US EPA ARCHIVE DOCUMENT

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

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 [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | Enter initial soil concentration, ENTER Mean soil conc., $C_R$ (µg/kg) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (15 or 200 cm) | ENTER Depth below grade to top of contamination, $L_1$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined vadose zone soil vapor permeability, $k_v$ ($cm^2$) | Note | ENTER Vadose zone soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Vadose zone soil total porosity, $n^A$ (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Vadose zone soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging Time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time ET (hrs/day) | ENTER Conversion factor CF (l/l/yr) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | | 15 | 15 | 10 | LS | 1 | | 1 | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 2.74E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 99876 | Isopropyltoluene, 4- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | 2.49E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | 2.61E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | 8.80E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 8.34E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 67641 | Acetone | 3.24E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 7.27E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 7.73E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 6.75E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.56E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 1.50E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71432 | Benzene | 8.06E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.91E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | 4.45E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108883 | Toluene | 5.85E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 1.47E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | 3.11E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 1.84E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | 1.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | 2.60E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 5.10E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 5.41E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 4.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 1.76E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 3.88E+04 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 9.83E+04 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 8.11E+04 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | 4.31E+05 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | 9.25E+05 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 9.24E+05 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |

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

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult 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, $\Delta H_{v,b}$ (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 ($\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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- | 2.88E-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 | 3.63E+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 |
| 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 | 1.26E+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 | 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 | 528.10 | 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 | 8.80E+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 Adult Recreational Scenario - CT
Southwest Properties, Wells G&H 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, $\theta_a^v$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ ($atm-m^3/mol$) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | 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 | 4.98E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-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 |
| 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 | 2.93E-01 | 1.75E-04 | 3.96E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 6.63E+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 | 6.55E-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+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 |
| 135988 | 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 | 7.86E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-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 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 3.69E+05 | 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 | 8.60E+01 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 6.34E+01 | 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 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 3.99E+05 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.96E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | 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 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | 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 | 6.68E+03 | 6.99E-03 | 3.01E-01 | 1.75E-04 | 6.34E-04 |
| 79209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 5.03E+07 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.50E+03 | 9.88E-05 | 4.25E-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 | 7.27E+02 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 6.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 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 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | 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 | 1.46E+03 | 5.16E-04 | 2.22E-02 | 1.75E-04 | 6.87E-04 |
| 75343 | 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 | 7.46E+03 | 2.88E-03 | 1.24E-01 | 1.75E-04 | 4.55E-04 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-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 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 4.63E+07 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.49E+03 | 4.80E-05 | 2.11E-03 | 1.75E-04 | 9.46E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 6.01E+05 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 7.88E+03 | 8.50E-03 | 3.66E-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 | 7.54E+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 | 8.08E+01 | 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 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 2.01E+02 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 8.58E+03 | 4.79E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | 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 | 1.51E+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 | 2.92E-03 | 1.26E-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 | 1.64E-03 | 6.65E-02 | 1.75E-04 | 4.65E-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 | 3.18E-03 | 1.37E-01 | 1.75E-04 | 4.60E-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 | 5.88E-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 | 1.08E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | 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 | 3.86E-04 |
| 79345 | 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 |
| 541731 | 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 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 2.50E+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 |
| 95501 | 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 | 5.51E-07 | 2.37E-05 | 1.75E-04 | 3.94E-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 | 1.87E-02 | 1.75E-04 | 2.25E-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-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 5.41E+03 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | 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 | 2.66E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 208968 | Acenaphthylene | 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 | 3.38E-04 |
| 83329 | Acenaphthene | 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 | 3.67E-05 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | 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 | 1.51E-01 | 1.75E-04 | 1.69E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 2.97E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.62E+04 | 2.20E-06 | 9.48E-07 | 1.75E-04 | 8.18E-01 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-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 | 3.50E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 2.67E+03 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.84E+04 | 1.26E-06 | 5.43E-04 | 1.75E-04 | 1.60E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 8.83E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.64E-04 |
| C9-C12 | C9-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 | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 4.31E+05 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA | 3.96E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 9.25E+05 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA | 8.28E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 1.72E+04 | 9.24E+05 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA | 3.60E-04 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - CT
Southwest Properties, Wells 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, $K_d$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | 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 | 6.0E-03 |
| 540590 | Dichloroethylene, 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 |
| 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 | 9.67E+307 | 1.08E-05 | 4.61E-02 | N/A | 3.0E-03 |
| 99876 | 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 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 6.22E+01 | N/A | 0.10 | 2.74E+01 | 4.66E-04 | 1.23E+03 | 5.47E+297 | 1.08E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.66E-02 | 3.24E+05 | 0.10 | 2.74E+01 | 7.66E-04 | 1.23E+03 | 1.14E+189 | 1.08E-05 | 3.51E+00 | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | 6.46E+05 | 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 |
| 74839 | Bromomethane | 1 | 15 | 2.66E-02 | N/A | 0.10 | 2.74E+01 | 4.46E-04 | 1.23E+03 | #NUM! | 1.08E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.66E-02 | 1.12E+05 | 0.10 | 2.74E+01 | 7.66E-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 | 1.08E+06 | 0.10 | 2.74E+01 | 6.47E-04 | 1.23E+03 | 3.62E+264 | 1.08E-05 | 1.17E+00 | N/A | 2.0E-01 |
| 76131 | 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 |
| 67641 | Acetone | 1 | 15 | 1.15E-03 | 1.37E+03 | 0.10 | 2.74E+01 | 2.07E-03 | 1.23E+03 | 9.18E+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 |
| 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 |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 1.60E+05 | 0.10 | 2.74E+01 | 8.35E-04 | 1.23E+03 | 8.55E+227 | 1.08E-05 | 1.73E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-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 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.66E-02 | 4.56E+03 | 0.10 | 2.74E+01 | 6.67E-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 | 1.62E+06 | 0.10 | 2.74E+01 | 4.58E-04 | 1.23E+03 | #NUM! | 1.08E-05 | 1.75E+00 | N/A | 5.0E-01 |
| 156592 | cis-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 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.66E-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 | 4.38E+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 | 4.65E-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 | 1.61E+287 | 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 | 3.35E+06 | 0.10 | 2.74E+01 | 5.98E-04 | 1.23E+03 | 1.50E+242 | 1.08E-05 | 3.62E+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 | 1.38E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 8.19E+04 | 0.10 | 2.74E+01 | 4.39E-04 | 1.23E+03 | #NUM! | 1.08E-05 | 8.92E-01 | 5.9E-06 | 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 | 3.46E-01 | N/A | 6.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 2.68E+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 | 3.95E-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 | 5.65E-04 | 1.23E+03 | 1.66E+256 | 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 |
| 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 | 3.94E+00 | 0.10 | 2.74E+01 | 3.84E-02 | 1.23E+03 | 4.74E+03 | 1.09E-05 | 4.28E-05 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.56E+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 |
| 100527 | Benzaldehyde | 1 | 15 | 6.54E-02 | N/A | 0.10 | 2.74E+01 | 1.35E-03 | 1.23E+03 | 2.80E+107 | 1.08E-06 | 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 |
| 208968 | Acenaphthylene | 1 | 15 | 8.67E+00 | 4.31E+02 | 0.10 | 2.74E+01 | 3.38E-04 | 1.23E+03 | #NUM! | 1.08E-05 | 4.64E-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+197 | 1.08E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.63E+01 | 1.64E+04 | 0.10 | 2.74E+01 | 1.66E-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 | 8.15E-01 | 1.23E+03 | 1.50E+00 | 3.24E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.83E+01 | 8.27E+03 | 0.10 | 2.74E+01 | 3.50E-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+06 | 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 | 9.00E+02 | 6.78E+06 | 0.10 | 2.74E+01 | 3.64E-04 | 1.23E+03 | #NUM! | 1.08E-05 | 7.29E+01 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.56E+00 | 1.96E+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 | 1.36E+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+06 | 0.10 | 2.74E+01 | 4.27E-04 | 1.23E+03 | #NUM! | 1.08E-05 | 1.51E+01 | N/A | 5.0E-02 |

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

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.38E+05 | NA | NA | NA |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.86E+02 | NA | NA | NA |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | NA |
| 104518 | n-Butylbenzene | NA | NA | NA | 6.83E+03 | NA | NA | NA |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 1.1E-04 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+03 | NA | NA | NA |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+04 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | 2.9E-04 |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | 4.6E-08 | 6.2E-04 |
| 74839 | Bromomethane | NA | NA | NA | 3.89E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | 9.0E-07 |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 5.39E+05 | NA | NA | 4.3E-05 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+06 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.76E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.66E+06 | NA | 9.0E-10 | 4.1E-06 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 3.3E-05 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | 1.2E-07 |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 2.6E-05 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 2.3E-05 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 6.01E+05 | NA | NA | NA |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 1.8E-09 | 7.6E-05 |
| 79016 | Trichloroethylene | NA | NA | NA | 6.03E+05 | NA | 9.6E-08 | 2.2E-04 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.86E+04 | NA | NA | 9.0E-05 |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 2.6E-05 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.04E+05 | NA | 4.3E-09 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | 4.3E-05 |
| 100414 | Ethylbenzene | NA | NA | NA | 1.56E+05 | NA | NA | 2.2E-06 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.62E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.06E+05 | NA | NA | 6.7E-07 |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+04 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 3.2E-04 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 5.81E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 1.1E-05 |
| 83329 | Acenaphthene | NA | NA | NA | 6.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.84E+04 | NA | NA | 1.7E-04 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.88E+07 | NA | NA | 1.3E-01 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 2.7E-03 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | 3.1E-02 |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | 9.7E-03 |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.82E+07 | NA | NA | 2.2E-03 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 1E-07 | 2.0E-01 |

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

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

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Vol@tiles from Soil
Future Commercial Scenario - RME
Southmest Properties, Wells G&H Superfund Site, Operable Unit 3
Munciny Waste Oil

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 X

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc. $C_R$ (µg/kg) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (15 or 200 cm) | ENTER Depth below grade to top of contamination, $L_1$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Vadose zone SCS soil type (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, $\rho_b^d$ ($g/cm^3$) | ENTER Vadose zone soil total porosity, $n^v$ (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^v$ ($cm^3/cm^3$) | ENTER Vadose zone soil organic carbon fraction, $f_{oc}^v$ (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time ET (hrs/day) | ENTER Conversion factor CF (mg/µg) | ENTER Target risk for carcinogens TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 9.37E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 104513 | n-Butylbenzene | 4.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.18E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 99876 | Isopropyltoluene, 4- | 2.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+00 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.14E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.28E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 1.00E+04 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 3.73E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 71432 | Benzene | 2.48E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.23E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 108883 | Toluene | 8.55E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 3.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 6.70E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 2.23E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 8.51E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.36E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.53E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.72E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 8.44E+06 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 25 | 25 | 250 | 8 | 8760 | 1.0E-06 | 1 |

Note:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (U.S. EPA June 18, 2003) were used for soil water filled porosity ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity ($n$), and soil dry bulk density ($\rho_b$).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Commercial Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| 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, $\Delta H_{v,b}$ (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 ($\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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-triflouroethane, 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 | 320.65 | 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 | 373.90 | 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 | 1.26E+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 | 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 |

