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

**Section 742.TABLE B SSL Parameters**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Symbol | Parameter | Units | Source | Parameter Value(s) |
| AT | Averaging Time for Noncarcinogens in Ingestion Equation | yr |  | Residential = 6Industrial/Commercial = 25Construction Worker = 0.115 |
| AT | Averaging Time for Noncarcinogens in Inhalation Equation | yr  |  | Residential = 30Industrial/Commercial = 25Construction Worker = 0.115 |
| ATc | Averaging Time for Carcinogens | yr  | SSL | 70 |
| BW | Body Weight | kg  |  | Residential = 15, noncarcinogens70, carcinogensIndustrial/Commercial = 70Construction Worker = 70 |
| Csat | Soil Saturation Concentration | mg/kg | Appendix A, Table A or Equation S29 in Appendix C, Table A | Chemical-Specific or Calculated Value |
| Cw | Target Soil Leachate Concentration | mg/L | Equation S18 in Appendix C, Table A | Groundwater Standard, Health Advisory concentration, or Calculated Value |
| d | Mixing Zone Depth | m | SSL or Equation S25 in Appendix C, Table A | 2 m or Calculated Value |
| da | Aquifer Thickness | m | Field Measurement | Site-Specific |
| ds | Depth of Source(Vertical thickness of contamination) | m | Field Measurement or Estimation | Site-Specific |
| Symbol | Parameter | Units | Source | Parameter Value(s) |
| DA | Apparent Diffusivity | cm2/s | Equation S10 in Appendix C, Table A | Calculated Value |
| Di | Diffusivity in Air | cm2/s | Appendix C, Table E | Chemical-Specific |
| Dw | Diffusivity in Water | cm2/s | Appendix C, Table E | Chemical-Specific |
| DF | Dilution Factor | unitless | Equation S22 in Appendix C, Table A | 20 or Calculated Value |
| ED | Exposure Duration for Ingestion of Carcinogens | yr |  | Industrial/Commercial = 25Construction Worker = 1 |
| ED | Exposure Duration for Inhalation of Carcinogens | yr |  | Residential = 30Industrial/Commercial = 25Construction Worker = 1 |
| ED | Exposure Duration for Ingestion of Noncarcinogens | yr |  | Residential = 6Industrial/Commercial = 25Construction Worker = 1 |
| ED | Exposure Duration for Inhalation of Noncarcinogens | yr |  | Residential = 30Industrial/Commercial = 25Construction Worker = 1 |
| ED | Exposure Duration for the Direct Ingestion of Groundwater | yr |  | Residential = 30Industrial/Commercial = 25Construction Worker = 1 |
| EDM-L | Exposure Duration for Migration to Groundwater Mass-Limit Equation S28 | yr | SSL | 70 |
| EF | Exposure Frequency | d/yr |  | Residential = 350Industrial/Commercial = 250Construction Worker = 30 |
| F(x) | Function dependent on Um/Ut | unitless  | SSL | 0.194 |
| foc | Organic Carbon Content of Soil | g/g | SSL or Field Measurement (See Appendix C, Table F) | Surface Soil = 0.006Subsurface soil = 0.002, or Site-Specific |
| GWobj | Groundwater Remediation Remediation Objective | mg/L | Appendix B, Table E, 35 IAC 620.Subpart F, or Equation S23 in Appendix C, Table A | Chemical-Specific or Calculated |
| H' | Henry's Law Constant | unitless | Appendix C, Table E | Chemical-Specific |
| i | Hydraulic Gradient | m/m | Field Measurement (See Appendix C, Table F) | Site-Specific |
| I | Infiltration Rate | m/yr | SSL  | 0.3 |
| IM-L | Infiltration Rate for Migration to Groundwater Mass-Limit Equation S28 | m/yr | SSL | 0.18 |
| IFsoil-adj (residential) | Age Adjusted Soil Ingestion Factor for Carcinogens | (mg-yr)/ (kg-d) | SSL | 114 |
| IRsoil | Soil Ingestion Rate | mg/d |  | Residential = 200Industrial/Commercial = 50Construction Worker = 480 |
| IRW | Daily Water Ingestion Rate | L/d |  | Residential = 2Industrial/Commercial = 1 |
| K | Aquifer Hydraulic Conductivity | m/yr | Field Measurement (See Appendix C, Table F) | Site-Specific |
| Kd (Non-ionizing organics)  | Soil-Water Partition Coefficient | cm3/g or L/kg | Equation S19 in Appendix C, Table A | Calculated Value |
| Kd (Ionizing organics) | Soil-Water Partition Coefficient | cm3/g or L/kg | Equation S19 in Appendix C, Table A | Chemical and pH-Specific (see Appendix C, Table I) |
| Kd (In-organics) | Soil-Water Partition Coefficient | cm3/g or L/kg | Appendix C, Table J | Chemical and pH-Specific |
| Koc | Organic Carbon Partition Coefficient | cm3/g or L/kg | Appendix C, Table E or Appendix C, Table I | Chemical-Specific |
