

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to
Defaults

Soil Gas Concentration Data

| | | | | |
|---|--|-----------|--|---|
| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., C_g (mg/m^3) | OR | ENTER Soil gas conc., C_g (ppmv) | ENTER Chemical (numbers only, no dashes) |
| 108872 | 1.00E+02 | | | Methylcyclohexane 71432 |

MORE
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| | | | | | | | |
|---|---|--|---|--|--|---|--|
| ENTER Depth below grade to bottom of enclosed space floor, L_F (cm) | ENTER Soil gas sampling depth below grade, L_S (cm) | ENTER Average soil temperature, T_S (°C) | ENTER Totals must add up to value of L_s (cell F24) | | | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | ENTER User-defined stratum A soil vapor permeability, k_v (cm^2) |
| | | | ENTER Thickness of soil stratum A, h_A (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm) | OR | |
| 15 | 30 | 11 | 30 | | | SL | |

MORE
↓

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ENTER Stratum A SCS soil type Lookup Soil Parameters | ENTER Stratum A soil dry bulk density, r_b^A (g/cm^3) | ENTER Stratum A soil porosity, n^A (unitless) | ENTER Stratum A soil water-filled porosity, q_w^A (cm^3/cm^3) | ENTER Stratum B SCS soil type Lookup Soil Parameters | ENTER Stratum B soil total bulk density, r_b^B (g/cm^3) | ENTER Stratum B soil total porosity, n^B (unitless) | ENTER Stratum B soil water-filled porosity, q_w^B (cm^3/cm^3) | ENTER Stratum C SCS soil type Lookup Soil Parameters | ENTER Stratum C soil dry bulk density, r_b^C (g/cm^3) | ENTER Stratum C soil total porosity, n^C (unitless) | ENTER Stratum C soil water-filled porosity, q_w^C (cm^3/cm^3) |
| SL | 1.8315666 | 0.3036 | 0.15447168 | | | | | | | | |

MORE
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| | | | | | | | |
|--|---|---|--|---|---|--|---|
| ENTER Enclosed space floor thickness, L_{crack} (cm) | ENTER Soil-bldg. pressure differential, DP ($g/cm-s^2$) | ENTER Enclosed space floor length, L_B (cm) | ENTER Enclosed space floor width, W_B (cm) | ENTER Enclosed space height, H_B (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m) |
| 10 | 40 | 1000 | 1000 | 304.8 | 0.1 | 1 | |

| | | | |
|--|--|---|--|
| ENTER Averaging time for carcinogens, AT_C (yrs) | ENTER Averaging time for noncarcinogens, AT_{NC} (yrs) | ENTER Exposure duration, ED (yrs) | ENTER Exposure frequency, EF (days/yr) |
| 70 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, D_a (cm^2/s) | Diffusivity in water, D_w (cm^2/s) | Henry's law constant at reference temperature, H ($\text{atm}\cdot\text{m}^3/\text{mol}$) | Henry's law constant reference temperature, T_R ($^\circ\text{C}$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, T_B ($^\circ\text{K}$) | Critical temperature, T_C ($^\circ\text{K}$) | Molecular weight, MW (g/mol) | Unit risk factor, URF (ng/m^3) ⁻¹ | Reference conc., RfC (mg/m^3) |
|---|---|--|---|---|--|---|---|--|--|
| 7.35E-02 | 8.52E-06 | 1.03E-01 | 25 | 7,474 | 373.90 | 572.20 | 98.21 | 0.0E+00 | 3.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, t (sec) | Source-building separation, L _T (cm) | Stratum A soil air-filled porosity, q _a ^A (cm ³ /cm ³) | Stratum B soil air-filled porosity, q _a ^B (cm ³ /cm ³) | Stratum C soil air-filled porosity, q _a ^C (cm ³ /cm ³) | Stratum A effective total fluid saturation, S _{1e} (cm ³ /cm ³) | Stratum A soil intrinsic permeability, k _i (cm ²) | Stratum A soil relative air permeability, k _{rg} (cm ²) | Stratum A soil effective vapor permeability, k _v (cm ²) | Floor-wall seam perimeter, X _{crack} (cm) | Soil gas conc. (mg/m ³) | Bldg. ventilation rate, Q _{building} (cm ³ /s) |
|----------------------------|---|---|---|---|---|--|--|--|--|-------------------------------------|--|
| 7.88E+08 | 15 | 0.149 | ERROR | ERROR | 0.436 | 5.94E-09 | 0.718 | 4.27E-09 | 4,000 | 1.00E+02 | 8.47E+04 |

| Area of enclosed space below grade, A _B (cm ²) | Crack-to-total area ratio, h (unitless) | Crack depth below grade, Z _{crack} (cm) | Enthalpy of vaporization at ave. soil temperature, DH _{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, H' _{TS} (unitless) | Vapor viscosity at ave. soil temperature, m _v (g/cm-s) | Stratum A effective diffusion coefficient, D ^{eff} _A (cm ² /s) | Stratum B effective diffusion coefficient, D ^{eff} _B (cm ² /s) | Stratum C effective diffusion coefficient, D ^{eff} _C (cm ² /s) | Total overall effective diffusion coefficient, D ^{eff} _T (cm ² /s) | Diffusion path length, L _d (cm) |
|---|---|--|---|--|--|---|---|---|---|---|--|
| 1.06E+06 | 3.77E-04 | 15 | 8,573 | 5.04E-02 | 2.16E+00 | 1.76E-04 | 1.41E-03 | 0.00E+00 | 0.00E+00 | 1.41E-03 | 15 |

| Convection path length, L _p (cm) | Source vapor conc., C _{source} (mg/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(Pe ^f) (unitless) | Infinite source indoor attenuation coefficient, a (unitless) | Infinite source bldg. conc., C _{building} (mg/m ³) | Unit risk factor, URF (mg/m ³) ⁻¹ | Reference conc., RfC (mg/m ³) |
|---|--|---------------------------------------|--|--|--|---|--|---|--|---|
| 15 | 1.00E+02 | 0.10 | 4.28E+00 | 1.41E-03 | 4.00E+02 | 8.26E+32 | 4.85E-05 | 4.85E-03 | NA | 3.0E+00 |

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

| Incremental risk from vapor intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|--|--|
| NA | 1.1E-06 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL
DOWN
TO "END"

END