	15	1.61E+04	3.67E-05	1.55E-03	1.76E-04	7.33E-04
83328	Acenaphthene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+08	9.50E+06	1.30E-04	15	1.47E+03	3.61E-03	1.61E-01	1.76E-04	1.89E-04
132649	Indenzofuran	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+08	9.50E+06	1.30E-04	15	1.62E+04	2.20E-04	9.49E-07	1.76E-04	8.16E-01
96737	Fluorene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.97E+04	2.52E+08	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.76E-04	3.50E-04
85019	Phenanthrene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	3.64E+04	2.52E+08	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.76E-04	3.50E-04
120127	Anthracene	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	2.67E+03	2.52E+08	9.50E+06	1.30E-04	15	1.84E+04	1.28E-05	5.43E-04	1.76E-04	1.80E-03
C6-C8	C6-C8 Aliphatics	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	8.83E+04	2.52E+08	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.76E-04	3.84E-04
C9-C12	C9-C12 Aliphatics	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	6.11E+04	2.52E+08	9.50E+06	1.30E-04	15	NA	7.80E-01	3.38E+01	1.76E-04	3.64E-04
C9-C10	C9-C10 Aromatics	1	0.130	0.858	1.62E-08	0.390	6.33E-09	1.72E+04	4.31E+05	2.52E+08	9.50E+06	1.30E-04	15	NA	3.88E-03	1.70E-01	1.76E-04	3.09E-04
C9-C18	C9-C18 Aliphatics	1	0.															

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Commercial Scenario - C1
 Southwest Properties, Wells G&H Superfund Site, Operable
 Whitney Barn

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{soil} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{avg} (cm ³ /s)	Crack effective diffusion coefficient, D_{eff} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent porect number, $\exp(Por)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., C_{bldg} ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
95838	Trimethylbenzene, 1,2,4	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+303	1.08E-05	N/A	N/A	5.0E-03
540590	Dichloroethylene, 1,2- (cis)	1	15	2.57E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
108678	Trimethylbenzene, 1,3,5	1	15	3.34E+00	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	6.0E-03
104518	n-Butylbenzene	1	15	5.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	0.87E+307	1.08E-05	4.81E-02	N/A	3.0E-03
98876	Isopropyltoluene, 4-	1	15	3.16E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	4.0E-01
135685	Bulkybenzene, sec-	1	15	6.22E+01	N/A	0.10	2.74E+01	4.86E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloroethane	1	15	2.88E-02	3.24E+05	0.10	2.74E+01	7.89E-04	1.23E+03	1.14E+199	1.08E-05	3.51E+00	N/A	6.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+05	0.10	2.74E+01	6.44E-04	1.23E+03	5.27E+224	1.08E-05	0.99E+00	8.8E-06	1.0E-01
74839	Bromomethane	1	15	2.86E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.89E-02	1.12E+05	0.10	2.74E+01	7.89E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E+01
76364	1,1-Dichloroethylene	1	15	1.18E-01	1.08E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.82E+284	1.08E-05	1.17E+00	N/A	2.0E-01
78131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.50E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
67841	Acetone	1	15	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+99	1.08E-05	1.48E-02	N/A	N/A
76160	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.29E+220	1.08E-05	N/A	N/A	7.0E-01
79209	Methyl Acetate	1	15	6.64E-03	N/A	0.10	2.74E+01	6.61E-04	1.23E+03	1.17E+188	1.08E-05	N/A	#N/A	#N/A
76062	Methylene chloride	1	15	2.34E-02	1.90E+05	0.10	2.74E+01	6.35E-04	1.23E+03	8.55E+227	1.08E-05	1.79E+00	4.7E-07	3.0E+00
156805	Inane-1,2-Dichloroethylene	1	15	1.06E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	8.85E-01	N/A	2.0E-01
183404	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.58E+03	0.10	2.74E+01	6.67E-04	1.23E+03	6.48E+216	1.08E-05	4.96E-02	N/A	3.0E+00
76343	1,1-Dichloroethane	1	15	6.32E-02	1.82E+05	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
195692	1,2-Dichloroethylene	1	15	7.10E-02	5.66E+04	0.10	2.74E+01	4.59E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
78553	Butane, 2- (MEK)	1	15	7.88E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71569	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.76E-04	1.23E+03	4.36E+304	1.08E-05	N/A	N/A	2.2E+00
110627	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.16E+298	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	2.85E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.61E+297	1.08E-05	3.08E-01	7.8E-06	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+05	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	5.36E-01	3.25E+08	0.10	2.74E+01	6.86E-04	1.23E+03	1.60E+242	1.08E-05	3.82E-01	N/A	3.0E+00
108883	Toluene	1	15	3.64E-01	1.28E+05	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	8.92E-01	5.6E-06	N/A
108807	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.55E-04	1.23E+03	#NUM!	1.08E-05	3.46E-01	N/A	6.0E-02
100414	Ethylbenzene	1	15	7.26E-01	2.65E+04	0.10	2.74E+01	4.60E-04	1.23E+03	#NUM!	1.08E-05	2.90E-01	N/A	1.0E+00
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+38	1.09E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
98828	Isopropylbenzene	1	15	1.86E+01	N/A	0.10	2.74E+01	3.85E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
76345	1,1,2,2-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	5.65E-04	1.23E+03	1.89E+255	1.08E-05	N/A	#N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.56E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
109467	1,4-Dichlorobenzene	1	15	1.23E+00	6.60E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	5.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.94E+00	0.10	2.74E+01	3.04E-02	1.23E+03	4.74E+03	1.09E-05	4.28E-05	N/A	N/A
120521	1,2,4-Trichlorobenzene	1	15	3.59E+00	N/A	0.10	2.74E+01	2.26E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
91576	Methylnaphthalene, 2-	1	15	8.64E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.80E+107	1.08E-05	N/A	#N/A	#N/A
92524	Biphenyl, 1,1'	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
208968	Acenaphthylene	1	15	1.25E+01	N/A	0.10	2.74E+01	3.19E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
83329	Acenaphthene	1	15	9.67E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.84E-03	N/A	3.0E-03
132648	Dibenzofuran	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+197	1.08E-05	N/A	N/A	3.0E-03
86737	Fluorene	1	15	1.63E+01	1.84E+04	0.10	2.74E+01	1.86E-04	1.23E+03	#NUM!	1.07E-05	1.75E-01	N/A	N/A
85018	Phenanthrene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.18E-01	1.23E+03	1.50E+00	3.24E-06	N/A	N/A	3.0E-03
120127	Anthracene	1	15	2.63E+01	8.27E+03	0.10	2.74E+01	3.80E-04	1.23E+03	#NUM!	1.08E-05	6.75E-02	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	6.90E+01	N/A	0.10	2.74E+01	1.60E-03	1.23E+03	5.15E+90	1.08E-05	N/A	N/A	3.0E-03
C9-C12	C9-C12 Aliphatics	1	15	4.53E+00	3.84E+09	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.00E+02	6.78E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	7.28E+01	N/A	2.0E-01
C9-C18	C9-C18 Aliphatics	1	15	3.58E+00	1.95E+07	0.10	2.74E+01	3.89E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
C11-C22	C11-C22 Aromatics	1	15	1.38E+03	2.42E+07	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	2.61E+02	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	1.40E+08	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	1.51E+01	N/A	5.0E-02