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 Unit 2
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 9.37E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 4.96E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 5.98E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.67E-04 | 1.67E-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 | 6.55E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.65E+03 | 6.80E-03 | 2.93E-01 | 1.75E-04 | 3.95E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 4.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.63E+03 | 1.09E-02 | 4.86E-01 | 1.75E-04 | 4.41E-04 |
| 91203 | Naphthalene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.16E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.52E-04 | 6.55E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.67E+03 | 7.48E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.63E+03 | 1.46E-02 | 6.27E-01 | 1.75E-04 | 4.88E-04 |
| 74873 | Chloromethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 6.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.00E+03 | 1.73E-02 | 7.46E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.69E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.55E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.80E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.99E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.96E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.58E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 8.78E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.68E+03 | 6.99E-03 | 3.01E-01 | 1.75E-04 | 6.34E-04 |
| 79209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 5.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.88E-05 | 4.26E-03 | 1.76E-04 | 8.81E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.00E+03 | 1.17E-03 | 5.03E-02 | 1.76E-04 | 6.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.16E-04 | 2.22E-02 | 1.76E-04 | 6.67E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.28E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.55E+03 | 1.00E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.76E-04 | 4.59E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 4.83E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 4.90E-05 | 2.11E-03 | 1.75E-04 | 9.46E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.79E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.50E-03 | 3.68E-01 | 1.75E-04 | 4.75E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.88E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.85E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.66E+03 | 4.79E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.98E+04 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.55E+03 | 8.55E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.15E+03 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.55E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.54E-03 | 6.65E-02 | 1.75E-04 | 4.56E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.18E-03 | 1.37E-01 | 1.75E-04 | 4.60E-04 |
| 1330207 | Xylenes | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.50E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.86E-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 | 6.55E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.06E-03 | 4.87E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.28E-02 | 5.51E-01 | 1.75E-04 | 3.95E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 6.65E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.66E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 8.89E-04 | 3.83E-02 | 1.75E-04 | 4.38E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 8.51E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 8.81E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.56E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.39E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 2.46E-04 | 1.06E-02 | 1.75E-04 | 3.38E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 6.09E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+04 | 3.57E-06 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 3.50E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.51E-03 | 1.51E-01 | 1.76E-04 | 1.86E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.62E+04 | 2.20E-06 | 9.48E-07 | 1.75E-04 | 8.16E-01 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.50E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 2.57E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.84E+04 | 1.26E-06 | 5.43E-04 | 1.75E-04 | 1.90E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.64E-04 |
| C9-C12 | C9-C12 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.50E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.92E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.95E-03 | 1.70E-01 | 1.75E-04 | 3.89E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 1.38E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 8.26E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.55E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.80E-04 | 1.56E-02 | 1.75E-04 | 4.27E-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
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) | Soil-water partition coefficient, $K_s$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 2.62E+05 | 0.10 | 1.04E+01 | 4.77E-04 | 6.45E+02 | 1.29E+220 | 1.49E-05 | 3.89E+00 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.67E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 6.45E+02 | 3.26E+278 | 1.48E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.86E-04 | 6.45E+02 | 3.48E+265 | 1.48E-06 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 3.57E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 6.45E+02 | 1.13E+238 | 1.49E-05 | 6.30E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 6.45E+02 | 2.56E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.18E+00 | 2.06E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.01E+239 | 1.49E-05 | 3.08E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 6.22E+01 | N/A | 0.10 | 1.04E+01 | 4.86E-04 | 6.45E+02 | 9.44E+215 | 1.49E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.86E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 6.44E-04 | 6.45E+02 | 1.02E+163 | 1.49E-05 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 4.48E-04 | 6.45E+02 | 1.38E+234 | 1.49E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 6.47E-04 | 6.45E+02 | 8.08E+191 | 1.49E-06 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.50E-01 | N/A | 0.10 | 1.04E+01 | 1.75E-04 | 6.45E+02 | #NUM! | 1.47E-06 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.15E-03 | 5.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.50E-05 | 8.05E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | 2.67E+165 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.64E-03 | N/A | 0.10 | 1.04E+01 | 8.61E-04 | 6.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+06 | 0.10 | 1.04E+01 | 6.35E-04 | 6.45E+02 | 2.18E+166 | 1.49E-05 | 6.62E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.05E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.86E-02 | N/A | 0.10 | 1.04E+01 | 6.87E-04 | 6.45E+02 | 2.47E+157 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 6.45E+02 | 1.67E+229 | 1.49E-05 | 2.19E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 3.15E+05 | 0.10 | 1.04E+01 | 4.68E-04 | 6.45E+02 | 7.49E+228 | 1.49E-05 | 4.68E+01 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.66E-03 | N/A | 0.10 | 1.04E+01 | 8.45E-04 | 6.45E+02 | 1.09E+111 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+05 | 0.10 | 1.04E+01 | 4.75E-04 | 6.45E+02 | 9.58E+220 | 1.49E-05 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+218 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 8.80E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+193 | 1.49E-06 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 8.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 6.45E+02 | 2.03E+217 | 1.49E-05 | 1.25E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 6.45E+02 | 4.88E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+05 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+196 | 1.49E-05 | 2.79E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 1.88E+05 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.92E+239 | 1.49E-05 | 2.79E+00 | 5.9E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.38E-01 | N/A | 0.10 | 1.04E+01 | 4.55E-04 | 6.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 6.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.80E-04 | 6.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.62E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 6.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.55E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 6.45E+02 | 5.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.86E+01 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.75E+265 | 1.48E-06 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.87E-01 | N/A | 0.10 | 1.04E+01 | 6.65E-04 | 6.45E+02 | 8.21E+185 | 1.49E-06 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.58E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.23E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 6.45E+02 | 4.84E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.56E+00 | N/A | 0.10 | 1.04E+01 | 2.26E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 6.54E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 6.45E+02 | 8.27E+77 | 1.50E-05 | N/A | #N/A | #N/A |
| 91578 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.88E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.79E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.16E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 9.57E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 6.45E+02 | 1.38E+143 | 1.49E-06 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.83E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.66E-04 | 6.45E+02 | #NUM! | 1.46E-05 | 4.70E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.54E+01 | N/A | 0.10 | 1.04E+01 | 8.16E-01 | 6.45E+02 | 1.34E+00 | 5.85E-06 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.83E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | 2.10E+300 | 1.48E-06 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 5.90E+01 | N/A | 0.10 | 1.04E+01 | 1.60E-03 | 6.45E+02 | 6.32E+66 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 15 | 4.53E+00 | 3.90E+06 | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.81E+268 | 1.48E-05 | 5.79E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 15 | 3.00E+02 | 1.11E+05 | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.67E+268 | 1.48E-05 | 1.84E+00 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.50E+00 | N/A | 0.10 | 1.04E+01 | 3.69E-04 | 6.45E+02 | 1.62E+284 | 1.48E-05 | N/A | N/A | 5.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 15 | 1.36E+03 | N/A | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.86E+268 | 1.48E-05 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 15 | 1.00E+01 | 8.26E+06 | 0.10 | 1.04E+01 | 4.27E-04 | 6.45E+02 | 7.52E+245 | 1.49E-05 | 7.23E+02 | N/A | 6.0E-02 |

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 Unit 2
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | RISK-BASED SOIL CONCENTRATION CALCULATIONS: 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | INCREMENTAL RISK CALCULATIONS: Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.36E+05 | NA | NA | 1.5E-01 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.95E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 1.9E-01 |
| 104518 | n-Butylbenzene | NA | NA | NA | 8.63E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 5.6E-03 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 1.7E-02 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.69E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 6.39E+05 | NA | NA | 4.6E-05 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+06 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 6.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.96E+06 | NA | 2.5E-07 | 5.0E-04 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 5.8E-03 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 1.0E-03 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 5.3E-02 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 6.01E+05 | NA | NA | 4.7E-04 |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 8.3E-07 | 1.0E-02 |
| 79016 | Trichloroethylene | NA | NA | NA | 6.05E+05 | NA | 1.1E-05 | 7.1E-03 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.96E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 1.6E-03 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.08E+05 | NA | 1.3E-06 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.53E+05 | NA | NA | 3.3E-04 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.82E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.06E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+05 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 2.1E-03 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 8.81E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 1.7E-03 |
| 83329 | Acenaphthene | NA | NA | NA | 5.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.64E+04 | NA | NA | 3.3E-04 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.86E+07 | NA | NA | 6.6E-02 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 1.8E-03 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 5.5E-01 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 1E-05 | 1E+00 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |

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

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 X

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc. C_R (ug/kg) | ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm) | ENTER Depth below grade to top of contamination, L_T (cm) | ENTER Average soil temperature, T_S (°C) | ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability) | OR | Note | ENTER User-defined vadose zone soil vapor permeability, k_v (cm²) | ENTER Vadose zone soil dry bulk density, ρ_b^d (g/cm³) | ENTER Vadose zone soil total porosity, n^v (unitless) | ENTER Vadose zone soil wat er-filled porosity, θ_w^v (cm³/cm³) | ENTER Vadose zone soil organic carbon fraction, f_oc^v (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time ET (hr/day) | ENTER Conversion factor CF (mg/kg) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1.85E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | 1.66E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.16E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 99876 | Isopropyltoluene, 4- | 1.66E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+00 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+05 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.19E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.28E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 3.82E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 3.70E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 71432 | Benzene | 3.49E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.29E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 108883 | Toluene | 5.56E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 9.62E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 6.70E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 2.23E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 6.61E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.39E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.50E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.72E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 8.44E+06 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 9 | 9 | 219 | 8 | 6760 | 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 ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity ($n$), and soil dry bulk density ($\rho_b$).

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

| 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 ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (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 $(\mu g/m^3)^{-1}$ | 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 |
| 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 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 | L |
| 76131 | Trichloro-1,2,2-triflouroethane, 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 | 6.98E+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 | 373.90 | 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 | 1.26E+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 | 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 |

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
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.85E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+04 | 4.99E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.96E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.67E-04 | 1.67E-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 | 6.56E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 6.60E-03 | 2.93E-01 | 1.75E-04 | 3.95E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.86E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.16E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.52E-04 | 6.55E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.58E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.67E+03 | 7.46E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.86E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.00E+03 | 1.73E-02 | 7.46E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.69E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.86E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.60E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.99E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.96E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.75E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.68E+03 | 6.99E-03 | 3.01E-01 | 1.75E-04 | 6.34E-04 |
| 78209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.88E-06 | 4.25E-03 | 1.75E-04 | 8.81E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 6.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.16E-04 | 2.22E-02 | 1.75E-04 | 6.87E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.26E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.82E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 4.59E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.63E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 4.90E-06 | 2.11E-03 | 1.75E-04 | 8.45E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.73E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.60E-03 | 3.66E-01 | 1.75E-04 | 4.75E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.88E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.85E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.56E+03 | 4.70E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.86E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+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 | 6.56E+03 | 8.55E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.16E+03 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 9.62E+01 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.64E-03 | 6.65E-02 | 1.75E-04 | 4.55E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.18E-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 | 6.56E+03 | 1.50E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.86E-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 | 6.56E+03 | 5.44E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.09E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.28E-02 | 5.51E-01 | 1.75E-04 | 3.95E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.06E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 5.65E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.60E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.66E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 8.89E-04 | 3.83E-02 | 1.75E-04 | 4.39E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.21E+04 | 5.61E-07 | 2.37E-05 | 1.75E-04 | 3.94E-02 |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.51E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.81E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.66E-04 | 1.14E-02 | 1.75E-04 | 3.16E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.38E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+03 | 2.45E-04 | 1.05E-02 | 1.75E-04 | 3.38E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.08E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+04 | 3.87E-06 | 1.66E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.50E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.51E-03 | 1.51E-01 | 1.75E-04 | 1.66E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.62E+04 | 2.20E-06 | 9.48E-07 | 1.75E-04 | 8.16E-01 |
| 86018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.50E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.57E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.84E+04 | 1.25E-05 | 5.43E-04 | 1.75E-04 | 1.80E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.84E-04 |
| C9-C12 | C9-C12 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.97E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.96E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.38E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.28E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.60E-01 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

