**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| **VOCs and SVOCs** | | | | | | | | | | | | | | |
| Acenaphthene | 83-32-9 | NA | | NA | | NA | 6.0E-02 | *i* | 6.0E-02 | *r* | 6.0E-02 | 0.13 | *RE* | 1.0 |
| Acenaphthylene | 208-96-8 | NA | | NA | | NA | 6.0E-02 | *t* | 6.0E-02 | *r* | 6.0E-02 | N/A | *RE* | 1.0 |
| Acetone | 67-64-1 | NA | | NA | | NA | 9.0E-01 | *i* | 9.0E-01 | *r* | 9.0E-01 | N/A | *RE* | 1.0 |
| Acetonitrile | 75-05-8 | NA | | NA | | NA | 1.7E-02 | *r* | 1.7E-02 | *i* | 1.7E-02 | N/A | *RE* | 1.0 |
| Acrylamide | 79-06-1 | 4.5E+00 | *i* | 4.5E+00 | *i* | 4.5E+00 | 2.0E-04 | *i* | 2.0E-04 | *r* | 2.0E-04 | 0.1 | *RE* | 1.0 |
| Acrylic acid | 79-10-7 | NA | | NA | | NA | 5.0E-01 | *i* | 2.9E-04 | *i* | 5.0E-01 | 0.1 | *RE* | 1.0 |
| Acrylonitrile | 107-13-1 | 5.4E-01 | *i* | 2.4E-01 | *i* | 5.4E-01 | 1.0E-03 | *t* | 5.7E-04 | *i* | 1.0E-03 | N/A | *RE* | 1.0 |
| Allyl alcohol | 107-18-6 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Allyl chloride | 107-05-1 | 2.1E-02 | *c* | 2.1E-02 | *c* | 2.1E-02 | 2.9E-04 | *r* | 2.9E-04 | *i* | 2.9E-04 | 0.1 | *RE* | 1.0 |
| Aniline | 62-53-3 | 5.7E-03 | *i* | 5.7E-03 | *c* | 5.7E-03 | 7.0E-03 | *p* | 2.9E-04 | *i* | 7.0E-03 | 0.1 | *RE* | 1.0 |
| Anthracene | 120-12-7 | NA | | NA | | NA | 3.0E-01 | *i* | 3.0E-01 | *r* | 3.0E-01 | 0.13 | *RE* | 1.0 |
| Aroclor 1016 | 12674-11-2 | 7.0E-02 | *a* | 7.0E-02 | *a* | 7.0E-02 | 7.0E-05 | *i* | 7.0E-05 | *r* | 7.0E-05 | 0.14 | *RE* | 1.0 |
| Aroclor 1221 | 11104-28-2 | 2.0E+00 | *a* | 2.0E+00 | *a* | 2.0E+00 | 2.0E-05 | *a* | 2.0E-05 | *a* | 2.0E-05 | 0.14 | *RE* | 1.0 |
| Aroclor 1242 | 53469-21-9 | 2.0E+00 | *a* | 2.0E+00 | *a* | 2.0E+00 | 2.0E-05 | *a* | 2.0E-05 | *a* | 2.0E-05 | 0.14 | *RE* | 1.0 |
| Aroclor 1248 | 12672-29-6 | 2.0E+00 | *a* | 2.0E+00 | *a* | 2.0E+00 | 2.0E-05 | *a* | 2.0E-05 | *a* | 2.0E-05 | 0.14 | *RE* | 1.0 |
| Aroclor 1254 | 11097-69-1 | 2.0E+00 | *a* | 2.0E+00 | *a* | 2.0E+00 | 2.0E-05 | *i* | 2.0E-05 | *r* | 2.0E-05 | 0.14 | *RE* | 1.0 |
| Aroclor 1260 | 11096-82-5 | 2.0E+00 | *a* | 2.0E+00 | *a* | 2.0E+00 | 2.0E-05 | *a* | 2.0E-05 | *a* | 2.0E-05 | 0.14 | *RE* | 1.0 |
| Azobenzene | 103-33-3 | 1.1E-01 | *i* | 1.1E-01 | *i* | 1.1E-01 | NA | | NA | | NA | N/A | *RE* | 1.0 |
| Benzene | 71-43-2 | 3.5E-02 | *m* | 1.8E-02 | *m* | 3.5E-02 | 4.0E-03 | *i* | 8.6E-03 | *i* | 4.0E-03 | N/A | *RE* | 1.0 |
| Benzidine | 92-87-5 | 2.3E+02 | *i* | 2.3E+02 | *i* | 2.3E+02 | 3.0E-03 | *i* | 3.0E-03 | *r* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| Benzo(a)anthracene | 56-55-3 | 7.3E-01 | *n* | 3.9E-01 | *c* | 7.3E-01 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Benzo(a)pyrene | 50-32-8 | 7.3E+00 | *i* | 3.9E+00 | *c* | 7.3E+00 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Benzo(b)fluoranthene | 205-99-2 | 7.3E-01 | *n* | 3.9E-01 | *c* | 7.3E-01 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Benzo(g,h,i)perylene | 191-24-2 | NA | | NA | | NA | 3.0E-02 | *t* | 3.0E-02 | *r* | 3.0E-02 | 0.13 | *RE* | 1.0 |