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

SL-SCREEN
 Version 2.3, 03/01

YES

OR

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

YES

ENTER Chemical CAS No. (number only, no dashes)	Enter Initial soil concentration Chemical Concn. (ug/g)	ENTER Mean soil conc., OR L ₁ (1.5 or 200 um)	ENTER Depth below grade to bottom of exposed space conc. L ₂ (cm)	ENTER Depth below grade to top of contamination, L ₃ (cm)	ENTER Average soil temperature, T _a (°C)	ENTER Vadose zone POR (used to estimate soil vapor permeability)	ENTER CR	ENTER User-defined vadose zone soil vapor permeability, K _v (cm ² /s)	ENTER Vadose zone soil dry bulk density, ρ _b (g/cm ³)	ENTER Vadose zone soil total porosity, n _t (unitless)	ENTER Vadose zone soil water-filled porosity, n _w (cm ³ /cm ³)	ENTER Vadose zone soil organic carbon fraction, f _{oc} (unitless)	ENTER Averaged time for carbon concs., ATC (yr)	ENTER Averaged time for nonhydrocarbons, ATNC (yr)	ENTER Exposure duration, ED (hr/yr)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure time (hr)	ENTER Dose factor (mg/kg)	ENTER Target risk for cancer, TR (10 ⁻⁶ /yr)	ENTER Target hazard quotient for noncancer, THQ (unitless)
9009	Trimehylbenzene, 1,2,4-	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Dichlorobenzene, 1,2- (total)	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Trimehylbenzene, 1,3,5-	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	n-Butylbenzene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9100	Naphthalene	2.74E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Isopropylbenzene, 4-	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10060	Butylbenzene, sec-	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7482	Chromene	2.49E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7984	Vinyl chloride	2.61E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7482	Bromobenzene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Ethyl Chloride	6.80E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7984	1,1-Dichloroethane	1.20E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7911	Trichloro-1,2,2-trifluoroethane, 1,1,2-	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Acetone	3.24E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9100	Carbon Disulfide	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Methyl Acetate	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Methylene chloride	7.27E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	trans-1,2-Dichlorobenzene	7.73E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Methyl-Tertiary-Butyl Ether	6.79E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7911	1,1-Dichloroethane	3.58E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	cis-1,2-Dichlorobenzene	1.80E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Benzene, 2, (MSE)	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	1,1,1-Trichloroethane	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Cyclohexane	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Benzene	2.10E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7982	Trichloroethylene	2.81E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Methyl cyclohexane	4.49E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Toluene	1.83E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10714	Tetrahydrofuran	1.47E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Chlorobenzene	3.11E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Ethylbenzene	1.84E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Xylene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Styrene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Isopropylbenzene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
7911	1,1,2,2-Tetrachloroethane	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9100	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	1,2-Dichlorobenzene	2.00E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	1,4-Dichlorobenzene	3.10E+01	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	1,2,4-Trichlorobenzene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
9009	Benzaldehyde	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Methylisophthalene, 2-	6.41E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Biphenyl, 1,1'	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
30060	Acanaphthylene	4.00E+02	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Acanaphthylene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Diethylfuran	1.70E+03	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Fluorene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	Phenanthrene	3.86E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
10067	Anthracene	15	15	10	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	C5-C9 Aliphatics	9.83E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	C6-C12 Aliphatics	8.17E+04	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	C9-C10 Aromatics	4.31E+08	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	C9-C18 Aliphatics	6.04E+08	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	
8741	C11-C22 Aromatics	4.15E+08	15	15	10	LB	1	1.5	0.43	0.3	0.002	70	6	6	78	2.5	8780	1.0E-06	1	

Note:
 1) Default soil parameters from table T of User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (U.S. EPA June 16, 2005) were used for soil water filled porosity (n_w), soil organic carbon fraction (f_{oc}), soil total porosity (n_t), and soil dry bulk density (ρ_b).

Appendix C.4

Johnson & Ettinger Model - Data Entry Screen

Inhalation of Volatiles from Soil

Future Child Recreational Scenario - RME

Southwest Properties, Wells G&H Superfund Site, Operable Unit 2

Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Normal boiling point, T _B (°K)	Critical temperature, T _C (°K)	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Physical state at soil temperature, (S.L.G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.26E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Bulybenzene, sec-	8.00E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.26E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	6.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	2.68E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	8.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.05E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
106883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	638.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	6.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Child Recreational Scenario - RME
 Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
 Whiskey Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_v (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_w (cm ³ /cm ³)	Vadose zone acid intrinsic permeability, k_i (cm ²)	Vadose zone acid relative air permeability, k_{ra} (cm ²)	Vadose zone acid effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR (ug/kg)	Bldg. ventilation rate, C_{vent} (m ³ /s)	Area of enclosed space below grade, A_b (cm ²)	Crack- to-total area ratio, τ (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,rs}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{rs} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{rs} (g/cm-s)	Vadose zone effective diffusion coefficient, $D_{v,rs}^*$ (cm ² /s)
95996	Trimethylbenzene, 1,2,4-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	4.38E+05	2.62E+06	9.50E+06	1.30E-04	15	1.55E+03	4.86E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichlorobenzene, 1,2- (total)	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.96E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
106878	Trimethylbenzene, 1,3,5-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.56E+03	6.80E-03	2.93E-01	1.75E-04	3.95E-04
104518	n-Butylbenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	8.83E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.80E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	9.56E-03	1.75E-04	4.70E-04
96876	Isopropyltoluene, 4-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	7.31E+05	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135688	Butylbenzene, sec-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.48E-02	6.27E-01	1.75E-04	4.86E-04
74873	Chloromethane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.40E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.98E-04
76014	Vinyl chloride	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.61E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.68E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.64E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	8.80E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.98E-04
75364	1,1-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.20E+02	2.52E+06	9.50E+06	1.30E-04	15	8.39E+03	1.47E-02	8.34E-01	1.75E-04	5.47E-04
78131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.98E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.66E-01	1.95E+01	1.75E-04	2.97E-03
87841	Acetone	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	6.50E-04	1.75E-04	2.97E-03
76150	Carbon Disulfide	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	8.78E+05	2.52E+06	9.50E+06	1.30E-04	15	8.58E+03	8.89E-03	3.01E-01	1.75E-04	6.34E-04
75209	Methyl Acetate	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.00E+07	2.52E+06	9.50E+06	1.30E-04	15	1.82E+03	8.85E-05	4.25E-03	1.75E-04	8.81E-04
155032	Methylene chloride	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	7.27E+02	2.52E+06	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	8.35E-04
155806	trans-1,2-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.42E+03	8.72E-03	3.56E-01	1.75E-04	4.32E-04
1634044	Methyl-Tert-butyl Ether	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.18E-04	2.22E-02	1.75E-04	6.87E-04
76343	1,1-Dichloroethane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.69E-04
155582	cis-1,2-Dichloroethylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.80E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78833	Butanone, 2- (MEK)	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	4.83E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-06	2.11E-03	1.75E-04	9.45E-04
71566	1,1,1-Trichloroethane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	6.01E+06	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.66E-01	1.75E-04	4.76E-04
110827	Cyclohexane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.54E-01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.10E+02	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79016	Trichloroethylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.81E+02	2.52E+06	9.50E+06	1.30E-04	15	8.58E+03	4.79E-03	2.08E-01	1.75E-04	4.83E-04
106872	Methyl cyclohexane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.81E+03	3.70E-01	1.58E+01	1.75E-04	5.98E-04
106883	Toluene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.15E+03	2.82E-03	1.26E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.65E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
106907	Chlorobenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	9.90E+03	1.94E-03	8.85E-02	1.75E-04	4.65E-04
100414	Ethylbenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.75E-04	4.60E-04
1330207	Xylenes	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.60E+05	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	5.88E-08	2.62E-04	1.75E-04	3.75E-03
100426	Styrene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.09E-02	4.07E-02	1.75E-04	4.47E-04
96828	Isopropylbenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.08E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.95E-04
78345	1,1,2,2-Tetrachloroethane	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.15E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	6.85E-04
541731	Dichlorobenzene, 1,3-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.66E-04
106467	1,4-Dichlorobenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.50E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.69E-04	3.83E-02	1.75E-04	4.38E-04
85501	1,2-Dichlorobenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.19E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	5.51E-07	2.37E-05	1.75E-04	3.94E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.13E+08	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.25E-04
106527	Benzaldehyde	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	2.29E-06	9.86E-04	1.75E-04	1.25E-03
91576	Methylnaphthalene, 2-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	5.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.81E+03	8.89E-04	3.81E-02	1.75E-04	3.19E-04
92524	Biphenyl, 1,1'-	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	6.81E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.98E-04	1.14E-02	1.75E-04	3.16E-04
208968	Acanaphthylene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.05E-02	1.75E-04	3.38E-04
83326	Acanaphthene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	8.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.81E+04	3.87E-05	1.58E-03	1.75E-04	7.33E-04
132846	Dibenzofuran	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.51E-01	1.75E-04	1.98E-04
86737	Fluorene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.97E+04	2.52E+06	9.50E+06	1.30E-04	15	1.62E+04	2.23E-08	9.48E-07	1.75E-04	8.16E-01
85018	Phenanthrene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	3.84E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.90E-03	1.75E-04	3.52E-04
120127	Anthracene	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.28E-06	5.43E-04	1.75E-04	1.82E-03
05-08	05-08 Aliphatics	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	9.85E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	8.48E-01	2.79E+01	1.75E-04	3.84E-04
09-C12	09-C12 Aliphatics	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	8.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.80E-01	3.94E+01	1.75E-04	3.64E-04
09-C10	09-C10 Aliphatics	1	0.130	0.859	1.82E-08	0.390	8.33E-09	1.72E+04	4.31E+06	2.52E+06	9.50E+06	1.30E-04	15	NA	3.98E-03	1.70E-01	1.75E-04	3.89E-04
09-C18	09-C18 Aliphatics																	