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
Murphy Waste Oil

| 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., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 5.15E+04 | 0.10 | 1.04E+01 | 4.77E-04 | 6.45E+02 | 1.29E+220 | 1.49E-05 | 7.68E-01 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.57E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 6.45E+02 | 3.28E+278 | 1.48E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.48E+265 | 1.48E-05 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 1.48E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 6.45E+02 | 1.13E+238 | 1.49E-05 | 2.19E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 6.45E+02 | 2.58E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.16E+00 | 1.63E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.01E+239 | 1.49E-05 | 2.42E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 6.22E+01 | N/A | 0.10 | 1.04E+01 | 4.86E-04 | 6.45E+02 | 9.44E+215 | 1.48E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 6.44E-04 | 6.45E+02 | 1.02E+183 | 1.49E-05 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 4.48E-04 | 6.45E+02 | 1.36E+234 | 1.49E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 5.47E-04 | 6.45E+02 | 8.08E+191 | 1.49E-05 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.50E-01 | N/A | 0.10 | 1.04E+01 | 1.75E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.15E-03 | 5.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.50E-05 | 8.05E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | 2.87E+185 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.64E-03 | N/A | 0.10 | 1.04E+01 | 6.61E-04 | 6.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+05 | 0.10 | 1.04E+01 | 6.35E-04 | 6.45E+02 | 2.18E+185 | 1.49E-05 | 8.62E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.05E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.66E-02 | N/A | 0.10 | 1.04E+01 | 6.67E-04 | 6.45E+02 | 2.47E+167 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 6.45E+02 | 1.87E+229 | 1.49E-05 | 2.19E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 1.20E+05 | 0.10 | 1.04E+01 | 4.59E-04 | 6.45E+02 | 7.49E+228 | 1.48E-06 | 1.79E+00 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.66E-03 | N/A | 0.10 | 1.04E+01 | 9.45E-04 | 6.45E+02 | 1.09E+111 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+05 | 0.10 | 1.04E+01 | 4.75E-04 | 6.45E+02 | 8.58E+220 | 1.49E-05 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+216 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 8.80E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+193 | 1.49E-05 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 8.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 6.45E+02 | 2.03E+217 | 1.49E-05 | 1.26E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 6.45E+02 | 4.68E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+05 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+198 | 1.48E-05 | 2.79E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 6.01E+04 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.92E+239 | 1.49E-05 | 8.93E-01 | 5.9E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.36E-01 | N/A | 0.10 | 1.04E+01 | 4.65E-04 | 6.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 8.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.80E-04 | 6.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.82E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 6.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.55E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 6.45E+02 | 6.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.86E+01 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.75E+265 | 1.48E-05 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.67E-01 | N/A | 0.10 | 1.04E+01 | 5.85E-04 | 6.45E+02 | 8.21E+186 | 1.49E-05 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.56E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.23E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 6.45E+02 | 4.64E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.56E+00 | N/A | 0.10 | 1.04E+01 | 2.25E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 8.54E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 6.45E+02 | 8.27E+77 | 1.50E-05 | N/A | #N/A | #N/A |
| 91576 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.88E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.78E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.15E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 9.57E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 6.45E+02 | 1.38E+143 | 1.49E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.63E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.68E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 4.70E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.54E+01 | N/A | 0.10 | 1.04E+01 | 8.18E-01 | 6.45E+02 | 1.34E+00 | 5.65E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.83E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | 2.10E+300 | 1.48E-05 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 6.90E+01 | N/A | 0.10 | 1.04E+01 | 1.60E-03 | 6.45E+02 | 8.32E+65 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 15 | 4.53E+00 | 3.80E+05 | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.81E+268 | 1.48E-05 | 5.79E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 15 | 3.00E+02 | 1.11E+05 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.87E+288 | 1.48E-06 | 1.64E+00 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.58E+00 | N/A | 0.10 | 1.04E+01 | 3.89E-04 | 6.45E+02 | 1.62E+284 | 1.48E-06 | N/A | N/A | 5.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 15 | 1.38E+03 | N/A | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.88E+288 | 1.48E-06 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 15 | 1.00E+01 | 6.26E+06 | 0.10 | 1.04E+01 | 4.27E-04 | 6.45E+02 | 7.52E+245 | 1.49E-05 | 1.23E+02 | N/A | 5.0E-02 |

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
Murphy Waste Oil

| | | RISK-BASED SOIL CONCENTRATION CALCULATIONS: | | | | | INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.36E+05 | NA | NA | 2.6E-02 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.96E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 1.6E-01 |
| 104518 | n-Butylbenzene | NA | NA | NA | 5.63E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 4.9E-03 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 1.2E-02 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.89E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 8.39E+05 | NA | NA | 4.1E-05 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.98E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+06 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.96E+06 | NA | 8.0E-08 | 4.4E-04 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 4.9E-03 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 8.8E-04 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 1.8E-03 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.89E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 6.01E+05 | NA | NA | 4.1E-04 |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 2.6E-07 | 8.7E-03 |
| 79016 | Trichloroethylene | NA | NA | NA | 6.05E+05 | NA | 3.5E-08 | 5.2E-03 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.96E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 1.4E-03 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.06E+05 | NA | 1.4E-07 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.58E+05 | NA | NA | 2.9E-04 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.82E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.09E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 5.50E+06 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 1.9E-03 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 8.81E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 1.5E-03 |
| 83329 | Acenaphthene | NA | NA | NA | 5.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.84E+04 | NA | NA | 2.6E-04 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.86E+07 | NA | NA | 5.8E-02 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 1.6E-03 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.38E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 4.9E-01 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 4E-06 | 7.8E-01 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Proerties, Waste O&M Superfund Site, Operable Unit 2
Hydrite Waste Oil

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 [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc., C_R (µg/kg) | ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm) | ENTER Depth below grade to top of contamination, L_T (cm) | ENTER Average soil temperature, T_S (°C) | ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability) | Note | OR ENTER User-defined vadose zone soil vapor permeability, k_v (cm²) | ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³) | ENTER Vadose zone soil total porosity, n^A (unitless) | ENTER Vadose zone soil water-filled porosity, θ_w^A (cm³/cm³) | ENTER Vadose zone soil organic carbon fraction, f_oc^A (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time, ET (hrs/day) | ENTER Conversion factor, CF (mg/kg) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 9.37E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | 4.00E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.18E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 99879 | Isopropyltoluene, 4- | 2.00E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+00 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.14E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.28E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 1.00E+04 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 3.73E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 71432 | Benzene | 2.48E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.23E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 108883 | Toluene | 6.65E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 3.03E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 8.70E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 2.23E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 8.51E+02 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.39E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.50E+01 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.72E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 6.44E+06 | 15 | 15 | 10 | LM | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 6 | 6 | 78 | 2.5 | 6760 | 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 ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity (n), and soil dry bulk density ($\rho_b$).

Appendix C-4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| 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 ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (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 $(\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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 | 8.50E-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-triflouroethane, 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 | 373.90 | 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 | 1.26E+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 | 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 |

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
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^v$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 9.37E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.56E+03 | 4.96E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.96E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.87E-04 | 1.67E-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 | 6.56E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 8.50E-03 | 2.93E-01 | 1.75E-04 | 3.96E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.16E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.52E-04 | 6.55E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.57E+03 | 7.48E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.00E+03 | 1.73E-02 | 7.46E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.69E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.36E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.80E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.99E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.96E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.78E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.68E+03 | 8.99E-03 | 3.01E-01 | 1.75E-04 | 6.34E-04 |
| 79209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.88E-05 | 4.25E-03 | 1.75E-04 | 8.61E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 6.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 9.27E-03 | 3.98E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.18E-04 | 2.22E-02 | 1.75E-04 | 5.67E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.25E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.00E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 4.69E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.83E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 4.90E-05 | 2.11E-03 | 1.75E-04 | 8.45E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.73E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.50E-03 | 3.66E-01 | 1.75E-04 | 4.75E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.68E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.85E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.56E+03 | 4.79E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.96E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 3.70E-01 | 1.59E+01 | 1.75E-04 | 5.68E-04 |
| 108883 | Toluene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.55E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.15E+03 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.55E+03 | 7.53E-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 | 6.56E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.54E-03 | 6.65E-02 | 1.75E-04 | 4.55E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.18E-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 | 6.56E+03 | 1.50E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.98E-08 | 2.52E-04 | 1.75E-04 | 3.75E-03 |
| 100425 | Styrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.06E+04 | 1.08E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.28E-02 | 5.51E-01 | 1.75E-04 | 3.95E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.06E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 5.65E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.56E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 8.99E-04 | 3.83E-02 | 1.75E-04 | 4.38E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 16 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.76E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.51E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 16 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.81E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.66E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.39E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 2.45E-04 | 1.05E-02 | 1.75E-04 | 3.39E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.09E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+04 | 3.67E-06 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.50E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.51E-03 | 1.51E-01 | 1.75E-04 | 1.66E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.62E+04 | 2.20E-06 | 9.48E-07 | 1.75E-04 | 8.16E-01 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.60E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.57E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 16 | 1.84E+04 | 1.26E-05 | 5.43E-04 | 1.75E-04 | 1.60E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.64E-04 |
| C9-C12 | C9-C12 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.92E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.96E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.38E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 8.28E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.60E-04 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Child Recreational Scenario - RME
Southwest Properties, Watts G&H Superfund Site, Operable
Murphy Waste Oil

