**Section 742.APPENDIX C Tier 2 Tables**

**Section 742.TABLE M J&E Parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  Symbol | Parameter | Units | Source | Tier 1 or Calculated Value |
| AB | Surface area of enclosed space at or below grade | cm2 | Equation J&E 12a or 12b, Appendix C, Table L | Residential = 1 x 106Industrial/Commercial = 4.0 x 106 |
| Acrack | Area of total cracks | cm2 | Equation J&E 14, Appendix C, Table L | Calculated Value |
| ATc | Averaging time for carcinogens | year | SSL, May 1996 | 70 |
| ATnc | Averaging time for noncarcinogens | year | ATnc = ED | Residential = 30Industrial/Commercial = 25 |
| Cvsat | Soil vapor saturation limit | mg/m3-air | Equation J&E 5, Appendix C, Table L | Chemical-Specific or Calculated Value |
| Dcrackeff | Effective diffusion coefficient through the cracks | cm2/s | Equation J&E 15, Appendix C, Table L | Calculated Value |
| Di | Diffusivity in air | cm2/s | Appendix C, Table E | Chemical-Specific |
| Dieff | Effective diffusion coefficient for each soil layer | cm2/s | Equation J&E 11, Appendix C, Table L | Calculated Value |
| Dsource | Distance from ground surface to top of contamination | cm | Field Measurement | Soil Gas Contamination = 152.4 Groundwater Contamination = 304.8 Site-Specific |
| DTeff | Total overall effective diffusion coefficient | cm2/s | Equation J&E 9a, Appendix C, Table L | Calculated Value |
| Dw | Diffusivity in water | cm2/s | Appendix C, Table E | Chemical-Specific |
| ED | Exposure duration | year | Residential: SSL, May 1996Industrial/Commercial: SSL 2002 | Residential = 30 Industrial/Commercial = 25 |
| EF | Exposure frequency | day/year | Residential: SSL, May 1996Industrial/Commercial: SSL 2002 | Residential = 350 Industrial/ Commercial = 250 |
| ER | Air exchange rate | exchanges per hour | Illinois EPA | Residential = 0.53 Industrial/ Commercial = 0.93 |
| foc | Fraction organic carbon content | g/g | SSL, May 1996, or Field MeasurementAppendix C, Table F | 0.002 or Site-Specific |
| HB | Height of building | cm | Illinois EPA | Slab-on-Grade Residential = 244 Industrial/ Commercial = 305 or Site-Specific in Tier 3 Basement Residential = 427 Industrial/ Commercial = 488 or Site-Specific in Tier 3 |
| H'TS | Dimensionless Henry's law constant at the system (soil) temperature 13˚C | unitless | Appendix C, Table E | Chemical-Specific |
| LB | Length of building | cm | Illinois EPA | Residential = 1000 Industrial/Commercial = 2000 or Site-Specific in Tier 3 |
| Lcrack | Slab thickness | cm | USEPA, Users Guide, 2004 | 10 |
| LF | Distance from ground surface to bottom of slab | cm | USEPA, Users Guide, 2004 | 10 (slab on grade) 200 (basement) |
| Li | Thickness of soil layer i | cm | Field Measurement for Capillary Fringe, USEPA, 2004 | Site-Specific For Capillary Fringe, 37.5 cm |
| LT | Distance from bottom of slab to top of contamination | cm | Field Measurement or Equation J&E 10, Appendix C, Table L  | 142.4 or Site-Specific |
| MW | Molecular weight | g/mole | Illinois EPA | Chemical-Specific |
| n | Total number of layers of different types of soil vapors migrate through from source to building(if source is groundwater, include a capillary fringe layer of 37.5 cm as one of the layers) | unitless | Field Measurement | Site-Specific |
| P | Vapor Pressure | atm | Appendix C, Table E | Chemical-Specific |
| Qbldg | Building ventilation rate | cm3/s | Equation J&E 13, Appendix C, Table L | Slab-on-GradeResidential = 3.59 x 104Industrial/ Commercial = 3.15 x 105or Site-Specific in Tier 3BasementResidential = 6.28 x 104Industrial/Commercial = 5.04 x 105 or Site-Specific in Tier 3 |