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Futura Child Recreational Scenario - RME
 Southwest Properties, Wells GBH Superfund Site, Operable
 Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L _d (cm)	Convection path length, L _c (cm)	Soil-water partition coefficient, K _{oc} (cm ³ /g)	Source vapor conc., C _{soil} (µg/m ³)	Crack radius, r _{crack} (cm)	Average vapor flow rate into bldg., Q _{avg} (cm ³ /s)	Crack effective diffusion coefficient, D _{eff} (cm ² /s)	Area of crack, A _{crack} (cm ²)	Exponent of equivalent Paclet number, exp(Pac)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., C _{avg} (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
96638	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.76E+303	1.08E-05	N/A	N/A	6.0E-03
540690	Dichlorobenzene, 1,2, (total)	1	15	2.57E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
105878	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.95E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	6.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	9.87E+307	1.08E-05	4.61E-02	N/A	3.0E-03
96878	Isopropyltoluene, 4-	1	15	3.18E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135068	Bulbiferene, sec.	1	15	6.22E+01	N/A	0.10	2.74E+01	4.89E-04	1.23E+03	5.47E+297	1.08E-05	N/A	#N/A	#N/A
74873	Chloromethane	1	15	2.99E-02	3.24E+05	0.10	2.74E+01	7.68E-04	1.23E+03	1.14E+189	1.08E-05	3.51E+00	N/A	9.0E-02
75014	Vinyl chloride	1	15	3.12E-02	9.48E+06	0.10	2.74E+01	6.44E-04	1.23E+03	6.27E+224	1.08E-05	8.99E+00	8.8E-08	1.0E-01
74839	Bromomethane	1	15	2.99E-02	N/A	0.10	2.74E+01	4.89E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.99E-02	1.12E+05	0.10	2.74E+01	7.68E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	1.0E+01
75354	1,1-Dichloroethylene	1	15	1.15E-01	2.04E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.62E+284	1.08E-05	2.21E+00	N/A	2.0E-01
78131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.80E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E+01
87841	Acetone	1	15	1.15E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	9.18E+89	1.08E-05	1.48E-02	N/A	N/A
76160	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	8.34E-04	1.23E+03	1.25E+228	1.08E-05	N/A	N/A	7.0E-01
79200	Methyl Acetate	1	15	6.84E-03	N/A	0.10	2.74E+01	9.61E-04	1.23E+03	1.17E+188	1.08E-05	N/A	N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.80E+05	0.10	2.74E+01	6.36E-04	1.23E+03	8.55E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
156806	trans-1,2-Dichloroethylene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-05	3.85E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.68E-02	4.68E+03	0.10	2.74E+01	6.67E-04	1.23E+03	9.48E+216	1.08E-05	4.98E-02	N/A	3.0E+00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.02E+05	0.10	2.74E+01	4.68E-04	1.23E+03	#NUM!	1.08E-05	1.75E+00	N/A	5.0E-01
168582	cis-1,2-Dichloroethylene	1	15	7.10E-02	5.68E+04	0.10	2.74E+01	4.58E-04	1.23E+03	#NUM!	1.08E-05	6.12E-01	N/A	2.0E-01
75933	Butanone, 2- (MEK)	1	15	7.88E-03	N/A	0.10	2.74E+01	9.45E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71556	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.20E+304	1.08E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	15	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.18E+298	1.08E-05	N/A	#N/A	#N/A
71432	Benzene	1	15	1.18E-01	7.41E+04	0.10	2.74E+01	6.42E-04	1.23E+03	1.81E+287	1.08E-05	8.02E-01	7.8E-08	3.0E-02
29016	Trichloroethylene	1	15	3.32E-01	1.06E+05	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
106872	Methyl cyclohexane	1	15	6.39E-01	3.38E+08	0.10	2.74E+01	6.98E-04	1.23E+03	1.60E+242	1.08E-05	3.62E+01	N/A	3.0E+00
106803	Toluene	1	15	3.84E-01	1.28E+05	0.10	2.74E+01	6.34E-04	1.23E+03	1.10E+271	1.08E-05	1.39E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.29E-04	1.23E+03	#NUM!	1.08E-05	3.82E-01	N/A	5.9E-08
109907	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.55E-04	1.23E+03	#NUM!	1.08E-05	3.46E-01	N/A	1.0E+00
100414	Ethylbenzene	1	15	7.29E-01	2.88E+04	0.10	2.74E+01	4.80E-04	1.23E+03	#NUM!	1.08E-05	2.60E-01	N/A	1.0E-01
1330207	Xylenes	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+38	1.08E-05	N/A	N/A	1.0E-01
100426	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	#N/A
96828	Isopropylbenzene	1	15	1.66E+01	N/A	0.10	2.74E+01	3.96E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	6.05E-04	1.23E+03	1.68E+258	1.08E-05	N/A	N/A	#N/A
541731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.66E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
106467	1,4-Dichlorobenzene	1	15	1.23E+00	6.66E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95501	1,2-Dichlorobenzene	1	15	1.07E-01	3.84E+00	0.10	2.74E+01	3.84E-02	1.23E+03	4.74E+03	1.08E-05	4.28E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.68E+00	N/A	0.10	2.74E+01	2.22E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
91670	Benzofluorene	1	15	6.84E-02	N/A	0.10	2.74E+01	1.35E-03	1.23E+03	2.60E+107	1.08E-05	N/A	#N/A	#N/A
91670	Methylisobutylene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92624	Biphenyl, 1,1'	1	15	1.23E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
209988	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+197	1.08E-05	N/A	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	1.66E-04	1.23E+03	#NUM!	1.08E-05	4.84E-03	N/A	3.0E-03
132549	Dibenzofuran	1	15	1.83E+01	1.64E+04	0.10	2.74E+01	8.18E-01	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
66737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	1.80E-03	1.23E+03	5.14E+80	1.08E-05	1.78E-01	N/A	N/A
85018	Phenanthrene	1	15	2.81E+01	6.27E+03	0.10	2.74E+01	3.50E-04	1.23E+03	1.50E+00	3.24E-05	N/A	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.80E-03	1.23E+03	#NUM!	1.08E-05	6.78E-02	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.53E+00	3.84E+08	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E-03	N/A	3.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.78E+06	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	7.39E-01	N/A	2.0E-01
C9-C10	C9-C10 Aromatics	1	15	3.58E+00	1.95E+07	0.10	2.74E+01	3.69E-04	1.23E+03	#NUM!	1.08E-05	2.10E-02	N/A	5.0E-02
C9-C18	C9-C18 Aliphatics	1	15	1.38E+03	1.58E+06	0.10	2.74E+01	3.64E-04	1.23E+03	#NUM!	1.08E-05	1.70E-03	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	6.23E+06	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	6.72E-01	N/A	5.0E-02

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YEM" box)

SL-SCREEN
Version 2.3.0301

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "EED" box and initial soil conc. below)

YES

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER initial soil concentration Mean soil conc. OR CR (ug/kg)	ENTER Depth below grade to bottom of excavated area (ft.) L ₁ (ft)	ENTER Depth below grade to top of contamination L ₂ (ft)	ENTER Average soil temperature T _a (°C)	ENTER Vadose zone SCS soil bulk (used to estimate soil vapor permeability) OR Note	ENTER User-defined vadose zone soil vapor permeability k _v (cm ²)	ENTER Vadose zone soil dry bulk density, ρ _b (g/cm ³)	ENTER Vadose zone soil porosity, n _v (unitless)	ENTER Vadose zone soil water-filled porosity, θ _w (unitless)	ENTER Vadose zone soil organic carbon fraction, f _{oc} (unitless)	ENTER Atmospheric time for contaminants, ATC (hrs)	ENTER Atmospheric time for noncontaminants, ATNC (hrs)	ENTER Exposure duration, ED (years)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure rate ET (hr/day)	ENTER Correction factor CF (unitless)	ENTER Target risk level contaminant, TR (unitless)	ENTER Target hazard quotient for contaminant, THQ (unitless)	
																			Chemical Name
10028	Toluene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
10029	1,2-Dichloroethane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
10030	1,1,1-Trichloroethane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
10031	n-Butylbenzene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
10032	Naphthalene	2.74E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
10033	Isopropylbenzene, 4-	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
10034	Butylbenzene, sec-	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
74670	Chloromethane	2.49E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
7504	Vinyl chloride	2.81E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
7426	Bromomethane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
75002	Ethyl chloride	8.60E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
73624	1,1-Dichloroethane	6.34E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
71111	Trichloro-1,2,2-trifluoroethane, 1,1,2-	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
67641	Acetone	3.34E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
71381	Carbon disulfide	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
76381	Methyl acetate	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
76381	Methylene chloride	7.27E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100408	trans-1,2-Dichloroethane	7.73E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100404	Methyl-Tertiary-Butyl Ether	6.75E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
76341	1,1-Dichloroethane	3.58E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100401	cis-1,2-Dichloroethane	1.80E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
76353	Sulfone, 2-(MEC)	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
71364	1,1,1-Trichloroethane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
110671	Cyclohexane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
71012	Benzene	8.00E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
71012	Trichloroethane	7.81E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100472	Methyl cyclohexane	4.49E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100485	Toluene	3.85E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
127134	Tetrachloroethane	1.47E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100487	Chlorobenzene	3.11E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100414	Ethylbenzene	1.84E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
133847	Xylene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
100429	Styrene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
14243	Isopropylbenzene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
76048	1,1,2,2-Tetrachloroethane	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
141731	Dichlorobenzene, 1,2-	1.00E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100487	1,4-Dichlorobenzene	3.80E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
14641	1,2-Dichlorobenzene	6.10E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
136201	1,2,4-Trichlorobenzene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
100477	Benzaldehyde	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
113731	Methylnaphthalene, 2-	5.41E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
100481	Biphenyl, 1,1'-	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
100490	Acenaphthylene	4.09E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
13329	Acenaphthene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
13346	Dibenzofuran	1.79E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
10747	Fluorene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
100418	Phenanthrene	3.99E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
12627	Anthracene	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1	
09-09	CS-C8 Aliphatics	6.63E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
09-010	CS-C12 Aliphatics	6.51E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
09-018	CS-C10 Aromatics	4.31E+06	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
09-014	CS-C18 Aliphatics	9.23E+06	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1
011-028	C11-C22 Aromatics	9.24E+06	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	2	2	26	2.5	8790	1.0E-06	1

1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (U) 8. EPA (June 18, 2000) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n_v), and soil dry bulk density (ρ_b).