| 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., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 2.62E+05 | 0.10 | 1.04E+01 | 4.77E-04 | 6.45E+02 | 1.29E+220 | 1.49E-05 | 3.89E+00 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.57E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 6.45E+02 | 3.26E+278 | 1.49E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.48E+265 | 1.49E-05 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 3.57E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 6.45E+02 | 1.13E+238 | 1.49E-05 | 5.30E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 6.45E+02 | 2.58E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.18E+00 | 2.08E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.01E+239 | 1.49E-05 | 3.06E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 8.22E+01 | N/A | 0.10 | 1.04E+01 | 4.66E-04 | 6.45E+02 | 9.44E+215 | 1.49E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 8.44E-04 | 6.45E+02 | 1.02E+183 | 1.49E-05 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 6.48E-04 | 6.45E+02 | 1.36E+234 | 1.49E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 6.47E-04 | 6.45E+02 | 8.08E+191 | 1.49E-05 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.60E-01 | N/A | 0.10 | 1.04E+01 | 1.76E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.16E-03 | 5.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.50E-05 | 8.05E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | 2.87E+165 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.64E-03 | N/A | 0.10 | 1.04E+01 | 8.61E-04 | 6.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+05 | 0.10 | 1.04E+01 | 6.35E-04 | 6.45E+02 | 2.18E+165 | 1.49E-05 | 6.62E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.06E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.68E-02 | N/A | 0.10 | 1.04E+01 | 6.67E-04 | 6.45E+02 | 2.47E+157 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 6.45E+02 | 1.67E+229 | 1.49E-05 | 2.19E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 3.15E+06 | 0.10 | 1.04E+01 | 4.59E-04 | 6.45E+02 | 7.49E+226 | 1.49E-05 | 4.68E+01 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.66E-03 | N/A | 0.10 | 1.04E+01 | 9.45E-04 | 6.45E+02 | 1.09E+111 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+05 | 0.10 | 1.04E+01 | 4.75E-04 | 6.45E+02 | 9.68E+220 | 1.49E-05 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+216 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 8.80E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+183 | 1.49E-05 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 8.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 6.45E+02 | 2.03E+217 | 1.49E-05 | 1.25E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 6.45E+02 | 4.68E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+05 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+196 | 1.49E-05 | 2.78E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 1.88E+05 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.82E+239 | 1.49E-05 | 2.78E+00 | 5.8E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.38E-01 | N/A | 0.10 | 1.04E+01 | 4.55E-04 | 6.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 5.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.60E-04 | 6.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.62E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 6.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.55E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 6.45E+02 | 6.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.86E+01 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.75E+265 | 1.48E-05 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.87E-01 | N/A | 0.10 | 1.04E+01 | 5.65E-04 | 6.45E+02 | 8.21E+185 | 1.49E-05 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.58E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.33E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 6.45E+02 | 4.64E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.58E+00 | N/A | 0.10 | 1.04E+01 | 2.25E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 8.54E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 6.45E+02 | 8.27E+77 | 1.50E-05 | N/A | #N/A | #N/A |
| 91576 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.85E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.79E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.15E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 9.57E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 6.45E+02 | 1.38E+143 | 1.49E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.63E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.66E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 4.76E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.54E+01 | N/A | 0.10 | 1.04E+01 | 6.16E-01 | 6.45E+02 | 1.34E+00 | 5.85E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.83E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | 2.10E+300 | 1.48E-05 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 5.90E+01 | N/A | 0.10 | 1.04E+01 | 1.60E-03 | 6.45E+02 | 6.32E+65 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 15 | 4.53E+00 | 3.90E+06 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.81E+288 | 1.48E-05 | 5.78E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 15 | 3.00E+02 | 1.11E+06 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.87E+288 | 1.48E-05 | 1.64E+00 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.56E+00 | N/A | 0.10 | 1.04E+01 | 3.89E-04 | 6.45E+02 | 1.62E+264 | 1.48E-05 | N/A | N/A | 5.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 15 | 1.36E+03 | N/A | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.86E+288 | 1.48E-05 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 15 | 1.00E+01 | 6.26E+05 | 0.10 | 1.04E+01 | 4.27E-04 | 6.45E+02 | 7.52E+245 | 1.49E-05 | 1.23E+02 | N/A | 6.0E-02 |

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
Murphy Waste Oil

| | | RISK-BASED SOIL CONCENTRATION CALCULATIONS: | | | | | INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.36E+05 | NA | NA | 1.4E-02 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.95E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 1.8E-02 |
| 104518 | n-Butylbenzene | NA | NA | NA | 6.83E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 5.4E-04 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 1.7E-03 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.69E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 6.39E+05 | NA | NA | 4.5E-06 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+08 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.96E+06 | NA | 5.9E-09 | 4.9E-05 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 5.5E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 9.8E-05 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 5.2E-03 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 8.01E+05 | NA | NA | 4.5E-05 |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 1.9E-08 | 9.7E-04 |
| 79016 | Trichloroethylene | NA | NA | NA | 5.05E+05 | NA | 2.6E-07 | 6.9E-04 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.96E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 1.8E-04 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.08E+05 | NA | 3.1E-08 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.58E+05 | NA | NA | 3.2E-05 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.62E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.08E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+06 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 2.1E-04 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 6.81E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 1.8E-04 |
| 83329 | Acenaphthene | NA | NA | NA | 9.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.64E+04 | NA | NA | 3.3E-05 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.88E+07 | NA | NA | 8.4E-03 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 1.8E-04 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 5.5E-02 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 3E-07 | 1E-01 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |

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
Munster Waste Oil

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 X

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc., $C_s$ (ug/kg) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (15 or 200 cm) | ENTER Depth below grade to top of contamination, $L_1$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Vadose zone SCS soil type 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, $\rho_b^A$ ($g/cm^3$) | ENTER Vadose zone soil total porosity, $n^V$ (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^V$ ($cm^3/cm^3$) | ENTER Vadose zone soil organic carbon fraction, $f_{oc}^V$ (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time, ET (hrs/day) | ENTER Conversion factor, CF (mg/ug) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1.65E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | 1.66E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.18E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 99876 | Isopropyltoluene, 4- | 1.36E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+00 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 76131 | 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 | 8760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.14E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.28E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 3.62E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 3.73E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71432 | Benzene | 3.48E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.72E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108883 | Toluene | 8.56E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 8.62E+01 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 6.70E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 2.23E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 9.61E+02 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.39E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.80E+01 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.72E+03 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 1.00E+00 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 1.00E+00 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 9.44E+00 | 15 | 15 | 10 | LS | | 1 | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 2 | 2 | 26 | 2.5 | 8760 | 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 ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity (n), and soil dry bulk density ($\rho_b$).

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

| 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 ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (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 $(\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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- | 2.88E-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 | 373.90 | 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 | 1.26E+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 | 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 - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^v$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.65E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 4.96E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540690 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.96E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.87E-04 | 1.67E-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 | 6.56E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 6.80E-03 | 2.93E-01 | 1.75E-04 | 3.95E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.66E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.16E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.52E-04 | 6.55E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.66E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.57E+03 | 7.48E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.00E+03 | 1.73E-02 | 7.46E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.68E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.60E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.98E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.96E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.78E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.68E+03 | 8.99E-03 | 3.01E-01 | 1.75E-04 | 8.34E-04 |
| 79209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.86E-06 | 4.25E-03 | 1.75E-04 | 8.61E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 8.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.18E-04 | 2.22E-02 | 1.75E-04 | 6.67E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.26E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.82E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 4.59E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.63E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 4.90E-05 | 2.11E-03 | 1.75E-04 | 9.45E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.79E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.50E-03 | 3.66E-01 | 1.75E-04 | 4.76E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.88E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.85E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.56E+03 | 4.78E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.98E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 3.70E-01 | 1.59E+01 | 1.75E-04 | 5.08E-04 |
| 108883 | Toluene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.55E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.15E+03 | 2.82E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 9.62E+01 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.54E-03 | 6.65E-02 | 1.75E-04 | 4.65E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.18E-03 | 1.37E-01 | 1.75E-04 | 4.60E-04 |
| 1330207 | Xylenes | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.50E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.86E-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 | 6.56E+03 | 5.44E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.08E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.25E-02 | 5.51E-01 | 1.75E-04 | 3.95E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 5.85E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.56E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 8.89E-04 | 3.83E-02 | 1.75E-04 | 4.38E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.21E+04 | 5.61E-07 | 2.37E-05 | 1.75E-04 | 3.94E-02 |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.51E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.51E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.65E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.39E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 2.45E-04 | 1.05E-02 | 1.75E-04 | 3.38E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.09E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.81E+04 | 3.67E-05 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.50E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.51E-03 | 1.51E-01 | 1.75E-04 | 1.66E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.82E+04 | 2.20E-06 | 9.48E-05 | 1.75E-04 | 8.18E-01 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.50E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.57E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.84E+04 | 1.29E-05 | 5.43E-04 | 1.75E-04 | 1.60E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 9.48E-01 | 2.79E+01 | 1.75E-04 | 3.64E-04 |
| C9-C12 | C9-C12 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.92E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.96E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.36E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 8.28E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.60E-04 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

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
Murphy Waste Oil

| 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., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 5.15E+04 | 0.10 | 1.04E+01 | 4.77E-04 | 6.45E+02 | 1.29E+220 | 1.49E-05 | 7.66E-01 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.57E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 6.45E+02 | 3.26E+278 | 1.48E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.48E+266 | 1.48E-05 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 1.48E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 6.45E+02 | 1.13E+238 | 1.49E-05 | 2.19E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 6.45E+02 | 2.66E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.15E+00 | 1.63E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.01E+239 | 1.49E-05 | 2.42E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 6.22E+01 | N/A | 0.10 | 1.04E+01 | 4.86E-04 | 6.45E+02 | 9.44E+215 | 1.49E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.68E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 6.44E-04 | 6.45E+02 | 1.02E+163 | 1.49E-05 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 4.48E-04 | 6.45E+02 | 1.36E+234 | 1.49E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.68E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 6.47E-04 | 6.45E+02 | 8.08E+191 | 1.49E-05 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.50E-01 | N/A | 0.10 | 1.04E+01 | 1.75E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.15E-03 | 5.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.50E-05 | 8.06E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | 2.87E+165 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.64E-03 | N/A | 0.10 | 1.04E+01 | 8.81E-04 | 6.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+05 | 0.10 | 1.04E+01 | 6.35E-04 | 6.45E+02 | 2.18E+165 | 1.49E-05 | 8.62E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.05E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.68E-02 | N/A | 0.10 | 1.04E+01 | 8.87E-04 | 6.45E+02 | 2.47E+157 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 6.45E+02 | 1.87E+229 | 1.49E-05 | 2.19E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 1.20E+05 | 0.10 | 1.04E+01 | 4.59E-04 | 6.45E+02 | 7.49E+228 | 1.49E-05 | 1.79E+00 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.68E-03 | N/A | 0.10 | 1.04E+01 | 9.45E-04 | 6.45E+02 | 1.09E+111 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+06 | 0.10 | 1.04E+01 | 4.75E-04 | 6.45E+02 | 9.58E+220 | 1.49E-05 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+216 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 6.60E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+193 | 1.49E-05 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 8.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 6.45E+02 | 2.03E+217 | 1.49E-05 | 1.25E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 6.45E+02 | 4.88E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+05 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+198 | 1.49E-05 | 2.79E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 6.01E+04 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.82E+238 | 1.49E-05 | 8.93E-01 | 5.9E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.38E-01 | N/A | 0.10 | 1.04E+01 | 4.55E-04 | 6.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 6.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.28E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.80E-04 | 6.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.82E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 6.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.55E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 6.45E+02 | 6.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.86E+01 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.75E+265 | 1.48E-05 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.87E-01 | N/A | 0.10 | 1.04E+01 | 5.85E-04 | 6.45E+02 | 8.21E+185 | 1.49E-05 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.58E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.23E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 6.45E+02 | 4.64E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.58E+00 | N/A | 0.10 | 1.04E+01 | 2.25E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 6.54E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 6.45E+02 | 8.27E+77 | 1.50E-05 | N/A | #N/A | #N/A |
| 91576 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.88E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.79E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.15E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 9.57E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 6.45E+02 | 1.35E+143 | 1.48E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 16 | 1.63E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.06E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 4.70E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.54E+01 | N/A | 0.10 | 1.04E+01 | 8.16E-01 | 6.45E+02 | 1.34E+00 | 5.85E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.63E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | 2.10E+300 | 1.48E-05 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 5.90E+01 | N/A | 0.10 | 1.04E+01 | 1.60E-03 | 6.45E+02 | 6.32E+65 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 16 | 4.53E+00 | 3.90E+06 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.81E+285 | 1.48E-05 | 5.78E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 16 | 3.00E+02 | 1.11E+05 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.87E+286 | 1.48E-05 | 1.64E+00 | N/A | 2.0E-01 |
| C8-C10 | C8-C10 Aromatics | 1 | 16 | 3.58E+00 | N/A | 0.10 | 1.04E+01 | 3.69E-04 | 6.45E+02 | 1.62E+284 | 1.48E-05 | N/A | N/A | 5.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 16 | 1.36E+03 | N/A | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | 4.86E+288 | 1.48E-05 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 16 | 1.00E+01 | 8.28E+06 | 0.10 | 1.04E+01 | 4.27E-04 | 6.45E+02 | 7.52E+245 | 1.49E-05 | 1.23E+02 | N/A | 5.0E-02 |