| Ks | Saturated Hydraulic Conductivity | m/yr | Appendix C, Table KAppendix C, Illustration C | Site-Specific |
| L | Source Length Parallel to Groundwater Flow | m | Field Measurement | Site-Specific |
| PEF | Particulate Emission Factor | m3/kg | SSL or Equation S15 in Appendix C, Table A | Residential = 1.32 • 109 or Site-SpecificIndustrial/Commercial = 1.24 • 109 or Site-Specific |
| PEF′ | Particulate Emission Factor adjusted for Agitation (construction worker) | m3/kg | Equation S16 in Appendix C, Table A using PEF (industrial/commercial) | 1.24 • 108 or Site-Specific |
| Q/C (used in VF equations) | Inverse of the mean concentration at the center of a square source | (g/m2-s)/ (kg/m3) | Appendix C, Table H | Residential = 68.81Industrial/Commercial = 85.81Construction Worker = 85.81 |
| Q/C (used in PEF equations) | Inverse of the mean concentration at the center of a square source | (g/m2-s)/ (kg/m3) | SSL or Appendix C, Table H | Residential = 90.80Industrial/Commercial = 85.81Construction Worker = 85.81 |
| RfC | Inhalation Reference Concentration | mg/m3 | Illinois EPA: http://www.epa.state.il.us/land/taco/toxicity-values.xls | Toxicological-Specific (Note: for Construction Workers use subchronic reference concentrations) |
| RfDo | Oral Reference Dose | mg/(kg-d) | Illinois EPA: <http://www.epa.state.il.us/land/taco/>toxicity-values.xls | Toxicological-Specific (Note: for Construction Workers use subchronic reference doses) |
| ROsoil | Soil remediation objective | mg/kg | Equation S30 in Appendix C, Table A | Calculated value |
| ROsoil gas | Soil gas remediation objective | mg/m3 | Equation S30 in Appendix C, Table A | Calculated value |
| S | Solubility in Water | mg/L | Appendix C, Table E | Chemical-Specific |
| SFo | Oral Slope Factor | (mg/kg-d)-1 | Illinois EPA: http://www.epa.state.il.us/land/taco/toxicity-values.xls | Toxicological-Specific |
| T | Exposure Interval | s |  | Residential = 9.5 • 108Industrial/Commercial = 7.9 • 108Construction Worker = 3.6 • 106 |
| TM-L | Exposure Interval for Mass-Limit Volatilization Factor Equation S26 | yr | SSL | 30 |
| THQ | Target Hazard Quotient | unitless | SSL | 1 |
| TR | Target Cancer Risk | unitless |  | Residential = 10-6 at the point of human exposureIndustrial/Commercial = 10-6 at the point of human exposureConstruction Worker = 10-6 at the point of human exposure |
| Um | Mean Annual Windspeed | m/s | SSL | 4.69 |
| URF | Inhalation Unit Risk Factor | (μg/m3)-1 | Illinois EPA: http://www.epa.state.il.us/land/taco/toxicity-values.xls | Toxicological-Specific |
| Ut | Equivalent Threshold Value of Windspeed at 7 m | m/s | SSL | 11.32 |
| V | Fraction of Vegetative Cover | unitless | SSL or Field Measurement | 0.5 of Site-Specific |
| VF | Volatilization Factor | m3/kg | Equation S8 in Appendix C, Table A | Calculated Value |
| VF′ | Volatilization Factor adjusted for Agitation | m3/kg | Equation S9 in Appendix C, Table A | Calculated Value |
| VFM-L | Mass-Limit Volatilization Factor | m3/kg | Equation S26 in Appendix C, Table A | Calculated Value |
| VF′M-L | Mass-Limit Volatilization Factor adjusted for Agitation | m3/kg | Equation S27 in Appendix C, Table A | Calculated Value |
| η | Total Soil Porosity | Lpore/Lsoil | SSL or Equation S24 in Appendix C, Table A | 0.43, orGravel = 0.25Sand = 0.32Silt = 0.40Clay = 0.36, orCalculated Value |
| θa | Air-Filled Soil Porosity | Lair/Lsoil | SSL or Equation S21 in Appendix C, Table A | Surface Soil (top 1 meter) = 0.28 Subsurface Soil (below 1 meter) = 0.13, orGravel = 0.05Sand = 0.14Silt = 0.24Clay = 0.19, orCalculated Value |
| θw | Water-Filled Soil Porosity | Lwater/Lsoil | SSL or Equation S20 in Appendix C, Table A | Surface Soil (top 1 meter) = 0.15Subsurface Soil (below 1 meter) = 0.30, orGravel = 0.20Sand = 0.18Silt = 0.16Clay = 0.17, orCalculated Value |
| ρb | Dry Soil Bulk Density | kg/L or g/cm3 | SSL or Field Measurement (See Appendix C, Table F) | 1.5, orGravel = 2.0Sand = 1.8Silt = 1.6Clay = 1.7, orSite-Specific |
| ρs | Soil Particle Density | g/cm3 | SSL or Field Measurement (See Appendix C, Table F) | 2.65, orSite-Specific |
| ρw | Water Density | g/cm3 | SSL | 1 |
| 1/(2b+3) | Exponential in Equation S20 | unitless | Appendix C, Table KAppendix C, Illustration C | Site-Specific |

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