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Child Recreational Scenario - CT
 Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
 Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Normal boiling point, T _B (°K)	Critical temperature, T _C (°K)	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RIC (mg/m ³)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.60E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
540590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	877.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135888	Butylbenzene, sec-	8.00E-02	8.00E-06	1.07E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.28E-01	6.50E-06	8.87E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.06E-01	1.23E-05	2.71E-02	25	5.25E+03	269.25	432.00	1.86E+01	2.78E+03	6.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.38E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
75354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	2.68E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.88E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
78209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	647.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	6.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.36	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.18E+01	5.08E+03	N/A	5.0E-01	L
158592	cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71566	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.56E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.88E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	560.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108883	Toluene	8.70E-02	8.60E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.28E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.76E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
98828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	6.88E+01	N/A	N/A	L
106487	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.38E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120621	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	8.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.78E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.48E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.87E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.83E-02	7.88E-06	9.41E-08	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	8.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	8.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	8.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Appendix C.4
 Johnson & Ettinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Child Recreational Scenario - CT
 Southwest Pyrites, Wells GSH Superfund Site, Operable Unit 2
 Whitley Barrel

Chemical CAS No.	Source-building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_w (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k (cm^2)	Vadose zone soil relative air permeability, k_{ra} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, Xcrack (cm)	Initial soil concentration used, CR ($\mu\text{g}/\text{kg}$)	Bldg. ventilation rate, Q_{vent} (cm^3/s)	Area of enclosed space below grade, A_g (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization $\Delta H_{v,s}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{ps} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{vs} (g/cm-s)	Vadose zone effective diffusion coefficient, D_{eff}^v (cm^2/s)
Chemical																	
95836	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	4.38E+05	2.52E+08	9.50E+06	1.30E-04	15	1.55E+03	4.06E-03	2.13E-01	1.75E-04	4.77E-04
540590	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	5.96E+02	2.52E+08	9.50E+06	1.30E-04	15	1.73E+03	3.87E-04	1.67E-02	1.75E-04	3.77E-04
106578	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	7.13E+04	2.52E+08	9.50E+06	1.30E-04	15	1.55E+03	6.80E-03	2.93E-01	1.75E-04	3.96E-04
104518	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	8.63E+03	2.52E+08	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.86E-01	1.75E-04	4.41E-04
91203	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	2.74E+03	2.52E+08	9.50E+06	1.30E-04	15	1.28E+04	1.52E-04	6.55E-03	1.75E-04	4.70E-04
99878	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	1.10E+08	2.52E+08	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135888	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	1.10E+08	2.52E+08	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	6.27E-01	1.75E-04	4.88E-04
74873	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	2.48E+02	2.52E+08	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.68E-04
75014	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	2.61E+02	2.52E+08	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.46E-01	1.75E-04	6.44E-04
74839	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.68E+06	2.52E+08	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.45E-04
75003	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.60E+01	2.52E+08	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.88E-04
75354	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.34E+01	2.52E+08	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
76131	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.99E+05	2.52E+08	9.50E+06	1.30E-04	15	1.44E+03	4.56E-01	1.96E+01	1.75E-04	1.75E-04
67641	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.24E+02	2.52E+08	9.50E+06	1.30E-04	15	7.56E+03	1.97E-05	8.50E-04	1.75E-04	2.07E-03
75150	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.78E+05	2.52E+08	9.50E+06	1.30E-04	15	6.88E+03	6.89E-03	3.01E-01	1.75E-04	6.34E-04
75092	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	6.03E+07	2.52E+08	9.50E+06	1.30E-04	15	1.50E+03	9.88E-05	4.25E-03	1.75E-04	8.61E-04
156806	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	7.27E+02	2.52E+08	9.50E+06	1.30E-04	15	7.03E+03	1.17E-03	5.03E-02	1.75E-04	4.32E-04
1834044	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	7.73E+01	2.52E+08	9.50E+06	1.30E-04	15	1.42E+03	8.27E-03	3.56E-01	1.75E-04	4.39E-04
75343	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	4.83E+07	2.52E+08	9.50E+06	1.30E-04	15	1.45E+03	6.16E-04	2.22E-02	1.75E-04	6.67E-04
156582	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.88E+01	2.52E+08	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
78933	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.88E+06	2.52E+08	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
71566	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	6.01E+05	2.52E+08	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.75E-04	9.45E-04
110827	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.88E+05	2.52E+08	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.86E-01	1.75E-04	4.76E-04
71432	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.88E+01	2.52E+08	9.50E+06	1.30E-04	15	1.46E+03	1.75E-03	7.54E+01	1.75E-04	4.85E-04
79016	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.88E+05	2.52E+08	9.50E+06	1.30E-04	15	8.12E+03	1.69E-03	1.16E-01	1.75E-04	2.42E-04
108872	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	4.45E+02	2.52E+08	9.50E+06	1.30E-04	15	8.58E+03	4.79E-03	2.06E-01	1.75E-04	4.83E-04
108843	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	5.85E+02	2.52E+08	9.50E+06	1.30E-04	15	9.16E+03	2.82E-03	1.26E-01	1.75E-04	5.35E-04
127184	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.47E+02	2.52E+08	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
105907	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.11E+02	2.52E+08	9.50E+06	1.30E-04	15	8.80E+03	1.54E-03	6.85E-02	1.75E-04	4.56E-04
100414	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.84E+02	2.52E+08	9.50E+06	1.30E-04	15	1.02E+04	3.18E-03	1.37E-01	1.75E-04	4.60E-04
1330207	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	1.60E+06	2.52E+08	9.50E+06	1.30E-04	15	1.64E+03	5.88E-06	2.52E-04	1.75E-04	3.75E-03
100425	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	5.44E+05	2.52E+08	9.50E+06	1.30E-04	15	1.06E+04	1.08E-03	4.87E-02	1.75E-04	4.47E-04
98626	1	0.130	0.858	1.62E-08	0.390	8.33E-09	1.72E+04	1.08E+06	2.52E+08	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.86E-04
79345	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.15E+06	2.52E+08	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	6.85E-04
541731	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.00E+02	2.52E+08	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.56E-04
108467	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	2.50E+02	2.52E+08	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.38E-04
96501	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	5.10E+01	2.52E+08	9.50E+06	1.30E-04	15	1.21E+04	5.51E-07	2.37E-05	1.75E-04	3.84E-02
120821	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.13E+08	2.52E+08	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.87E-02	1.75E-04	2.26E-04
100527	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.74E+08	2.52E+08	9.50E+06	1.30E-04	15	1.53E+03	2.29E-05	6.94E-04	1.75E-04	1.35E-03
91578	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	5.41E+03	2.52E+08	9.50E+06	1.30E-04	15	1.51E+03	2.68E-04	1.14E-02	1.75E-04	3.15E-04
82524	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	8.81E+04	2.52E+08	9.50E+06	1.30E-04	15	1.47E+03	1.45E-02	1.14E-02	1.75E-04	3.15E-04
208988	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	4.00E+02	2.52E+08	9.50E+06	1.30E-04	15	1.51E+03	2.45E-04	1.05E-03	1.75E-04	3.38E-04
83329	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	6.09E+04	2.52E+08	9.50E+06	1.30E-04	15	1.81E+04	3.87E-05	1.58E-03	1.75E-04	1.33E-04
132849	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	1.79E+03	2.52E+08	9.50E+06	1.30E-04	15	1.47E+03	3.61E-03	1.51E-01	1.75E-04	1.88E-04
86737	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	2.87E+04	2.52E+08	9.50E+06	1.30E-04	15	1.62E+04	2.20E-08	9.48E-07	1.75E-04	8.18E-01
85818	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	3.64E+04	2.52E+08	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.80E-03	1.75E-04	3.50E-04
128127	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	2.57E+03	2.52E+08	9.50E+06	1.30E-04	15	1.84E+04	1.28E-05	5.43E-04	1.75E-04	1.60E-03
CB-06	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	9.83E+04	2.52E+08	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.64E-04
CB-C12	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	6.11E+04	2.52E+08	9.50E+06	1.30E-04	15	NA	7.60E-01	3.96E+01	1.75E-04	3.64E-04
CB-C10	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	4.31E+05	2.52E+08	9.50E+06	1.30E-04	15	NA	3.96E-03	1.70E-01	1.75E-04	3.64E-04
CB-C18	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	9.25E+05	2.52E+08	9.50E+06	1.30E-04	15	NA	8.28E-01	3.86E+01	1.75E-04	3.64E-04
CB-C22	1	0.130	0.659	1.62E-08	0.390	8.33E-09	1.72E+04	9.24E+06	2.52E+08	9.50E+06	1.30E-04	15	NA	3.69E-04	1.56E-02	1.75E-04	4.27E-04