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
Murphy Waste Oil

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.36E+05 | NA | NA | 9.5E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.96E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 6.0E-03 |
| 104518 | n-Butylbenzene | NA | NA | NA | 6.63E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 1.8E-04 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 4.5E-04 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.86E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 8.39E+05 | NA | NA | 1.5E-06 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+08 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.96E+06 | NA | 6.8E-10 | 1.6E-05 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 1.8E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 3.3E-05 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 6.6E-05 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 5.01E+05 | NA | NA | 1.5E-05 |
| 110827 | Cyclohexane | NA | NA | NA | 3.85E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 2.2E-09 | 3.2E-04 |
| 79016 | Trichloroethylene | NA | NA | NA | 8.05E+05 | NA | 2.9E-08 | 2.3E-04 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.98E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 5.7E-05 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.08E+05 | NA | 1.1E-09 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.58E+05 | NA | NA | 1.1E-05 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.82E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.06E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+06 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 6.9E-05 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 6.61E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 5.5E-05 |
| 83329 | Acenaphthene | NA | NA | NA | 5.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.64E+04 | NA | NA | 1.1E-05 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.86E+07 | NA | NA | 2.1E-03 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 8.1E-05 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 1.8E-02 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 3E-08 | 2.9E-02 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |

Appendix C 4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational - RME
Southwest Frontier, Wells G&H Superfund Site, Operable Unit 2
Muratyl Waste Oil

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 X

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc. $C_R$ (µg/kg) | ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (15 or 200 cm) | ENTER Depth below grade to top of contamination, $L_1$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability) | OR | Note | ENTER User-defined vadose zone soil vapor permeability, $k_v$ (cm²) | ENTER Vadose zone soil dry bulk density, $\rho_b^A$ (g/cm³) | ENTER Vadose zone soil total porosity, $n^A$ (unitless) | ENTER Vadose zone soil water-filled porosity, $\theta_w^A$ (cm³/cm³) | ENTER Vadose zone soil organic carbon fraction, $f_{oc}^A$ (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time ET (hrs/day) | ENTER Conversion factor CF (cm³/m³) | ENTER Target risk for carcinogens TR (unitless) | ENTER Target hazard quotient for noncarcinogens THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 9.37E+03 | 15 | 15 | 10 | LS | 1 | | | 1.3 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | 4.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.18E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 99876 | Isopropyltoluene, 4- | 2.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.14E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.28E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 1.00E+04 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 9.73E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71432 | Benzene | 2.48E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.29E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108883 | Toluene | 8.56E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 3.00E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 4.70E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 2.35E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 8.51E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1'- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.38E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.80E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.75E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| CR-C5 | C5-C8 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| CR-C12 | C9-C12 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| CR-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| CR-C16 | C9-C16 Aliphatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 5.44E+06 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 24 | 24 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |

Notes:
1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building. R.I.S. EPA June 18, 2003) were used for soil water filled porosity ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity ($n$), and soil dry bulk density ($\rho_b$).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| 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 ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (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 $(\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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-triflouroethane, 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 | 373.90 | 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 | 1.26E+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 | 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 Adult Recreational - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | Vadose zone effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Vadose zone soil intrinsic permeability, $k_i$ ($cm^2$) | Vadose zone soil relative air permeability, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization a ave. soil temperature, $\Delta H_{v,ts}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{ts}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{ts}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 9.37E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 4.96E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.88E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.67E-04 | 1.67E-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 | 6.56E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.55E+03 | 6.60E-03 | 2.93E-01 | 1.75E-04 | 3.95E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.18E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.52E-04 | 6.55E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.57E+03 | 7.48E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.00E+03 | 1.73E-02 | 7.45E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.89E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.60E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.99E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.55E-01 | 1.98E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.78E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.88E+03 | 6.99E-03 | 3.01E-01 | 1.76E-04 | 6.34E-04 |
| 79209 | Methyl Acetate | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.88E-05 | 4.25E-03 | 1.75E-04 | 8.81E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 6.35E-04 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.16E-04 | 2.22E-02 | 1.75E-04 | 6.67E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.26E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 1.00E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 4.59E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.63E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 4.80E-05 | 2.11E-03 | 1.75E-04 | 9.45E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.73E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.52E-03 | 3.66E-01 | 1.75E-04 | 4.75E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.88E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.65E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.58E+03 | 4.79E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.98E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+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 | 6.56E+03 | 8.56E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.15E+03 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.00E+02 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 6.56E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.54E-03 | 6.65E-02 | 1.75E-04 | 4.55E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.18E-03 | 1.37E-01 | 1.75E-04 | 4.60E-04 |
| 1330207 | Xylenes | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.50E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.85E-06 | 2.52E-04 | 1.75E-04 | 3.76E-03 |
| 100425 | Styrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.08E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.08E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.28E-02 | 5.51E-01 | 1.75E-04 | 3.86E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 5.65E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.56E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.05E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 8.89E-04 | 3.83E-02 | 1.75E-04 | 4.38E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.61E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 8.86E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.61E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.65E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.39E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+03 | 2.45E-04 | 1.05E-02 | 1.75E-04 | 3.38E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.09E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+04 | 3.67E-06 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.60E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.51E-03 | 1.51E-01 | 1.75E-04 | 1.66E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.62E+04 | 2.20E-08 | 9.48E-07 | 1.75E-04 | 8.18E-01 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.50E-04 |
| 120127 | Anthracene | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.57E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.84E+04 | 1.26E-05 | 5.43E-04 | 1.75E-04 | 1.60E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.84E-04 |
| C9-C12 | C9-C12 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.64E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.92E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.98E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.38E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 8.28E-01 | 3.56E+01 | 1.75E-04 | 3.64E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.60E-04 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational - RME
Southwest Prperties, Wells G&H Superfund Site, Operable
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Diffusion path length, $L_d$ (cm) | Convection path length, $L_p$ (cm) | Soil-water partition coefficient, $K_s$ ($cm^3/g$) | Source vapor conc., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 2.62E+05 | 0.10 | 1.04E+01 | 4.77E-04 | 6.45E+02 | 1.29E+220 | 1.49E-05 | 3.89E+00 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.57E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 6.45E+02 | 3.26E+278 | 1.48E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.48E+265 | 1.48E-05 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 3.57E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 6.45E+02 | 1.13E+238 | 1.49E-05 | 5.30E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 6.45E+02 | 2.66E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.16E+00 | 2.06E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.01E+239 | 1.49E-05 | 3.06E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 6.22E+01 | N/A | 0.10 | 1.04E+01 | 4.86E-04 | 6.45E+02 | 9.44E+215 | 1.49E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 6.44E-04 | 6.45E+02 | 1.02E+163 | 1.49E-05 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 4.48E-04 | 6.45E+02 | 1.36E+234 | 1.49E-05 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 6.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 5.47E-04 | 6.45E+02 | 6.08E+191 | 1.49E-05 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.50E-01 | N/A | 0.10 | 1.04E+01 | 1.75E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.16E-03 | 6.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.50E-05 | 8.05E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | 2.87E+166 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.64E-03 | N/A | 0.10 | 1.04E+01 | 6.81E-04 | 6.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+05 | 0.10 | 1.04E+01 | 6.35E-04 | 6.45E+02 | 2.18E+165 | 1.49E-05 | 6.62E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.05E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.68E-02 | N/A | 0.10 | 1.04E+01 | 6.87E-04 | 6.45E+02 | 2.47E+157 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 6.45E+02 | 1.67E+229 | 1.49E-05 | 2.18E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 3.15E+06 | 0.10 | 1.04E+01 | 4.59E-04 | 6.45E+02 | 7.49E+228 | 1.49E-05 | 4.68E+01 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.68E-03 | N/A | 0.10 | 1.04E+01 | 8.45E-04 | 6.45E+02 | 1.09E+111 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+05 | 0.10 | 1.04E+01 | 4.75E-04 | 6.45E+02 | 9.58E+220 | 1.49E-05 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+216 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 6.80E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+193 | 1.49E-05 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 6.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 6.45E+02 | 2.03E+217 | 1.49E-05 | 1.25E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 6.45E+02 | 4.68E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+06 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+196 | 1.49E-05 | 2.79E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 1.55E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.92E+239 | 1.49E-05 | 2.79E+00 | 5.9E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.38E-01 | N/A | 0.10 | 1.04E+01 | 4.55E-04 | 6.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 6.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.60E-04 | 6.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.62E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 6.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.65E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 6.45E+02 | 6.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.86E+01 | N/A | 0.10 | 1.04E+01 | 3.96E-04 | 6.45E+02 | 3.75E+285 | 1.48E-05 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.87E-01 | N/A | 0.10 | 1.04E+01 | 5.66E-04 | 6.45E+02 | 5.21E+165 | 1.49E-05 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.56E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.23E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 6.45E+02 | 4.64E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.66E+00 | N/A | 0.10 | 1.04E+01 | 2.25E-04 | 6.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 6.64E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 6.45E+02 | 8.27E+77 | 1.50E-05 | N/A | #N/A | #N/A |
| 91576 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.88E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.79E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.16E-04 | 6.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 8.57E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 6.45E+02 | 1.35E+143 | 1.49E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.63E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.66E-04 | 6.45E+02 | #NUM! | 1.48E-05 | 4.70E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.64E+01 | N/A | 0.10 | 1.04E+01 | 8.16E-01 | 6.45E+02 | 1.34E+00 | 5.86E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.83E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | 2.10E+300 | 1.48E-05 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 5.90E+01 | N/A | 0.10 | 1.04E+01 | 1.60E-03 | 6.45E+02 | 6.32E+65 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 15 | 4.53E+00 | 3.90E+06 | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.61E+288 | 1.48E-05 | 5.78E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 15 | 3.00E+02 | 1.11E+05 | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.87E+288 | 1.48E-05 | 1.84E+00 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.58E+00 | N/A | 0.10 | 1.04E+01 | 3.69E-04 | 6.45E+02 | 1.62E+254 | 1.48E-05 | N/A | N/A | 6.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 15 | 1.38E+03 | N/A | 0.10 | 1.04E+01 | 3.84E-04 | 6.45E+02 | 4.88E+288 | 1.48E-05 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 15 | 1.00E+01 | 8.26E+06 | 0.10 | 1.04E+01 | 4.27E-04 | 6.45E+02 | 7.62E+245 | 1.49E-05 | 1.23E+02 | N/A | 6.0E-02 |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational - RME
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| | | RISK-BASED SOIL CONCENTRATION CALCULATIONS: | | | | | INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.36E+05 | NA | NA | 1.4E-02 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.96E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 1.8E-02 |
| 104518 | n-Butylbenzene | NA | NA | NA | 6.63E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 5.4E-04 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 1.7E-03 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.69E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 8.39E+05 | NA | NA | 4.5E-06 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+06 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.99E+06 | NA | 2.4E-08 | 4.9E-05 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 5.5E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 9.8E-05 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 3.2E-03 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 8.01E+05 | NA | NA | 4.5E-05 |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 7.8E-08 | 9.7E-04 |
| 79016 | Trichloroethylene | NA | NA | NA | 8.05E+05 | NA | 1.0E-06 | 6.9E-04 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.96E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 1.6E-04 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.08E+05 | NA | 1.3E-07 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.58E+05 | NA | NA | 3.2E-05 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.82E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.06E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+06 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 2.1E-04 |
| 92524 | Biphenyl, 1,1'- | NA | NA | NA | 8.81E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 1.8E-04 |
| 83329 | Acenaphthene | NA | NA | NA | 6.09E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.85E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.84E+04 | NA | NA | 3.3E-05 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.86E+07 | NA | NA | 6.4E-03 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 1.8E-04 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 5.5E-02 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 1E-06 | 1E-01 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat). Risk/HQ calculated at Csat. |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - OT
Southwest Properties, Wells G&H Superfund Site, Operable Unit 2
Multiple Waste Oil