| Benzo(k)fluoranthene | 207-08-9 | 7.3E-02 | *n* | 3.9E-01 | *c* | 7.3E-02 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Benzoic acid | 65-85-0 | NA | | NA | | NA | 4.0E+00 | *i* | 4.0E+00 | *r* | 4.0E+00 | 0.1 | *RE* | 1.0 |
| Benzyl alcohol | 100-51-6 | NA | | NA | | NA | 3.0E-01 | *h* | 3.0E-01 | *r* | 3.0E-01 | 0.1 | *RE* | 1.0 |
| 1,1-Biphenyl | 92-52-4 | NA | | NA | | NA | 5.0E-02 | *i* | 5.0E-02 | *r* | 5.0E-02 | N/A | *RE* | 1.0 |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | *i* | 1.2E+00 | *i* | 1.1E+00 | NA | | NA | | NA | N/A | *RE* | 1.0 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 7.0E-02 | *t* | 3.5E-02 | *t* | 7.0E-02 | 4.0E-02 | *i* | 4.0E-02 | *r* | 4.0E-02 | N/A | *RE* | 1.0 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | *i* | 2.2E+02 | *i* | 2.2E+02 | NA | | NA | | NA | N/A | *RE* | 1.0 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | *i* | 1.4E-02 | *r* | 1.4E-02 | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Bromochloromethane | 74-97-5 | NA | | NA | | NA | 4.0E-02 | *t* | 1.429E-02 | *t* | 4.0E-02 | N/A | *RE* | 1.0 |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | *i* | 1.3E-01 | *c* | 6.2E-02 | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | N/A | *RE* | 1.0 |
| Bromoform | 75-25-2 | 7.9E-03 | *i* | 3.9E-03 | *i* | 7.9E-03 | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Bromomethane | 74-83-9 | NA | | NA | | NA | 1.4E-03 | *i* | 1.4E-03 | *i* | 1.4E-03 | N/A | *RE* | 1.0 |
| 4-Bromophenyl phenyl ether | 101-55-3 | 1.5E+01 | *t* | 1.2E+01 | *t* | 1.5E+01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| n-Butylbenzene | 104-51-8 | NA | | NA | | NA | 4.0E-02 | *n* | 4.0E-02 | *r* | 4.0E-02 | N/A | *RE* | 1.0 |
| sec-Butylbenzene | 135-98-8 | NA | | NA | | NA | 4.0E-02 | *n* | 4.0E-02 | *r* | 4.0E-02 | N/A | *RE* | 1.0 |
| tert-Butylbenzene | 98-06-6 | NA | | NA | | NA | 4.0E-02 | *n* | 4.0E-02 | *r* | 4.0E-02 | N/A | *RE* | 1.0 |
| Butyl benzyl phthalate | 85-68-7 | NA | | NA | | NA | 2.0E-01 | *i* | 2.0E-01 | *r* | 2.0E-01 | 0.1 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| Carbazole | 86-74-8 | 2.0E-02 | *h* | 2.0E-02 | *r* | 2.0E-02 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| Carbon disulfide | 75-15-0 | NA | | NA | | NA | 1.0E-01 | *i* | 2.0E-01 | *i* | 1.0E-01 | N/A | *RE* | 1.0 |
| Carbon tetrachloride | 56-23-5 | 1.3E-01 | *i* | 5.3E-02 | *i* | 1.3E-01 | 7.0E-04 | *i* | 1.1E-02 | *c* | 7.0E-04 | N/A | *RE* | 1.0 |