Appendix C.4
 Johnson & Ellinger Model - Data Entry Screen
 Inhalation of Volatiles from Soil
 Future Child Recreational Scenario - CT
 Southwest Properties, Walla G&H Superfund Site, Operable
 Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusion path length, L _d (cm)	Convection path length, L _p (cm)	Soil-water partition coefficient, K _d (cm ³ /g)	Vapor conc., C _{soil} (ug/m ³)	Crack radius, r _{crack} (cm)	Average vapor flow rate into bldg., Q _{avg} (cm ³ /s)	Crack effective diffusion coefficient, D _{crack} (cm ² /s)	Area of crack, A _{crack} (cm ²)	Exponent of equivalent foundation pocket number, exp(PeF)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg conc., C _{soil,bldg} (ug/m ³)	Unit risk factor, URF (ug/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
95638	Trimethylbenzene, 1,2,4-	1	15	7.43E+00	N/A	0.10	2.74E+01	4.77E-04	1.23E+03	2.75E+003	1.08E-05	N/A	N/A	5.0E-03
540690	Dichloroethene, 1,2 (cis)	1	15	2.67E-01	N/A	0.10	2.74E+01	3.77E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
109878	Trimethylbenzene, 1,3,5-	1	15	3.34E+00	N/A	0.10	2.74E+01	3.96E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	6.0E-03
104518	n-Butylbenzene	1	15	8.02E+00	N/A	0.10	2.74E+01	4.41E-04	1.23E+03	#NUM!	1.08E-05	N/A	#N/A	#N/A
91203	Naphthalene	1	15	4.00E+00	4.27E+03	0.10	2.74E+01	4.70E-04	1.23E+03	8.87E+307	1.08E-05	4.61E-02	N/A	3.0E-03
96878	Isopropyltoluene, 4-	1	15	3.18E+00	N/A	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
135688	Butylbenzene, sec.	1	15	6.23E-01	N/A	0.10	2.74E+01	7.88E-04	1.23E+03	5.47E+287	1.08E-05	N/A	N/A	#N/A
74873	Chloroethane	1	15	2.98E-02	3.24E+06	0.10	2.74E+01	7.88E-04	1.23E+03	1.14E+189	1.08E-05	3.61E+00	N/A	8.0E-02
75014	Vinyl chloride	1	15	3.72E-02	6.48E+05	0.10	2.74E+01	8.44E-04	1.23E+03	5.27E+224	1.08E-05	6.99E+00	8.9E-06	1.0E-01
74839	Bromomethane	1	15	2.98E-02	N/A	0.10	2.74E+01	4.48E-04	1.23E+03	#NUM!	1.06E-06	N/A	N/A	5.0E-03
75003	Ethyl Chloride	1	15	2.86E-02	1.12E+06	0.10	2.74E+01	7.68E-04	1.23E+03	1.14E+189	1.08E-05	1.21E+00	N/A	1.0E-01
75354	1,1-Dichloroethene	1	15	1.19E-01	1.09E+05	0.10	2.74E+01	5.47E-04	1.23E+03	3.82E+294	1.08E-05	1.17E+00	N/A	2.0E-01
78131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	15	4.60E-01	N/A	0.10	2.74E+01	1.75E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	3.0E-01
67641	Acetone	1	15	1.19E-03	1.37E+03	0.10	2.74E+01	2.07E-03	1.23E+03	8.18E+89	1.09E-05	1.48E-02	N/A	N/A
75150	Carbon Disulfide	1	15	1.03E-01	N/A	0.10	2.74E+01	6.34E-04	1.23E+03	1.25E+228	1.08E-05	N/A	N/A	7.0E-01
78209	Methyl Acetate	1	15	6.84E-03	N/A	0.10	2.74E+01	8.81E-04	1.23E+03	1.17E+169	1.08E-05	N/A	N/A	#N/A
75092	Methylene chloride	1	15	2.34E-02	1.60E+05	0.10	2.74E+01	6.35E-04	1.23E+03	8.65E+227	1.08E-05	1.73E+00	4.7E-07	3.0E+00
159605	trans-1,2-Dichloroethene	1	15	1.05E-01	8.20E+04	0.10	2.74E+01	4.32E-04	1.23E+03	#NUM!	1.08E-06	8.66E-01	N/A	2.0E-01
1634044	Methyl-Tertiary-Butyl Ether	1	15	7.88E-02	4.68E+03	0.10	2.74E+01	5.87E-04	1.23E+03	9.48E+216	1.08E-05	4.96E-02	N/A	3.0E-00
75343	1,1-Dichloroethane	1	15	6.32E-02	1.82E+05	0.10	2.74E+01	4.68E-04	1.23E+03	#NUM!	1.08E-05	1.78E+00	N/A	5.0E-01
159592	cis-1,2-Dichloroethene	1	15	7.10E-02	5.86E+04	0.10	2.74E+01	4.69E-04	1.23E+03	#NUM!	1.08E-05	8.12E-01	N/A	2.0E-01
78933	Butanone, 2- (MEK)	1	15	7.69E-03	N/A	0.10	2.74E+01	8.49E-04	1.23E+03	1.18E+153	1.08E-05	N/A	N/A	N/A
71559	1,1,1-Trichloroethane	1	15	2.20E-01	N/A	0.10	2.74E+01	4.75E-04	1.23E+03	4.36E+304	1.09E-05	N/A	N/A	2.2E+00
110827	Cyclohexane	1	10	3.20E-01	N/A	0.10	2.74E+01	4.85E-04	1.23E+03	3.18E+298	1.08E-05	N/A	N/A	#N/A
71432	Benzene	1	15	1.18E-01	2.85E+04	0.10	2.74E+01	5.42E-04	1.23E+03	1.81E+287	1.08E-05	3.08E-01	7.6E-08	3.0E-02
79016	Trichloroethylene	1	15	3.32E-01	1.09E+05	0.10	2.74E+01	4.83E-04	1.23E+03	3.77E+299	1.08E-05	1.18E+00	1.1E-04	4.0E-02
108872	Methyl cyclohexane	1	15	5.36E-01	3.35E+06	0.10	2.74E+01	5.88E-04	1.23E+03	1.60E+242	1.08E-05	3.82E+01	N/A	3.0E-00
108883	Toluene	1	15	3.84E-01	1.28E+05	0.10	2.74E+01	5.34E-04	1.23E+03	1.10E+271	1.08E-05	1.36E+00	N/A	4.0E-01
127184	Tetrachloroethylene	1	15	3.10E-01	9.19E+04	0.10	2.74E+01	4.39E-04	1.23E+03	#NUM!	1.08E-05	9.92E-01	5.9E-09	N/A
109807	Chlorobenzene	1	15	4.38E-01	3.21E+04	0.10	2.74E+01	4.65E-04	1.23E+03	#NUM!	1.08E-05	3.48E-01	N/A	8.0E-02
100414	Ethylbenzene	1	15	7.28E-01	2.88E+04	0.10	2.74E+01	4.80E-04	1.23E+03	#NUM!	1.08E-05	2.80E-01	N/A	1.0E+00
1330207	Xylene	1	15	4.82E-01	N/A	0.10	2.74E+01	3.75E-03	1.23E+03	4.03E+38	1.08E-05	N/A	N/A	1.0E-01
100425	Styrene	1	15	1.55E+00	N/A	0.10	2.74E+01	4.47E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
96828	Isopropylbenzene	1	15	1.66E+01	N/A	0.10	2.74E+01	3.96E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	4.0E-01
79345	1,1,2,2-Tetrachloroethane	1	15	1.87E-01	N/A	0.10	2.74E+01	6.85E-04	1.23E+03	1.88E+268	1.08E-05	N/A	N/A	#N/A
641731	Dichlorobenzene, 1,3-	1	15	3.40E-01	3.19E+04	0.10	2.74E+01	2.66E-04	1.23E+03	#NUM!	1.07E-05	3.42E-01	N/A	N/A
108487	1,4-Dichlorobenzene	1	15	1.23E+00	6.86E+03	0.10	2.74E+01	4.38E-04	1.23E+03	#NUM!	1.08E-05	7.19E-02	N/A	8.0E-01
95601	1,2-Dichlorobenzene	1	15	1.07E-01	3.94E+00	0.10	2.74E+01	3.84E-02	1.23E+03	4.74E+03	1.08E-05	4.28E-05	N/A	N/A
120821	1,2,4-Trichlorobenzene	1	15	3.86E+00	N/A	0.10	2.74E+01	2.25E-04	1.23E+03	#NUM!	1.07E-05	N/A	N/A	2.0E-01
100027	Benzaldehyde	1	15	6.34E-02	N/A	0.10	2.74E+01	1.95E-03	1.23E+03	2.80E+107	1.08E-05	N/A	N/A	#N/A
91578	Methylnaphthalene, 2-	1	15	1.70E+01	1.20E+04	0.10	2.74E+01	3.13E-04	1.23E+03	#NUM!	1.08E-05	1.29E-01	N/A	3.0E-03
92524	Biphenyl, 1,1'	1	15	1.25E+01	N/A	0.10	2.74E+01	3.15E-04	1.23E+03	#NUM!	1.08E-05	N/A	N/A	N/A
208988	Acenaphthylene	1	15	9.57E+00	4.31E+02	0.10	2.74E+01	3.38E-04	1.23E+03	#NUM!	1.08E-05	4.84E-03	N/A	3.0E-03
83329	Acenaphthene	1	15	1.42E+01	N/A	0.10	2.74E+01	7.33E-04	1.23E+03	2.13E+187	1.08E-05	N/A	N/A	3.0E-03
132848	Dibenzofuran	1	15	1.83E+01	1.84E+04	0.10	2.74E+01	1.86E-04	1.23E+03	#NUM!	1.07E-05	1.76E-01	N/A	N/A
66737	Fluorene	1	15	1.54E+01	N/A	0.10	2.74E+01	8.18E-01	1.23E+03	1.50E+00	1.32E-05	N/A	N/A	3.0E-03
65016	Phenanthrene	1	15	2.83E+01	6.27E+03	0.10	2.74E+01	3.60E-04	1.23E+03	#NUM!	1.08E-05	6.78E-02	N/A	3.0E-03
120127	Anthracene	1	15	5.90E+01	N/A	0.10	2.74E+01	1.80E-03	1.23E+03	5.14E+90	1.08E-05	N/A	N/A	3.0E-03
C5-C8	C5-C8 Aliphatics	1	15	4.53E+00	3.84E+08	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	4.14E+03	N/A	2.0E-01
C9-C12	C9-C12 Aliphatics	1	15	3.00E+02	6.76E+06	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	7.20E+01	N/A	2.0E-01
O9-C10	O9-C10 Aromatics	1	15	3.66E+00	1.96E+07	0.10	2.74E+01	3.88E-04	1.23E+03	#NUM!	1.08E-05	2.10E+02	N/A	5.0E-02
O9-C18	O9-C18 Aliphatics	1	15	1.38E+03	2.42E+07	0.10	2.74E+01	3.84E-04	1.23E+03	#NUM!	1.08E-05	2.81E+02	N/A	2.0E-01
C11-C22	C11-C22 Aromatics	1	15	1.00E+01	1.40E+06	0.10	2.74E+01	4.27E-04	1.23E+03	#NUM!	1.08E-05	1.61E+01	N/A	5.0E-02