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box) — SL-SGREEN 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 [X]

| ENTER Chemical CAS No. (numbers only, no dashes) | Chemical | ENTER Mean soil conc., C_R (ug/kg) | ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm) | ENTER Depth below grade to top of contamination, L_t (cm) | ENTER Average soil temperature, T_s (°C) | ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability) | OR | Note | ENTER User-defined vadose zone soil vapor permeability, k_v (cm²) | ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm³) | ENTER Vadose zone soil total porosity, n^V (unitless) | ENTER Vadose zone soil water-filled porosity, θ_w^V (cm³/cm³) | ENTER Vadose zone soil organic carbon fraction, f_oc^V (unitless) | ENTER Averaging time for carcinogens, ATC (yrs) | ENTER Averaging time for noncarcinogens, ATNC (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) | ENTER Exposure time ET (hrs/day) | ENTER Conversion factor CF (mg/ug) | ENTER Target risk for carcinogens, TR (unitless) | ENTER Target hazard quotient for noncarcinogens, THQ (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1.83E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 540590 | Dichloroethylene, 1,2- (total) | 1.19E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108678 | Trimethylbenzene, 1,3,5- | 4.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 104518 | n-Butylbenzene | 1.59E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91203 | Naphthalene | 3.19E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 99878 | Isopropyltoluene, 4- | 1.64E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 135988 | Butylbenzene, sec- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74873 | Chloromethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75014 | Vinyl chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 74839 | Bromomethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75003 | Ethyl Chloride | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75354 | 1,1-Dichloroethylene | 1.60E+00 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 67641 | Acetone | 1.27E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75150 | Carbon Disulfide | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79209 | Methyl Acetate | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75092 | Methylene chloride | 2.01E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156605 | trans-1,2-Dichloroethylene | 3.14E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1634044 | Methyl-Tertiary-Butyl Ether | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 75343 | 1,1-Dichloroethane | 3.29E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 156592 | cis-1,2-Dichloroethylene | 3.83E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 78933 | Butanone, 2- (MEK) | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71556 | 1,1,1-Trichloroethane | 3.73E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 110827 | Cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 71432 | Benzene | 2.49E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79016 | Trichloroethylene | 2.23E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108872 | Methyl cyclohexane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108883 | Toluene | 8.66E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 127184 | Tetrachloroethylene | 8.82E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 108907 | Chlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100414 | Ethylbenzene | 6.70E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 1330207 | Xylenes | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100425 | Styrene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 98828 | Isopropylbenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 79345 | 1,1,2,2-Tetrachloroethane | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 541731 | Dichlorobenzene, 1,3- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 106467 | 1,4-Dichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 95501 | 1,2-Dichlorobenzene | 3.23E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120821 | 1,2,4-Trichlorobenzene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 100527 | Benzaldehyde | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 91576 | Methylnaphthalene, 2- | 8.51E+02 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 92524 | Biphenyl, 1,1- | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 208968 | Acenaphthylene | 1.39E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 83329 | Acenaphthene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 132649 | Dibenzofuran | 3.90E+01 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 86737 | Fluorene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 85018 | Phenanthrene | 1.77E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| 120127 | Anthracene | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C5-C8 | C5-C8 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C12 | C9-C12 Aliphatics | 1.00E+03 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C10 | C9-C10 Aromatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C9-C18 | C9-C18 Aliphatics | | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |
| C11-C22 | C11-C22 Aromatics | 8.44E+00 | 15 | 15 | 10 | LS | 1 | | | 1.5 | 0.43 | 0.3 | 0.002 | 70 | 7 | 7 | 26 | 2.5 | 8760 | 1.0E-06 | 1 |

Note:
1) Default soil parameters from table 7 of Users Guide for Evaluating Subsurface Vapor Intrusion into Buildings (U.S. EPA June 16, 2003) were used for soil water filled porosity ($\theta_w$), soil organic carbon fraction ($f_{oc}$), soil total porosity (n), and soil dry bulk density ($\rho_b$).

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| 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, $\Delta H_{v,b}$ (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 $(\mu g/m^3)^{-1}$ | 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 |
| 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 | 7.28E-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-triflouroethane, 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 | 373.90 | 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 | 1.26E+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 | 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 Adult Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| Chemical CAS No. (numbers only, no dashes) | Chemical | Source-building separation, LT (cm) | Vadose zone soil air-filled porosity, $\theta_a^v$ ($cm^3/cm^3$) | 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, $k_{rg}$ ($cm^2$) | Vadose zone soil effective vapor permeability, $k_v$ ($cm^2$) | Floor-wall seam perimeter, Xcrack (cm) | Initial soil concentration used, CR (µg/kg) | Bldg. ventilation rate, $Q_{building}$ ($cm^3/s$) | Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (unitless) | Crack depth below grade, $Z_{crack}$ (cm) | Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol) | Henry's law constant at ave. soil temperature, $H_{TS}$ (atm-$m^3$/mol) | Henry's law constant at ave. soil temperature, HTS (unitless) | Vapor viscosity at ave. soil temperature, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.65E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.56E+03 | 4.96E-03 | 2.13E-01 | 1.75E-04 | 4.77E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.98E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.73E+03 | 3.87E-04 | 1.67E-02 | 1.75E-04 | 3.77E-04 |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.56E+03 | 6.60E-03 | 2.83E-01 | 1.75E-04 | 3.95E-04 |
| 104518 | n-Butylbenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.66E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 1.09E-02 | 4.69E-01 | 1.75E-04 | 4.41E-04 |
| 91203 | Naphthalene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.16E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.29E+04 | 1.62E-04 | 6.56E-03 | 1.75E-04 | 4.70E-04 |
| 99876 | Isopropyltoluene, 4- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.58E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.57E+03 | 7.48E+00 | 3.22E+02 | 1.75E-04 | 4.39E-04 |
| 135988 | Butylbenzene, sec- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.10E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 1.46E-02 | 6.27E-01 | 1.75E-04 | 4.86E-04 |
| 74873 | Chloromethane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.79E-03 | 3.35E-01 | 1.75E-04 | 7.66E-04 |
| 75014 | Vinyl chloride | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.33E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5.90E+03 | 1.73E-02 | 7.46E-01 | 1.75E-04 | 6.44E-04 |
| 74839 | Bromomethane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.69E+06 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.37E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.20E+03 | 7.78E-03 | 3.36E-01 | 1.75E-04 | 7.66E-04 |
| 75354 | 1,1-Dichloroethylene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.60E+00 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.39E+03 | 1.47E-02 | 6.34E-01 | 1.75E-04 | 5.47E-04 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.99E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.44E+03 | 4.56E-01 | 1.98E+01 | 1.75E-04 | 1.75E-04 |
| 67641 | Acetone | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.27E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.56E+03 | 1.97E-05 | 8.50E-04 | 1.75E-04 | 2.07E-03 |
| 75150 | Carbon Disulfide | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.78E+05 | 6.93E+05 | 2.60E+06 | 2.48E-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 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.03E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 9.88E-06 | 4.25E-03 | 1.75E-04 | 6.61E-04 |
| 75092 | Methylene chloride | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.01E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.03E+03 | 1.17E-03 | 5.03E-02 | 1.75E-04 | 6.35E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.14E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.42E+03 | 8.27E-03 | 3.56E-01 | 1.75E-04 | 4.32E-04 |
| 75343 | 1,1-Dichloroethane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.42E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.45E+03 | 5.16E-04 | 2.22E-02 | 1.75E-04 | 6.67E-04 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.25E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.45E+03 | 2.68E-03 | 1.24E-01 | 1.75E-04 | 4.58E-04 |
| 78933 | Butanone, 2- (MEK) | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.73E+03 | 2.04E-03 | 8.77E-02 | 1.75E-04 | 4.59E-04 |
| 71556 | 1,1,1-Trichloroethane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 4.63E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 4.90E-06 | 2.11E-03 | 1.75E-04 | 9.45E-04 |
| 110827 | Cyclohexane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.73E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.88E+03 | 8.50E-03 | 3.66E-01 | 1.75E-04 | 4.75E-04 |
| 71432 | Benzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.88E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.49E+03 | 1.75E+00 | 7.54E+01 | 1.75E-04 | 4.85E-04 |
| 79016 | Trichloroethylene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.49E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.12E+03 | 2.69E-03 | 1.16E-01 | 1.75E-04 | 5.42E-04 |
| 108872 | Methyl cyclohexane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 8.56E+03 | 4.79E-03 | 2.06E-01 | 1.75E-04 | 4.83E-04 |
| 108883 | Toluene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.98E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 3.70E-01 | 1.59E+01 | 1.75E-04 | 5.96E-04 |
| 127184 | Tetrachloroethylene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.55E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.15E+03 | 2.92E-03 | 1.26E-01 | 1.75E-04 | 5.34E-04 |
| 108907 | Chlorobenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 9.82E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.55E+03 | 7.83E-03 | 3.37E-01 | 1.75E-04 | 4.39E-04 |
| 100414 | Ethylbenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.04E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.80E+03 | 1.54E-03 | 6.65E-02 | 1.75E-04 | 4.55E-04 |
| 1330207 | Xylenes | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 6.70E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.02E+04 | 3.16E-03 | 1.37E-01 | 1.75E-04 | 4.60E-04 |
| 100425 | Styrene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.50E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 5.86E-06 | 2.52E-04 | 1.75E-04 | 3.75E-03 |
| 98828 | Isopropylbenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 5.44E+05 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.08E-03 | 4.67E-02 | 1.75E-04 | 4.47E-04 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.08E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.54E+03 | 1.26E-02 | 5.51E-01 | 1.75E-04 | 3.95E-04 |
| 541731 | Dichlorobenzene, 1,3- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.15E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.05E+04 | 1.34E-04 | 5.77E-03 | 1.75E-04 | 5.85E-04 |
| 106467 | 1,4-Dichlorobenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.82E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.50E+03 | 4.11E-03 | 1.77E-01 | 1.75E-04 | 2.56E-04 |
| 95501 | 1,2-Dichlorobenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.06E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.12E+04 | 6.89E-04 | 3.63E-02 | 1.75E-04 | 4.39E-04 |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.23E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.21E+04 | 5.51E-07 | 2.37E-05 | 1.75E-04 | 3.94E-02 |
| 100527 | Benzaldehyde | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.13E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.32E+04 | 4.35E-04 | 1.87E-02 | 1.75E-04 | 2.25E-04 |
| 91576 | Methylnaphthalene, 2- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.74E+06 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.53E+03 | 2.29E-05 | 9.84E-04 | 1.75E-04 | 1.35E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.51E+02 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 8.85E-04 | 3.81E-02 | 1.75E-04 | 3.13E-04 |
| 208968 | Acenaphthylene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.81E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 2.66E-04 | 1.14E-02 | 1.75E-04 | 3.15E-04 |
| 83329 | Acenaphthene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.39E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.51E+03 | 2.45E-04 | 1.05E-02 | 1.75E-04 | 3.38E-04 |
| 132649 | Dibenzofuran | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 8.09E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.61E+04 | 3.67E-05 | 1.58E-03 | 1.75E-04 | 7.33E-04 |
| 86737 | Fluorene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 3.50E+01 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.47E+03 | 3.61E-03 | 1.51E-01 | 1.75E-04 | 1.66E-04 |
| 85018 | Phenanthrene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.97E+04 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.62E+04 | 2.20E-06 | 9.46E-07 | 1.75E-04 | 5.16E-01 |
| 120127 | Anthracene | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.72E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.48E+03 | 1.14E-04 | 4.90E-03 | 1.75E-04 | 3.50E-04 |
| C5-C8 | C5-C8 Aliphatics | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 2.67E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.84E+04 | 1.26E-05 | 5.43E-04 | 1.75E-04 | 1.50E-03 |
| C8-C12 | C8-C12 Aliphatics | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 6.48E-01 | 2.79E+01 | 1.75E-04 | 3.84E-04 |
| C9-C10 | C9-C10 Aromatics | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.00E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 7.80E-01 | 3.36E+01 | 1.75E-04 | 3.84E-04 |
| C9-C18 | C9-C18 Aliphatics | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.92E+08 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.96E-03 | 1.70E-01 | 1.75E-04 | 3.69E-04 |
| C11-C22 | C11-C22 Aromatics | 1 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 6.56E+03 | 1.36E+07 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA | 8.26E-01 | 3.56E+01 | 1.75E-04 | 3.84E-04 |
| | | | | | | | | | 5.44E+06 | 6.93E+06 | 2.60E+06 | 2.48E-04 | 15 | NA | 3.60E-04 | 1.55E-02 | 1.75E-04 | 4.27E-04 |

