

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) | Chemical | ENTER Chemical CAS No. (numbers only, no dashes) |
|--|---|----|---|-----------------------|--|
| 71556 | 6.50E+01 | | | 1,1,1-Trichloroethane | 71432 |

MORE
↓

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

| 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, $DH_{v,b}$ (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) |
|---|---|--|---|---|--|---|---|--|--|
| 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545.00 | 133.40 | 0.0E+00 | 2.2E+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_{fe} (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 | 6.50E+01 | 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, η_{TS} (g/cm-s) | Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s) | Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s) | Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s) | Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s) | Diffusion path length, L_d (cm) |
|---|---|---|--|---|---|--|---|---|---|---|-----------------------------------|
| 1.06E+06 | 3.77E-04 | 15 | 7,874 | 8.91E-03 | 3.82E-01 | 1.76E-04 | 1.50E-03 | 0.00E+00 | 0.00E+00 | 1.50E-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 | 6.50E+01 | 0.10 | 4.28E+00 | 1.50E-03 | 4.00E+02 | 1.02E+31 | 4.86E-05 | 3.16E-03 | NA | 2.2E+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 | 9.8E-07 |

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

SCROLL
DOWN
TO "END"

END