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

SL-SCREEN
 Version 2.3.03/01

YES

OR

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

YES

ENTER Chemical CAS No. (Numbers only, no dashes)	Enter initial soil concentration.		ENTER Depth below grade to bottom of unconsolidated soil layer L _u (m)	ENTER Depth below grade to base of consolidation L _t (m)	ENTER Average soil temperature, T _a (°C)	ENTER Vadose zone SO ₂ soil flow depth to estimate soil vapor permeability, L _v (cm)	ENTER User-defined vadose zone soil vapor permeability, K _v (cm ² /s)	ENTER Vadose zone soil dry bulk density, ρ _b (g/cm ³)	ENTER Vadose zone soil initial moisture, w _i (g/g)	ENTER Vadose zone soil water-filled porosity, θ _w (cm ³ /cm ³)	ENTER Vadose zone soil organic carbon fraction, f _{oc} (g/g)	ENTER Averaging time for carcinogens, ATC (hrs)	ENTER Averaging time for noncarcinogens, ATNC (hrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure level ET (hr/day)	ENTER Conversion factor CF (mg/kg)	ENTER Target Risk for carcinogens, TR _c (10 ⁻⁶ /yr)	ENTER Target Risk for noncarcinogens, TR _{nc} (10 ⁻⁶ /yr)
	ENTER Mean soil conc. OR Chemical (µg/g)	ENTER Initial soil conc. (µg/g or mg/cm ³)																	
0403	Trifluorobenzene, 1,2,4-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
0406	Dichlorobenzene, 1,2- (total)	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10405	Trifluorobenzene, 1,3,5-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10410	n-Butylbenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
91305	Naphthalene	2.74E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
91476	Isopropyltoluene, 4-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
12864	Butylbenzene, sec-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
14473	Chlorobenzene	2.49E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
76014	Vinyl chloride	2.81E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
74258	Bromobenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
75053	Ethyl chloride	8.80E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
76384	1,1-Dichloroethane	1.20E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
71111	Trichloro-1,2,2,2-tetrafluoroethane, 1,1,1,2-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
67841	Acetone	3.24E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
76180	Carbon Dioxide	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
76099	Methyl acetate	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
75050	Methylene chloride	7.37E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10406	trans-1,2-Dichloroethane	7.73E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10404	Methyl-Tertiary-Butyl Ether	8.75E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
75243	1,1-Dichloroethane	3.88E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10408	cis-1,2-Dichloroethane	1.90E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
74853	Butane, 2- (MEK)	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
77996	1,1,1-Trichloroethane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10407	Cyclohexane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
74422	Benzene	2.10E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
76176	Trichloroethylene	3.81E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10402	Methyl cyclohexane	4.49E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10403	Toluene	5.82E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
12784	Tetrachloroethylene	1.47E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10407	Chlorobenzene	3.11E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10414	Ethylbenzene	1.84E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
12007	Xylene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10408	Styrene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
9428	Isopropylbenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
75248	1,1,2,2-tetrachloroethane	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
84151	Dichlorobenzene, 1,3-	1.00E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10447	1,4-Dichlorobenzene	2.50E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
88051	1,2-Dichlorobenzene	6.10E+01	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
12021	1,2,4-Trichlorobenzene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
99927	Benzaldehyde	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
87874	Methylstyrene, 2-	8.41E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
10404	Benzene, 1,1-	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
20088	Acenaphthylene	4.00E+02	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
6338	Acenaphthene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
12646	Dibenzofuran	1.72E+03	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
8777	Fluorene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
8843	Phenanthrene	3.66E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
18127	Anthracene	15	15	10	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
05-09	CS-C8 Aromatic	8.82E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
06-12	CS-C12 Aromatic	5.17E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
09-08	CS-C10 Aromatic	4.37E+04	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
09-18	CS-C18 Aromatic	8.04E+08	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1
C11-09	C11-C22 Aromatic	4.10E+08	15	15	10	LS	1	1.5	0.43	0.3	0.002	70	24	24	78	2.5	8780	1.0E-06	1

Note:
 1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2002) were used for soil water filled porosity (θ_w), soil organic carbon fraction (f_{oc}), soil total porosity (n), and soil dry bulk density (ρ_b).