Appendix C.4
Johnson & Ettinger Model - Data Entry Screen
Inhalation of Volatiles from Soil
Future Adult Recreational Scenario - CT
Southwest Properties, Wells G&H Superfund Site, Operable
Murphy Waste Oil

| 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., $C_{source}$ ($\mu g/m^3$) | Crack radius, $r_{crack}$ (cm) | Average vapor flow rate into bldg., $Q_{soil}$ ($cm^3/s$) | Crack effective diffusion coefficient, $D^{crack}$ ($cm^2/s$) | Area of crack, $A_{crack}$ ($cm^2$) | Exponent of equivalent foundation Peclet number, exp(Pef) (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95636 | Trimethylbenzene, 1,2,4- | 1 | 15 | 7.43E+00 | 5.15E+04 | 0.10 | 1.04E+01 | 4.77E-04 | 8.45E+02 | 1.29E+220 | 1.49E-05 | 7.68E-01 | N/A | 6.0E-03 |
| 540590 | Dichloroethylene, 1,2- (total) | 1 | 15 | 2.57E-01 | 2.17E+04 | 0.10 | 1.04E+01 | 3.77E-04 | 8.45E+02 | 3.26E+278 | 1.48E-05 | 3.21E-01 | #N/A | #N/A |
| 108678 | Trimethylbenzene, 1,3,5- | 1 | 15 | 3.34E+00 | 3.29E+05 | 0.10 | 1.04E+01 | 3.95E-04 | 8.45E+02 | 3.48E+285 | 1.48E-05 | 4.88E+00 | N/A | 6.0E-03 |
| 104518 | n-Butylbenzene | 1 | 15 | 5.02E+00 | 1.48E+04 | 0.10 | 1.04E+01 | 4.41E-04 | 8.45E+02 | 1.13E+238 | 1.49E-05 | 2.19E-01 | #N/A | #N/A |
| 91203 | Naphthalene | 1 | 15 | 4.00E+00 | 4.93E+03 | 0.10 | 1.04E+01 | 4.70E-04 | 8.45E+02 | 2.58E+223 | 1.49E-05 | 7.33E-02 | N/A | 3.0E-03 |
| 99876 | Isopropyltoluene, 4- | 1 | 15 | 3.16E+00 | 1.63E+06 | 0.10 | 1.04E+01 | 4.39E-04 | 8.45E+02 | 1.01E+239 | 1.49E-05 | 2.42E+01 | N/A | 4.0E-01 |
| 135988 | Butylbenzene, sec- | 1 | 15 | 8.22E+01 | N/A | 0.10 | 1.04E+01 | 4.88E-04 | 8.45E+02 | 9.44E+215 | 1.49E-05 | N/A | #N/A | #N/A |
| 74873 | Chloromethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.68E-04 | 8.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 9.0E-02 |
| 75014 | Vinyl chloride | 1 | 15 | 3.72E-02 | N/A | 0.10 | 1.04E+01 | 6.44E-04 | 8.45E+02 | 1.02E+163 | 1.49E-06 | N/A | 8.8E-06 | 1.0E-01 |
| 74839 | Bromomethane | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 4.48E-04 | 8.45E+02 | 1.36E+234 | 1.49E-06 | N/A | N/A | 5.0E-03 |
| 75003 | Ethyl Chloride | 1 | 15 | 2.86E-02 | N/A | 0.10 | 1.04E+01 | 7.66E-04 | 8.45E+02 | 1.38E+137 | 1.49E-05 | N/A | N/A | 1.0E+01 |
| 75354 | 1,1-Dichloroethylene | 1 | 15 | 1.18E-01 | 2.72E+03 | 0.10 | 1.04E+01 | 5.47E-04 | 8.45E+02 | 8.08E+191 | 1.49E-06 | 4.05E-02 | N/A | 2.0E-01 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | 1 | 15 | 4.60E-01 | N/A | 0.10 | 1.04E+01 | 1.75E-04 | 8.45E+02 | #NUM! | 1.47E-06 | N/A | N/A | 3.0E+01 |
| 67641 | Acetone | 1 | 15 | 1.15E-03 | 5.38E+03 | 0.10 | 1.04E+01 | 2.07E-03 | 8.45E+02 | 5.83E+50 | 1.50E-05 | 8.05E-02 | N/A | N/A |
| 75150 | Carbon Disulfide | 1 | 15 | 1.03E-01 | N/A | 0.10 | 1.04E+01 | 6.34E-04 | 8.45E+02 | 2.87E+165 | 1.49E-05 | N/A | N/A | 7.0E-01 |
| 79209 | Methyl Acetate | 1 | 15 | 6.84E-03 | N/A | 0.10 | 1.04E+01 | 8.61E-04 | 8.45E+02 | 8.20E+121 | 1.49E-05 | N/A | #N/A | #N/A |
| 75092 | Methylene chloride | 1 | 15 | 2.34E-02 | 4.44E+05 | 0.10 | 1.04E+01 | 6.35E-04 | 8.45E+02 | 2.18E+166 | 1.49E-05 | 8.82E+00 | 4.7E-07 | 3.0E+00 |
| 156605 | trans-1,2-Dichloroethylene | 1 | 15 | 1.05E-01 | 3.33E+05 | 0.10 | 1.04E+01 | 4.32E-04 | 8.45E+02 | 1.43E+243 | 1.49E-05 | 4.95E+00 | N/A | 2.0E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1 | 15 | 7.68E-02 | N/A | 0.10 | 1.04E+01 | 6.87E-04 | 8.45E+02 | 2.47E+157 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 75343 | 1,1-Dichloroethane | 1 | 15 | 6.32E-02 | 1.47E+05 | 0.10 | 1.04E+01 | 4.58E-04 | 8.45E+02 | 1.67E+229 | 1.49E-05 | 2.19E+00 | N/A | 5.0E-01 |
| 156592 | cis-1,2-Dichloroethylene | 1 | 15 | 7.10E-02 | 1.20E+05 | 0.10 | 1.04E+01 | 4.68E-04 | 8.45E+02 | 7.49E+228 | 1.49E-05 | 1.79E+00 | N/A | 2.0E-01 |
| 78933 | Butanone, 2- (MEK) | 1 | 15 | 7.68E-03 | N/A | 0.10 | 1.04E+01 | 8.45E-04 | 8.45E+02 | 1.09E+151 | 1.49E-05 | N/A | N/A | N/A |
| 71556 | 1,1,1-Trichloroethane | 1 | 15 | 2.20E-01 | 3.02E+05 | 0.10 | 1.04E+01 | 4.75E-04 | 8.45E+02 | 9.58E+220 | 1.49E-06 | 4.49E+00 | N/A | 2.2E+00 |
| 110827 | Cyclohexane | 1 | 15 | 3.20E-01 | N/A | 0.10 | 1.04E+01 | 4.85E-04 | 8.45E+02 | 3.37E+216 | 1.49E-05 | N/A | #N/A | #N/A |
| 71432 | Benzene | 1 | 15 | 1.18E-01 | 8.80E+04 | 0.10 | 1.04E+01 | 5.42E-04 | 8.45E+02 | 6.73E+193 | 1.49E-05 | 1.31E+00 | 7.8E-06 | 3.0E-02 |
| 79016 | Trichloroethylene | 1 | 15 | 3.32E-01 | 8.38E+04 | 0.10 | 1.04E+01 | 4.83E-04 | 8.45E+02 | 2.03E+217 | 1.49E-05 | 1.25E+00 | 1.1E-04 | 4.0E-02 |
| 108872 | Methyl cyclohexane | 1 | 15 | 5.36E-01 | N/A | 0.10 | 1.04E+01 | 5.98E-04 | 8.45E+02 | 4.88E+175 | 1.49E-05 | N/A | N/A | 3.0E+00 |
| 108883 | Toluene | 1 | 15 | 3.64E-01 | 1.87E+05 | 0.10 | 1.04E+01 | 5.34E-04 | 8.45E+02 | 4.07E+196 | 1.49E-05 | 2.79E+00 | N/A | 4.0E-01 |
| 127184 | Tetrachloroethylene | 1 | 15 | 3.10E-01 | 6.01E+04 | 0.10 | 1.04E+01 | 4.39E-04 | 8.45E+02 | 1.92E+239 | 1.49E-05 | 8.93E-01 | 5.9E-06 | N/A |
| 108907 | Chlorobenzene | 1 | 15 | 4.38E-01 | N/A | 0.10 | 1.04E+01 | 4.55E-04 | 8.45E+02 | 3.97E+230 | 1.49E-05 | N/A | N/A | 6.0E-02 |
| 100414 | Ethylbenzene | 1 | 15 | 7.26E-01 | 9.78E+04 | 0.10 | 1.04E+01 | 4.60E-04 | 8.45E+02 | 1.44E+228 | 1.49E-05 | 1.45E+00 | N/A | 1.0E+00 |
| 1330207 | Xylenes | 1 | 15 | 4.82E-01 | N/A | 0.10 | 1.04E+01 | 3.75E-03 | 8.45E+02 | 1.01E+28 | 1.50E-05 | N/A | N/A | 1.0E-01 |
| 100425 | Styrene | 1 | 15 | 1.55E+00 | N/A | 0.10 | 1.04E+01 | 4.47E-04 | 8.45E+02 | 6.29E+234 | 1.49E-05 | N/A | #N/A | #N/A |
| 98828 | Isopropylbenzene | 1 | 15 | 1.66E+01 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 8.45E+02 | 3.75E+285 | 1.48E-05 | N/A | N/A | 4.0E-01 |
| 79345 | 1,1,2,2-Tetrachloroethane | 1 | 15 | 1.87E-01 | N/A | 0.10 | 1.04E+01 | 5.65E-04 | 8.45E+02 | 8.21E+186 | 1.49E-05 | N/A | #N/A | #N/A |
| 541731 | Dichlorobenzene, 1,3- | 1 | 15 | 3.40E-01 | N/A | 0.10 | 1.04E+01 | 2.55E-04 | 8.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 1 | 15 | 1.23E+00 | N/A | 0.10 | 1.04E+01 | 4.38E-04 | 8.45E+02 | 2.83E+239 | 1.49E-05 | N/A | N/A | 8.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1 | 15 | 1.07E-01 | 1.72E+02 | 0.10 | 1.04E+01 | 3.94E-02 | 8.45E+02 | 4.64E+02 | 1.50E-05 | 2.59E-03 | N/A | N/A |
| 120821 | 1,2,4-Trichlorobenzene | 1 | 15 | 3.56E+00 | N/A | 0.10 | 1.04E+01 | 2.25E-04 | 8.45E+02 | #NUM! | 1.47E-05 | N/A | N/A | 2.0E-01 |
| 100527 | Benzaldehyde | 1 | 15 | 6.54E-02 | N/A | 0.10 | 1.04E+01 | 1.35E-03 | 8.45E+02 | 8.27E+77 | 1.50E-06 | N/A | #N/A | #N/A |
| 91576 | Methylnaphthalene, 2- | 1 | 15 | 1.70E+01 | 1.88E+03 | 0.10 | 1.04E+01 | 3.13E-04 | 8.45E+02 | #NUM! | 1.48E-05 | 2.79E-02 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 1 | 15 | 1.25E+01 | N/A | 0.10 | 1.04E+01 | 3.15E-04 | 8.45E+02 | #NUM! | 1.48E-05 | N/A | N/A | N/A |
| 208968 | Acenaphthylene | 1 | 15 | 9.67E+00 | 1.50E+03 | 0.10 | 1.04E+01 | 3.38E-04 | 8.45E+02 | #NUM! | 1.48E-05 | 2.22E-02 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 1 | 15 | 1.42E+01 | N/A | 0.10 | 1.04E+01 | 7.33E-04 | 8.45E+02 | 1.38E+143 | 1.49E-05 | N/A | N/A | 3.0E-03 |
| 132649 | Dibenzofuran | 1 | 15 | 1.63E+01 | 3.21E+02 | 0.10 | 1.04E+01 | 1.68E-04 | 8.45E+02 | #NUM! | 1.48E-05 | 4.70E-03 | N/A | N/A |
| 86737 | Fluorene | 1 | 15 | 1.54E+01 | N/A | 0.10 | 1.04E+01 | 8.19E-01 | 8.45E+02 | 1.34E+00 | 5.85E-05 | N/A | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 1 | 15 | 2.63E+01 | 2.98E+02 | 0.10 | 1.04E+01 | 3.50E-04 | 8.45E+02 | 2.10E+300 | 1.48E-05 | 4.40E-03 | N/A | 3.0E-03 |
| 120127 | Anthracene | 1 | 15 | 5.90E+01 | N/A | 0.10 | 1.04E+01 | 1.50E-03 | 8.45E+02 | 6.32E+65 | 1.50E-05 | N/A | N/A | 3.0E-03 |
| C5-C8 | C5-C8 Aliphatics | 1 | 15 | 4.63E+00 | 3.90E+06 | 0.10 | 1.04E+01 | 3.84E-04 | 8.45E+02 | 4.81E+288 | 1.48E-05 | 5.79E+01 | N/A | 2.0E-01 |
| C9-C12 | C9-C12 Aliphatics | 1 | 15 | 3.00E+02 | 1.11E+05 | 0.10 | 1.04E+01 | 3.84E-04 | 8.45E+02 | 4.87E+288 | 1.48E-05 | 1.64E+00 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 1 | 15 | 3.56E+00 | N/A | 0.10 | 1.04E+01 | 3.69E-04 | 8.45E+02 | 1.62E+284 | 1.48E-05 | N/A | N/A | 5.0E-02 |
| C9-C18 | C9-C18 Aliphatics | 1 | 15 | 1.36E+03 | N/A | 0.10 | 1.04E+01 | 3.84E-04 | 8.45E+02 | 4.88E+288 | 1.48E-05 | N/A | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 1 | 15 | 1.00E+01 | 8.26E+06 | 0.10 | 1.04E+01 | 4.27E-04 | 8.45E+02 | 7.52E+245 | 1.49E-05 | 1.23E+02 | N/A | 5.0E-02 |