| p-Chloroaniline | 106-47-8 | NA | | NA | | NA | 4.0E-03 | *i* | 4.0E-03 | *r* | 4.0E-03 | 0.1 | *RE* | 1.0 |
| Chlorobenzene | 108-90-7 | NA | | NA | | NA | 2.0E-02 | *i* | 1.7E-02 | *n* | 2.0E-02 | N/A | *RE* | 1.0 |
| Chloroethane | 75-00-3 | 2.9E-03 | *n* | 2.9E-03 | *r* | 2.9E-03 | 4.0E-01 | *n* | 2.9E+00 | *i* | 4.0E-01 | N/A | *RE* | 1.0 |
| Chloroform | 67-66-3 | 3.1E-02 | *c* | 8.1E-02 | *i* | 3.1E-02 | 1.0E-02 | *i* | 1.4E-02 | *n* | 1.0E-02 | N/A | *RE* | 1.0 |
| Chloromethane | 74-87-3 | 1.3E-02 | *t* | 6.3E-03 | *t* | 1.3E-02 | 2.6E-02 | *r* | 2.6E-02 | *i* | 2.6E-02 | N/A | *RE* | 1.0 |
| 2-Chloronaphthalene | 91-58-7 | NA | | NA | | NA | 8.0E-02 | *i* | 8.0E-02 | *r* | 8.0E-02 | N/A | *RE* | 1.0 |
| 2-Chlorophenol | 95-57-8 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | N/A | *RE* | 1.0 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | 1.5E+01 | *t* | 1.2E+01 | *t* | 1.5E+01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| 2-Chlorotoluene | 95-49-8 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | N/A | *RE* | 1.0 |
| 4-Chlorotoluene | 106-43-4 | NA | | NA | | NA | 2.0E-02 | *t* | 7.4E-05 | *t* | 2.0E-02 | N/A | *RE* | 1.0 |
| Chrysene | 218-01-9 | 7.3E-03 | *n* | 3.9E-02 | *c* | 7.3E-03 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Dibenzo(a,h)anthracene | 53-70-3 | 7.3E+00 | *n* | 4.1E+00 | *c* | 7.3E+00 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Dibenzofuran | 132-64-9 | NA | | NA | | NA | 2.0E-03 | *n* | 2.0E-03 | *r* | 2.0E-03 | N/A | *RE* | 1.0 |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | *i* | 9.5E-02 | *c* | 8.4E-02 | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 1.4E+00 | *h* | 1.4E+00 | *r* | 1.4E+00 | 5.7E-05 | *r* | 5.7E-05 | *i* | 5.7E-05 | 0.1 | *RE* | 1.0 |
| Dibutyl phthalate | 84-74-2 | NA | | NA | | NA | 1.0E-01 | *i* | 1.0E-01 | *r* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| 1,2-Dichlorobenzene | 95-50-1 | NA | | NA | | NA | 9.0E-02 | *i* | 5.7E-02 | *h* | 9.0E-02 | N/A | *RE* | 1.0 |
| 1,3-Dichlorobenzene | 541-73-1 | NA | | NA | | NA | 3.0E-02 | *n* | 3.0E-02 | *r* | 3.0E-02 | N/A | *RE* | 1.0 |
| 1,4-Dichlorobenzene | 106-46-7 | 5.4E-03 | *c* | 2.2E-02 | *n* | 5.4E-03 | 2.3E-01 | *n* | 2.3E-01 | *i* | 2.3E-01 | N/A | *RE* | 1.0 |
| 3,3-Dichlorobenzidine | 91-94-1 | 4.5E-01 | *i* | 1.2E+00 | *c* | 4.5E-01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| Dichlorodifluoromethane | 75-71-8 | NA | | NA | | NA | 2.0E-01 | *i* | 5.7E-02 | *h* | 2.0E-01 | N/A | *RE* | 1.0 |
| 1,1-Dichloroethane | 75-34-3 | 5.7E-03 | *c* | 5.6E-03 | *c* | 5.7E-03 | 1.0E-01 | *h* | 1.4E-02 | *n* | 1.0E-01 | N/A | *RE* | 1.0 |