Appendix C.4

Johnson & Ettinger Model - Data Entry Screen

Inhalation of Volatiles from Soil

Future Adult Recreational Scenario - RME

Southwest Properties, Wells G&H Superfund Site, Operable Unit 2

Whitney Barrel

Chemical CAS No. (numbers only, no dashes)	Chemical	Diffusivity in air, D _a (cm ² /s)	Diffusivity in water, D _w (cm ² /s)	Henry's law constant at reference temperature, H (atm·m ³ /mol)	Henry's law constant reference temperature, T _R (°C)	Enthalpy of vaporization at the normal boiling point, ΔH _{v,b} (cal/mol)	Normal boiling point, T _b (°K)	Critical temperature, T _c (°K)	Organic carbon partition coefficient, K _{oc} (cm ³ /g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)	Physical state at soil temperature, (S,L,G)
95636	Trimethylbenzene, 1,2,4-	7.80E-02	9.03E-06	5.70E-03	25	1.25E+03	442.30	649.11	3.72E+03	5.70E+01	N/A	6.0E-03	L
54590	Dichloroethylene, 1,2- (total)	5.59E-02	6.47E-06	4.30E-04	20	1.32E+03	585.00	677.50	1.28E+02	1.30E+00	#N/A	#N/A	0.0E+00
108678	Trimethylbenzene, 1,3,5-	6.48E-02	7.86E-06	7.81E-03	25	1.25E+03	442.30	649.11	1.67E+03	2.00E+01	N/A	6.0E-03	L
104518	n-Butylbenzene	7.25E-02	8.39E-06	1.25E-02	25	1.23E+03	456.00	684.00	2.51E+03	1.26E+00	#N/A	#N/A	L
91203	Naphthalene	5.90E-02	7.50E-06	4.83E-04	25	1.04E+04	491.14	748.40	2.00E+03	3.10E+01	N/A	3.0E-03	S
99876	Isopropyltoluene, 4-	7.25E-02	8.39E-06	8.60E+00	25	1.24E+03	450.10	652.04	1.58E+03	2.34E+01	N/A	4.0E-01	L
135988	Butylbenzene, sec-	8.09E-02	8.00E-06	1.67E-02	25	1.24E+03	446.65	669.98	3.11E+04	1.76E+01	#N/A	#N/A	0.0E+00
74873	Chloromethane	1.28E-01	6.50E-06	8.67E-03	25	1.35E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	9.0E-02	0.0E+00
75014	Vinyl chloride	1.08E-01	1.23E-05	2.71E-02	25	5.25E+03	259.25	432.00	1.86E+01	2.76E+03	8.8E-06	1.0E-01	L
74839	Bromomethane	7.28E-02	1.21E-05	6.22E-03	25	5.49E+03	276.50	414.75	1.43E+01	1.52E+04	N/A	5.0E-03	0.0E+00
75003	Ethyl Chloride	1.26E-01	6.50E-06	8.67E-03	25	1.36E+03	249.00	373.50	1.43E+01	5.32E+03	N/A	1.0E+01	L
76354	1,1-Dichloroethylene	9.00E-02	1.04E-05	2.61E-02	25	6.25E+03	304.75	576.05	5.89E+01	2.25E+03	N/A	2.0E-01	L
76131	Trichloro-1,1,2,2-tetrafluoroethane, 1,1,2-	2.88E-02	8.07E-06	5.17E-01	25	1.33E+03	320.70	481.05	2.25E+02	1.70E+02	N/A	3.0E+01	0.0E+00
67641	Acetone	1.24E-01	1.14E-05	3.88E-05	25	6.96E+03	329.20	508.10	5.75E-01	1.00E+06	N/A	N/A	L
75150	Carbon Disulfide	1.04E-01	1.29E-05	1.27E-02	25	6.39E+03	319.00	552.00	5.14E+01	2.67E+03	N/A	7.0E-01	L
79209	Methyl Acetate	1.04E-01	1.00E-05	1.13E-04	25	1.31E+03	365.00	547.50	3.32E+00	2.43E+05	#N/A	#N/A	0.0E+00
75092	Methylene chloride	1.01E-01	1.17E-05	2.19E-03	25	6.71E+03	313.00	510.00	1.17E+01	1.30E+04	4.7E-07	3.0E+00	L
156605	trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	9.39E-03	25	1.33E+03	320.85	516.50	5.25E+01	8.30E+03	N/A	2.0E-01	L
1634044	Methyl-Tertiary-Butyl Ether	1.02E-01	1.05E-05	5.87E-04	25	1.32E+03	328.38	497.11	3.84E+01	5.10E+04	N/A	3.0E+00	L
75343	1,1-Dichloroethane	7.42E-02	1.05E-05	5.61E-03	25	6.90E+03	330.55	523.00	3.16E+01	5.06E+03	N/A	5.0E-01	L
156592	cis-1,2-Dichloroethylene	7.38E-02	1.13E-05	4.07E-03	25	7.19E+03	333.65	544.00	3.55E+01	3.50E+03	N/A	2.0E-01	L
78933	Butanone, 2- (MEK)	8.08E-02	9.80E-06	5.60E-05	25	1.31E+03	352.50	528.75	3.83E+00	2.23E+05	N/A	N/A	0.0E+00
71556	1,1,1-Trichloroethane	7.80E-02	8.80E-06	1.72E-02	25	7.14E+03	347.24	545.00	1.10E+02	1.33E+03	N/A	2.2E+00	L
110827	Cyclohexane	8.00E-02	9.00E-06	2.00E+00	25	1.31E+03	353.85	530.78	1.60E+02	5.50E+01	#N/A	#N/A	0.0E+00
71432	Benzene	8.80E-02	9.80E-06	5.66E-03	25	7.34E+03	353.24	562.16	5.89E+01	1.75E+03	7.8E-06	3.0E-02	L
79016	Trichloroethylene	7.90E-02	9.10E-06	1.03E-02	25	7.51E+03	360.36	544.20	1.66E+02	1.10E+03	1.1E-04	4.0E-02	L
108872	Methyl cyclohexane	9.86E-02	8.52E-06	4.23E-01	25	1.30E+03	373.90	580.85	2.68E+02	1.40E+01	N/A	3.0E+00	L
108868	Toluene	8.70E-02	8.80E-06	6.63E-03	25	7.93E+03	383.78	591.79	1.82E+02	5.26E+02	N/A	4.0E-01	L
127184	Tetrachloroethylene	7.20E-02	8.20E-06	1.84E-02	25	8.29E+03	394.40	620.20	1.55E+02	2.00E+02	5.9E-06	N/A	L
108907	Chlorobenzene	7.30E-02	8.70E-06	3.71E-03	25	8.41E+03	404.87	632.40	2.19E+02	4.72E+02	N/A	6.0E-02	L
100414	Ethylbenzene	7.50E-02	7.80E-06	7.88E-03	25	8.50E+03	409.34	617.20	3.63E+02	1.69E+02	N/A	1.0E+00	L
1330207	Xylenes	7.69E-02	8.44E-06	6.73E-06	25	1.26E+03	417.40	616.21	2.41E+02	2.20E+02	N/A	1.0E-01	L
100425	Styrene	7.10E-02	8.00E-06	2.78E-03	25	8.74E+03	418.31	636.00	7.76E+02	3.10E+02	#N/A	#N/A	L
88828	Isopropylbenzene	6.50E-02	7.83E-06	1.47E-02	25	1.26E+03	425.40	631.01	9.31E+03	5.60E+01	N/A	4.0E-01	L
79345	1,1,2,2-Tetrachloroethane	7.10E-02	7.90E-06	3.44E-04	25	9.00E+03	419.60	661.15	9.33E+01	2.97E+03	#N/A	#N/A	L
541731	Dichlorobenzene, 1,3-	4.14E-02	8.85E-06	4.70E-03	25	1.24E+03	446.00	683.96	1.70E+02	8.88E+01	N/A	N/A	L
108467	1,4-Dichlorobenzene	6.90E-02	7.90E-06	2.43E-03	25	9.27E+03	447.21	684.75	6.17E+02	7.36E+01	N/A	8.0E-01	S
95501	1,2-Dichlorobenzene	6.88E-02	9.41E-06	1.62E-06	25	9.70E+03	465.00	697.50	5.34E+01	2.77E+04	N/A	N/A	S
120821	1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	1.42E-03	25	1.05E+04	486.15	725.00	1.78E+03	3.00E+02	N/A	2.0E-01	L
100527	Benzaldehyde	7.30E-02	9.07E-06	2.62E-05	25	1.24E+03	452.00	678.00	3.27E+01	6.57E+03	#N/A	#N/A	0.0E+00
91576	Methylnaphthalene, 2-	4.84E-02	7.75E-06	1.01E-03	25	1.17E+03	514.05	761.01	8.51E+03	2.46E+01	N/A	3.0E-03	S
92524	Biphenyl, 1,1'-	4.04E-02	8.15E-06	3.03E-04	25	1.15E+03	529.10	793.65	6.25E+03	6.94E+00	N/A	N/A	0.0E+00
208968	Acenaphthylene	4.43E-02	7.44E-06	2.80E-04	25	1.12E+03	553.00	792.01	4.79E+03	3.93E+00	N/A	3.0E-03	S
83329	Acenaphthene	4.21E-02	7.69E-06	1.55E-04	25	1.22E+04	550.54	803.15	7.08E+03	4.24E+00	N/A	3.0E-03	S
132649	Dibenzofuran	2.67E-02	5.93E-06	4.00E-03	25	1.11E+03	559.00	824.01	8.13E+03	1.00E+01	N/A	N/A	S
86737	Fluorene	3.63E-02	7.88E-06	9.41E-06	25	1.27E+04	570.44	870.00	7.71E+03	1.90E+00	N/A	3.0E-03	S
85018	Phenanthrene	3.30E-02	7.47E-06	1.30E-04	25	1.06E+03	613.00	869.01	1.41E+04	1.28E+00	N/A	3.0E-03	S
120127	Anthracene	3.24E-02	7.74E-06	6.51E-05	25	1.31E+04	615.18	873.00	2.95E+04	4.34E-02	N/A	3.0E-03	S
C5-C8	C5-C8 Aliphatics	6.00E-02	1.00E-05	1.30E+00	25	NA	NA	NA	2.27E+03	1.10E+04	N/A	2.0E-01	S
C9-C12	C9-C12 Aliphatics	6.00E-02	1.00E-05	1.56E+00	25	NA	NA	NA	1.50E+05	7.00E+01	N/A	2.0E-01	S
C9-C10	C9-C10 Aromatics	6.00E-02	1.00E-05	7.92E-03	25	NA	NA	NA	1.78E+03	5.10E+04	N/A	5.0E-02	S
C9-C18	C9-C18 Aliphatics	6.00E-02	1.00E-05	1.66E+00	25	NA	NA	NA	6.80E+05	1.00E+01	N/A	2.0E-01	S
C11-C22	C11-C22 Aromatics	6.00E-02	1.00E-05	7.32E-04	25	NA	NA	NA	5.00E+03	5.80E+03	N/A	5.0E-02	S