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

| | | RISK-BASED SOIL CONCENTRATION CALCULATIONS: | | | | | INCREMENTAL RISK 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., $C_{sat}$ (µg/kg) | Final indoor exposure soil conc., (µg/kg) | Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
| 95636 | Trimethylbenzene, 1,2,4- | NA | NA | NA | 4.38E+05 | NA | NA | 9.5E-04 |
| 540590 | Dichloroethylene, 1,2- (total) | NA | NA | NA | 5.96E+02 | NA | | |
| 108678 | Trimethylbenzene, 1,3,5- | NA | NA | NA | 7.13E+04 | NA | NA | 6.0E-03 |
| 104518 | n-Butylbenzene | NA | NA | NA | 6.63E+03 | NA | | |
| 91203 | Naphthalene | NA | NA | NA | 1.30E+05 | NA | NA | 1.8E-04 |
| 99876 | Isopropyltoluene, 4- | NA | NA | NA | 7.31E+05 | NA | NA | 4.5E-04 |
| 135988 | Butylbenzene, sec- | NA | NA | NA | 1.10E+06 | NA | NA | NA |
| 74873 | Chloromethane | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75014 | Vinyl chloride | NA | NA | NA | 8.33E+05 | NA | NA | NA |
| 74839 | Bromomethane | NA | NA | NA | 3.69E+06 | NA | NA | NA |
| 75003 | Ethyl Chloride | NA | NA | NA | 1.37E+06 | NA | NA | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 8.39E+05 | NA | NA | 1.5E-06 |
| 76131 | Trichloro-1,2,2-trifluoroethane, 1,1,2- | NA | NA | NA | 3.99E+05 | NA | NA | NA |
| 67641 | Acetone | NA | NA | NA | 2.01E+08 | NA | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 8.78E+05 | NA | NA | NA |
| 79209 | Methyl Acetate | NA | NA | NA | 5.03E+07 | NA | NA | NA |
| 75092 | Methylene chloride | NA | NA | NA | 2.95E+06 | NA | 2.3E-09 | 1.6E-05 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 2.12E+06 | NA | NA | 1.8E-04 |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 1.42E+07 | NA | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA | 1.39E+06 | NA | NA | 3.3E-05 |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 9.75E+05 | NA | NA | 6.6E-05 |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 4.63E+07 | NA | NA | NA |
| 71556 | 1,1,1-Trichloroethane | NA | NA | NA | 8.01E+05 | NA | NA | 1.5E-05 |
| 110827 | Cyclohexane | NA | NA | NA | 3.88E+05 | NA | NA | NA |
| 71432 | Benzene | NA | NA | NA | 5.74E+05 | NA | 7.6E-09 | 3.2E-04 |
| 79016 | Trichloroethylene | NA | NA | NA | 6.05E+05 | NA | 1.0E-07 | 2.3E-04 |
| 108872 | Methyl cyclohexane | NA | NA | NA | 2.96E+04 | NA | NA | NA |
| 108883 | Toluene | NA | NA | NA | 3.02E+05 | NA | NA | 5.2E-05 |
| 127184 | Tetrachloroethylene | NA | NA | NA | 1.08E+05 | NA | 3.9E-09 | NA |
| 108907 | Chlorobenzene | NA | NA | NA | 3.04E+05 | NA | NA | NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.58E+05 | NA | NA | 1.1E-05 |
| 1330207 | Xylenes | NA | NA | NA | 1.50E+05 | NA | NA | NA |
| 100425 | Styrene | NA | NA | NA | 5.44E+05 | NA | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 1.06E+06 | NA | NA | NA |
| 79345 | 1,1,2,2-Tetrachloroethane | NA | NA | NA | 1.15E+06 | NA | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | 3.82E+04 | NA | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 1.06E+05 | NA | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA | NA | NA | 8.50E+06 | NA | NA | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA | 1.13E+06 | NA | NA | NA |
| 100527 | Benzaldehyde | NA | NA | NA | 1.74E+06 | NA | NA | NA |
| 91576 | Methylnaphthalene, 2- | NA | NA | NA | 4.24E+05 | NA | NA | 6.9E-05 |
| 92524 | Biphenyl, 1,1- | NA | NA | NA | 8.51E+04 | NA | NA | NA |
| 208968 | Acenaphthylene | NA | NA | NA | 3.84E+04 | NA | NA | 5.5E-06 |
| 83329 | Acenaphthene | NA | NA | NA | 6.08E+04 | NA | NA | NA |
| 132649 | Dibenzofuran | NA | NA | NA | 1.65E+05 | NA | NA | NA |
| 86737 | Fluorene | NA | NA | NA | 2.97E+04 | NA | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 3.84E+04 | NA | NA | 1.1E-05 |
| 120127 | Anthracene | NA | NA | NA | 2.57E+03 | NA | NA | NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 7.36E+07 | NA | NA | 2.1E-03 |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA | 2.12E+07 | NA | NA | 6.1E-05 |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 1.92E+06 | NA | NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.36E+07 | NA | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.92E+07 | NA | NA | 1.8E-02 |

| | 95% UCL Cancer Risk | 95% UCL HI |
|---|---|---|
| TOTAL: | 1E-07 | 2.9E-02 |

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

| | |
|---|---|
| Trimethylbenzene, 1,2,4- | |
| Dichloroethylene, 1,2- (total) | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| Trimethylbenzene, 1,3,5- | |
| n-Butylbenzene | |
| Naphthalene | |
| Isopropyltoluene, 4- | |
| Butylbenzene, sec- | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| Chloromethane | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| Vinyl chloride | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| Bromomethane | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| Ethyl Chloride | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |
| 1,1-Dichloroethylene | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | MESSAGE: Soil conc. >= saturation (Csat), Risk/HQ calculated at Csat. |