| 1,1-Dichloroethylene | 75-35-4 | NA | | NA | | NA | 5.0E-02 | *i* | 5.7E-02 | *i* | 5.0E-02 | N/A | *RE* | 1.0 |
| cis-1,2-Dichloroethylene | 156-59-2 | NA | | NA | | NA | 1.0E-02 | *p* | 1.0E-02 | *r* | 1.0E-02 | N/A | *RE* | 1.0 |
| trans-1,2-Dichloroethylene | 156-60-5 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | N/A | *RE* | 1.0 |
| 2,4-Dichlorophenol | 120-83-2 | NA | | NA | | NA | 3.0E-03 | *i* | 3.0E-03 | *r* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| 1,2-Dichloropropane | 78-87-5 | 3.6E-02 | *c* | 3.6E-02 | *c* | 3.6E-02 | 1.1E-03 | *r* | 1.1E-03 | *i* | 1.1E-03 | N/A | *RE* | 1.0 |
| 1,3-Dichloropropene | 542-75-6 | 1.0E-01 | *i* | 1.4E-02 | *i* | 1.0E-01 | 3.0E-02 | *i* | 5.7E-03 | *i* | 3.0E-02 | N/A | *RE* | 1.0 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | *i* | 1.2E-03 | *r* | 1.2E-03 | 6.0E-01 | *i* | 6.0E-01 | *r* | 6.0E-01 | 0.1 | *RE* | 1.0 |
| Diethyl phthalate | 84-66-2 | NA | | NA | | NA | 8.0E-01 | *i* | 8.0E-01 | *r* | 8.0E-01 | 0.1 | *RE* | 1.0 |
| Diisopropyl ether (DIPE) | 108-20-3 | NA | | NA | | NA | 1.0E-01 | *t* | 1.1E-01 | *p* | 1.0E-01 | N/A | *RE* | 1.0 |
| 2,4-Dimethylphenol | 105-67-9 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| 2,6-Dimethylphenol | 576-26-1 | NA | | NA | | NA | 6.0E-04 | *i* | 6.0E-04 | *r* | 6.0E-04 | 0.1 | *RE* | 1.0 |
| Dimethyl phthalate | 131-11-3 | NA | | NA | | NA | 1.0E+01 | *h* | 1.0E+01 | *r* | 1.0E+01 | 0.1 | *RE* | 1.0 |
| 1,3-Dinitrobenzene | 99-65-0 | NA | | NA | | NA | 1.0E-04 | *i* | 1.0E-04 | *r* | 1.0E-04 | 0.1 | *RE* | 1.0 |
| 2,4-Dinitrophenol | 51-28-5 | NA | | NA | | NA | 2.0E-03 | *i* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| 2,4-Dinitrotoluene | 121-14-2 | 3.1E-01 | *c* | 3.1E-01 | *c* | 3.1E-01 | 2.0E-03 | *i* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| 2,6-Dinitrotoluene | 606-20-2 | 6.8E-01 | *i* | 6.8E-01 | *r* | 6.8E-01 | 1.0E-03 | *h* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| 4-Amino-2,6-dinitrotoluene | 19406-51-0 | 1.0E-02 | *t* | 1.0E-02 | *r* | 1.0E-02 | 1.7E-04 | *t* | 2.9E-05 | *t* | 1.7E-04 | 0.1 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ (mg/kg-day)$^{-1}$ | | Inhalation, $SF_i$ (mg/kg-day)$^{-1}$ | | Dermal, $SF_d$ (mg/kg-day)$^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| 2-Amino-4,6-dinitrotoluene | 35572-78-2 | 1.0E-02 | *t* | 1.0E-02 | *r* | 1.0E-02 | 1.7E-04 | *t* | 2.9E-05 | *t* | 1.7E-04 | 0.1 | *RE* | 1.0 |
| Di-n-octylphthalate | 117-84-0 | NA | | NA | | NA | 4.0E-02 | *p* | 4.0E-02 | *r* | 4.0E-02 | 0.1 | *RE* | 1.0 |
| 1,4-Dioxane | 123-91-1 | 1.1E-02 | *i* | 2.7E-02 | *c* | 1.1E-02 | 8.6E-01 | *r* | 8.6E-01 | *c* | 8.6E-01 | 0.1 | *RE* | 1.0 |