Chemical CAS No. (numbers only, no dashes)	Chemical	Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, θ_v (cm ³ /cm ³)	Vadose zone effective total fluid saturation, S_u (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, k (cm ²)	Vadose zone soil relative air permeability, k_{ra} (cm ²)	Vadose zone soil effective vapor permeability, k_v (cm ²)	Floor- wall seam perimeter, Xorack (cm)	Initial soil concentration used, CR (ug/kg)	Bldg. ventilation rate, Q_{vent} (cm ³ /s)	Area of enclosed space below grade, A_g (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Z_{max} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, $H_{p,TS}$ (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g-cm-s)	Vadose zone effective diffusion coefficient, D^*_v (cm ² /s)
95036	Trimethylbenzene, 1,2,4	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.36E+05	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	4.99E-03	2.13E-01	1.75E-04	4.77E-04
540590	Dichloromethane, 1,2, (distal)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.98E+02	2.52E+06	9.50E+06	1.30E-04	15	1.73E+03	3.27E-04	1.87E-02	1.75E-04	3.77E-04
108678	Trimethylbenzene, 1,3,5-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.13E+04	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	6.80E-03	2.39E-01	1.75E-04	3.95E-04
104519	n-Butylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.83E+03	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.09E-02	4.69E-01	1.75E-04	4.41E-04
91203	Naphthalene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.74E+03	2.52E+06	9.50E+06	1.30E-04	15	1.29E+04	1.52E-04	6.65E-03	1.75E-04	4.70E-04
99876	Isopropyltoluene, 4-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.31E+06	2.52E+06	9.50E+06	1.30E-04	15	1.57E+03	7.48E+00	3.22E+02	1.75E-04	4.39E-04
135888	Butylbenzene, sec-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.10E+06	2.52E+06	9.50E+06	1.30E-04	15	1.53E+03	1.46E-02	6.27E-01	1.75E-04	4.86E-04
74873	Chloromethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.49E+02	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.79E-03	3.35E-01	1.75E-04	7.08E-04
75014	Vinyl chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.81E+02	2.52E+06	9.50E+06	1.30E-04	15	5.00E+03	1.73E-02	7.48E-01	1.75E-04	6.44E-04
74839	Bromomethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.89E+06	2.52E+06	9.50E+06	1.30E-04	15	5.39E+03	3.84E-03	1.65E-01	1.75E-04	4.48E-04
75003	Ethyl Chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.40E+01	2.52E+06	9.50E+06	1.30E-04	15	1.20E+03	7.78E-03	3.35E-01	1.75E-04	7.68E-04
75354	1,1-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.20E+02	2.52E+06	9.50E+06	1.30E-04	15	6.39E+03	1.47E-02	6.34E-01	1.75E-04	5.47E-04
70131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.90E+05	2.52E+06	9.50E+06	1.30E-04	15	1.44E+03	4.55E-01	1.99E+01	1.75E-04	1.75E-04
67841	Acetone	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.24E+02	2.52E+06	9.50E+06	1.30E-04	15	7.59E+03	1.97E-05	6.50E-04	1.75E-04	2.07E-03
76160	Carbon Disulfide	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.78E+05	2.52E+06	9.50E+06	1.30E-04	15	6.88E+03	8.89E-03	3.91E-01	1.75E-04	6.34E-04
79206	Methyl Acetate	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+07	2.52E+06	9.50E+06	1.30E-04	15	1.55E+03	9.88E-05	4.26E-03	1.75E-04	8.61E-04
75092	Methylene chloride	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.37E+02	2.52E+06	9.50E+06	1.30E-04	15	7.05E+03	1.17E-02	5.03E-02	1.75E-04	6.35E-04
156805	1,1,1-Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	7.73E+01	2.52E+06	9.50E+06	1.30E-04	15	1.43E+03	8.27E-03	3.59E-01	1.75E-04	4.32E-04
1834044	Methyl-Tertiary-Butyl Ether	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.75E+01	2.52E+06	9.50E+06	1.30E-04	15	1.45E+03	5.15E-04	2.22E-02	1.75E-04	6.87E-04
76343	1,1-Dichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.58E+02	2.52E+06	9.50E+06	1.30E-04	15	7.45E+03	2.88E-03	1.24E-01	1.75E-04	4.58E-04
156592	cis-1,2-Dichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.90E+02	2.52E+06	9.50E+06	1.30E-04	15	7.73E+03	2.04E-03	8.77E-02	1.75E-04	4.59E-04
78833	Butanone, 2- (MEK)	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.93E+07	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	4.90E-05	2.11E-03	1.75E-04	9.45E-04
71956	1,1,1-Trichloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.01E+06	2.52E+06	9.50E+06	1.30E-04	15	7.88E+03	8.50E-03	3.89E-01	1.75E-04	4.75E-04
110827	Cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.88E+05	2.52E+06	9.50E+06	1.30E-04	15	1.49E+03	1.75E+00	7.64E-01	1.75E-04	4.85E-04
71432	Benzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.10E+02	2.52E+06	9.50E+06	1.30E-04	15	8.12E+03	2.69E-03	1.16E-01	1.75E-04	5.42E-04
79018	Trichloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.91E+02	2.52E+06	9.50E+06	1.30E-04	15	8.56E+03	4.79E-03	2.05E-01	1.75E-04	4.83E-04
106872	Methyl cyclohexane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.45E+02	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	3.70E-01	1.59E+01	1.75E-04	5.98E-04
108883	Toluene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.85E+02	2.52E+06	9.50E+06	1.30E-04	15	9.15E+03	2.62E-03	1.29E-01	1.75E-04	5.34E-04
127184	Tetrachloroethylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.47E+02	2.52E+06	9.50E+06	1.30E-04	15	9.55E+03	7.83E-03	3.37E-01	1.75E-04	4.39E-04
108907	Chlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.11E+02	2.52E+06	9.50E+06	1.30E-04	15	9.80E+03	1.54E-03	6.85E-02	1.75E-04	4.55E-04
100414	Ethylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.84E+02	2.52E+06	9.50E+06	1.30E-04	15	1.02E+04	9.18E-03	1.37E-01	1.75E-04	4.80E-04
1330207	Xylenes	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.50E+05	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	6.90E-06	2.52E-04	1.75E-04	3.75E-03
100425	Styrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.44E+05	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.09E-03	4.67E-02	1.75E-04	4.47E-04
98838	Isopropylbenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.06E+06	2.52E+06	9.50E+06	1.30E-04	15	1.54E+03	1.28E-02	5.51E-01	1.75E-04	3.95E-04
79348	1,1,2,2-Tetrachloroethane	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.15E+06	2.52E+06	9.50E+06	1.30E-04	15	1.05E+04	1.34E-04	5.77E-03	1.75E-04	5.65E-04
641751	Dichlorobenzene, 1,3-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.50E+03	4.11E-03	1.77E-01	1.75E-04	2.58E-04
198487	1,4-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.90E+02	2.52E+06	9.50E+06	1.30E-04	15	1.12E+04	8.89E-04	3.83E-02	1.75E-04	4.38E-04
96501	1,2-Dichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	5.10E+01	2.52E+06	9.50E+06	1.30E-04	15	1.21E+04	5.61E-07	2.37E-05	1.75E-04	3.84E-02
120821	1,2,4-Trichlorobenzene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.13E+06	2.52E+06	9.50E+06	1.30E-04	15	1.32E+04	4.35E-04	1.67E-02	1.75E-04	2.64E-04
100527	Benzaldehyde	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.74E+06	2.52E+06	9.50E+06	1.30E-04	15	1.63E+03	2.29E-06	9.84E-04	1.75E-04	1.95E-03
91576	Methylnaphthalene, 2-	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.41E+03	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	8.86E-04	3.81E-02	1.75E-04	3.13E-04
62524	Biphenyl, 1,1'	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.81E+04	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	2.86E-04	1.14E-02	1.75E-04	3.15E-04
208960	Acanaphthylene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.00E+02	2.52E+06	9.50E+06	1.30E-04	15	1.61E+03	2.45E-04	1.05E-02	1.75E-04	3.39E-04
83329	Acanaphthene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	6.09E+04	2.52E+06	9.50E+06	1.30E-04	15	1.61E+04	3.87E-05	1.58E-03	1.75E-04	7.35E-04
132849	Dibenzofuran	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	1.79E+03	2.52E+06	9.50E+06	1.30E-04	15	1.47E+03	3.51E-03	1.61E-01	1.75E-04	1.66E-04
86737	Fluorene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.87E+04	2.52E+06	9.50E+06	1.30E-04	15	1.62E+04	2.20E-08	9.48E-07	1.75E-04	6.15E-01
86018	Phenanthrene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	3.94E+04	2.52E+06	9.50E+06	1.30E-04	15	1.48E+03	1.14E-04	4.50E-03	1.75E-04	3.50E-04
120127	Anthracene	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	2.57E+03	2.52E+06	9.50E+06	1.30E-04	15	1.84E+04	1.26E-06	5.43E-04	1.75E-04	1.80E-03
09-C8	09-C8 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	9.66E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	6.48E-01	2.79E+01	1.75E-04	3.84E-04
09-C12	09-C12 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	8.11E+04	2.52E+06	9.50E+06	1.30E-04	15	NA	7.60E-01	3.98E+01	1.75E-04	3.64E-04
09-C10	09-C10 Aliphatics	1	0.130	0.659	1.62E-08	0.390	6.33E-09	1.72E+04	4.91E+05	2.52E+06	9.50E+06	1.30E-04	15	NA	3.99E-03	1.70E-01	1.75E-04	3.69E-04
09-C16	09-C16 Aliphatics																	