| Qsoil | Volumetric flow rate of soil gas into the enclosed space | cm3/s | USEPA, Users Guide for Evaluating Subsurface Vapor Intrusion into Buildings, 2004 | If LT is less than 5 feet (152 cm),Qsoil equals 83.33.If LT is 5 feet (152 cm) or greater, Qsoil equals zero.An input value of zero requires an institutional control. See Section 742.505(b) and (c).  |
| R | Ideal gas constant | atm-L/mol-K | USEPA, Users Guide, 2004 | 0.08206 |
| RfC | Reference concentration | µg/m3 | Illinois EPA: http://www.epa.state.il.us/land/taco/toxicity-values.xls | Toxicological-Specific |
| ROgw | Groundwater remediation objective | mg/L | Appendix B, Table E, or Equation J&E 6, Appendix C, Table L | Chemical-Specific or Calculated Value |
| ROindoor-air | Indoor air remediation objective | mg/m3 | Equations J&E 1 and 2, Appendix C, Table L | Calculated Value |
| ROsoilgas | Soil gas remediation objective | mg/m3 | Equation J&E 4, Appendix C, Table L | Calculated Value |
| S | Solubility in water | mg/L | Appendix C, Table E | Chemical-Specific |
| T | Temperature | °K | USEPA, Users Guide, 2004 | 286 (converted from 13oC) |
| THQ | Target hazard quotient for a chemical | unitless | SSL, May 1996 | 1 |
| TR | Target risk or the increased chance of developing cancer over a lifetime due to exposure to a chemical | unitless | SSL, May 1996 | Residential = 10-6 at the point of human exposureIndustrial/Commercial = 10-6 at the point of human exposure |
| URF | Unit risk factor | (µg/m3)-1 | Illinois EPA: http://www.epa.state.il.us/land/taco/toxicity-values.xls | Toxicological- Specific |
| w | Floor-wall seam gap | cm | USEPA, Users Guide, 2004 | 0.1 |
| W | Moisture content | g of water/g of soil | Field Measurement, Appendix C, Table F | Site-Specific |
| WB | Width of building | cm | Illinois EPA | Residential = 1000Industrial/ Commercial = 2000or Site-Specific in Tier 3 |
| α | Attenuation factor | unitless | Equations J&E 7 or 8, Appendix C, Table L | Site-Specific |
| θa | Air-filled soil porosity | cm3/cm3 | SSL, May 1996 orEquation J&E 18, Appendix C, Table L | 0.28 or Calculated Value |
| θa,crack | Air-filled porosity for soil in cracks | cm3/cm3 | SSL, May 1996 orEquation J&E 18, Appendix C, Table L | 0.13 |
| θa,i | Air-filled porosity of soil layer i | cm3/cm3 | SSL, May 1996 orEquation J&E 18, Appendix C, Table L | 0.13 or Calculated ValueFor capillary fringe, θa,i = 0.1 θT,i |
| θT,crack | Total porosity for soil in cracks | cm3/cm3 | SSL, May 1996 orEquation J&E 16, Appendix C, Table L | 0.43 |
| θT,i | Total porosity of soil layer i | cm3/cm3 | SSL, May 1996 orEquation J&E 16, Appendix C, Table L | 0.43 or Calculated Value |
| θw | Water-filled soil porosity | cm3/cm3 | SSL, May 1996 orEquation J&E 17, Appendix C, Table L | 0.15 or Calculated Value |
| θw,crack | Water-filled porosity for soil in cracks | cm3/cm3 | SSL, May 1996 orEquation J&E 17, Appendix C, Table L | 0.15 |
| θw,i | Water-filled porosity of soil layer i | cm3/cm3 | SSL, May 1996 orEquation J&E 17, Appendix C, Table LFor capillary fringe, US EPA, Users Guide 2004 | 0.15 or Calculated ValueFor capillary fringe = 0.375 or 0.9 θT,i |
| θb | Dry soil bulk density | g/cm3 | SSL, May 1996 orField Measurement, Appendix C, Table F | 1.5 or Calculated Value |
| θs,i | Soil particle density | g/cm3 | SSL, May 1996 orField Measurement, Appendix C, Table F | 2.65 or Calculated Value |
| θw | Density of water | g/cm3 | Illinois EPA | 1 |

(Source: Added at 37 Ill. Reg. 7506, effective May 15, 2013)