| Diphenylamine | 122-39-4 | NA | | NA | | NA | 2.5E-02 | *i* | 2.9E-03 | *t* | 2.5E-02 | 0.1 | *RE* | 1.0 |
| 1,2-Diphenylhydrazine | 122-66-7 | 8.0E-01 | *i* | 7.7E-01 | *i* | 8.0E-01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| Ethanol | 64-17-5 | NA | | NA | | NA | 3.3E+01 | *t* | 5.4E-01 | *t* | 3.3E+01 | N/A | *RE* | 1.0 |
| Ethylbenzene | 100-41-4 | NA | | NA | | NA | 1.0E-01 | *i* | 2.9E-01 | *i* | 1.0E-01 | N/A | *RE* | 1.0 |
| Ethylene dibromide (EDB) | 106-93-4 | 2.0E+00 | *i* | 2.1E+00 | *i* | 2.0E+00 | 9.0E-03 | *i* | 2.6E-03 | *i* | 9.0E-03 | N/A | *RE* | 1.0 |
| Ethylene dichloride (EDC) | 107-06-2 | 9.1E-02 | *i* | 9.1E-02 | *i* | 9.1E-02 | 2.0E-02 | *n* | 1.4E-03 | *n* | 2.0E-02 | N/A | *RE* | 1.0 |
| Ethylene glycol | 107-21-1 | NA | | NA | | NA | 2.0E+00 | *i* | 1.1E-01 | *c* | 2.0E+00 | 0.1 | *RE* | 1.0 |
| Ethylene thiourea | 96-45-7 | 4.5E-02 | *c* | 4.5E-02 | *c* | 4.5E-02 | 8.0E-05 | *i* | 8.0E-05 | *r* | 8.0E-05 | 0.1 | *RE* | 1.0 |
| Ethyl-tert-butyl-ether (ETBE) | 637-92-3 | NA | | NA | | NA | 1.0E-03 | *t* | 8.6E-02 | *t* | 1.0E-03 | N/A | *RE* | 1.0 |
| Fluoranthene | 206-44-0 | NA | | NA | | NA | 4.0E-02 | *i* | 4.0E-02 | *r* | 4.0E-02 | 0.13 | *RE* | 1.0 |
| Fluorene | 86-73-7 | NA | | NA | | NA | 4.0E-02 | *i* | 4.0E-02 | *r* | 4.0E-02 | 0.13 | *RE* | 1.0 |
| Formaldehyde | 50-00-0 | 4.5E-02 | *r* | 4.5E-02 | *i* | 4.5E-02 | 2.0E-01 | *i* | 8.6E-04 | *c* | 2.0E-01 | 0.1 | *RE* | 1.0 |
| n-Hexane | 110-54-3 | NA | | NA | | NA | 1.1E+01 | *p* | 2.0E-01 | *i* | 1.1E+01 | N/A | *RE* | 1.0 |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | *i* | 1.6E+00 | *i* | 1.6E+00 | 8.0E-04 | *i* | 8.0E-04 | *r* | 8.0E-04 | 0.1 | *RE* | 1.0 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | *i* | 7.7E-02 | *i* | 7.8E-02 | 3.0E-04 | *n* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Hexachlorocyclopentadiene | 77-47-4 | NA | | NA | | NA | 6.0E-03 | *i* | 5.7E-05 | *i* | 6.0E-03 | 0.1 | *RE* | 1.0 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | *i* | 1.4E-02 | *i* | 1.4E-02 | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Hexachlorophene | 70-30-4 | NA | | NA | | NA | 3.0E-04 | *i* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| HMX | 2691-41-0 | NA | | NA | | NA | 5.0E-02 | *i* | 7.7E-04 | *t* | 5.0E-02 | 0.1 | *RE* | 1.0 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1.2E+00 | *c* | 3.9E-01 | *c* | 1.2E+00 | NA | | NA | | NA | 0.13 | *RE* | 1.0 |
| Isophorone | 78-59-1 | 9.5E-04 | *i* | 9.5E-04 | *r* | 9.5E-04 | 2.0E-01 | *i* | 5.7E-01 | *c* | 2.0E-01 | 0.1 | *RE* | 1.0 |
| Isopropylbenzene (Cumene) | 98-82-8 | NA | | NA | | NA | 1.0E-01 | *i* | 1.1E-01 | *i* | 1.0E-01 | N/A | *RE* | 1.0 |
| 4-Isopropyltoluene | 99-87-6 | NA | | NA | | NA | 3.0E-01 | *i* | 3.0E-01 | *r* | 3.0E-01 | N/A | *RE* | 1.0 |
| Maleic anhydride | 108-31-6 | NA | | NA | | NA | 1.0E-01 | *i* | 2.0E-04 | *c* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| Methanol | 67-56-1 | NA | | NA | | NA | 5.0E-01 | *i* | 1.1E+00 | *c* | 5.0E-01 | N/A | *RE* | 1.0 |
| Methyl butyl ketone | 591-78-6 | NA | | NA | | NA | 6.0E-02 | *t* | 1.1E-03 | *t* | 6.0E-02 | N/A | *RE* | 1.0 |
| Methyl ethyl ketone | 78-93-3 | NA | | NA | | NA | 6.0E-01 | *i* | 1.4E+00 | *i* | 6.0E-01 | N/A | *RE* | 1.0 |
| 2-Methyl-4,6-dinitrophenol | 534-52-1 | NA | | NA | | NA | 1.0E-04 | *p* | 8.6E-05 | *t* | 1.0E-04 | 0.1 | *RE* | 1.0 |
| Methylene chloride | 75-09-2 | 7.5E-03 | *i* | 1.6E-03 | *i* | 7.5E-03 | 6.0E-02 | *i* | 1.1E-01 | *c* | 6.0E-02 | N/A | *RE* | 1.0 |
| Methyl iodide | 74-88-4 | NA | | NA | | NA | 1.4E-03 | *t* | 3.4E-03 | *t* | 1.4E-03 | N/A | *RE* | 1.0 |
| Methyl isobutyl ketone | 108-10-1 | NA | | NA | | NA | 8.0E-02 | *h* | 8.6E-01 | *i* | 8.0E-02 | N/A | *RE* | 1.0 |
| 2-Methylnaphthalene | 91-57-6 | NA | | NA | | NA | 4.0E-03 | *i* | 4.0E-03 | *r* | 4.0E-03 | N/A | *RE* | 1.0 |
| 2-Methylphenol | 95-48-7 | NA | | NA | | NA | 5.0E-02 | *i* | 5.0E-02 | *r* | 5.0E-02 | 0.1 | *RE* | 1.0 |
| 3-Methylphenol | 108-39-4 | NA | | NA | | NA | 5.0E-02 | *i* | 5.0E-02 | *r* | 5.0E-02 | 0.1 | *RE* | 1.0 |
| 4-Methylphenol | 106-44-5 | NA | | NA | | NA | 5.0E-03 | *h* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Methyl teriary butyl ether (MTBE) | 1634-04-4 | 1.8E-03 | *c* | 9.1E-04 | *n* | 1.8E-03 | 8.6E-01 | *r* | 8.6E-01 | *i* | 8.6E-01 | N/A | *RE* | 1.0 |
| Methyl-2,4,6-trinitrophenylnitramine | 479-45-8 | NA | | NA | | NA | 1.0E-02 | *t* | 2.9E-05 | *t* | 1.0E-02 | 0.1 | *RE* | 1.0 |
| Naphthalene | 91-20-3 | 1.2E-01 | *r* | 1.2E-01 | *c* | 1.2E-01 | 2.0E-02 | *i* | 8.6E-04 | *i* | 2.0E-02 | 0.13 | *RE* | 1.0 |
| 2-Nitroaniline | 88-74-4 | NA | | NA | | NA | 3.0E-03 | *p* | 3.0E-05 | *p* | 3.0E-03 | 0.1 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| 3-Nitroaniline | 99-09-2 | 2.1E-02 | *p* | 2.1E-02 | *r* | 2.1E-02 | 3.0E-04 | *p* | 3.0E-04 | *p* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| 4-Nitroaniline | 100-01-6 | 2.1E-02 | *p* | 2.1E-02 | *r* | 2.1E-02 | 3.0E-03 | *p* | 1.0E-03 | *p* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| Nitrobenzene | 98-95-3 | NA | | NA | | NA | 5.0E-04 | *i* | 5.7E-04 | *h* | 5.0E-04 | N/A | *RE* | 1.0 |
| Nitroglycerin | 55-63-0 | 1.4E-02 | *n* | 1.4E-02 | *r* | 1.4E-02 | 7.0E-05 | *t* | 7.0E-05 | *r* | 7.0E-05 | 0.1 | *RE* | 1.0 |
| 2-Nitrophenol | 88-75-5 | NA | | NA | | NA | 2.0E-03 | *t* | 1.1E-03 | *t* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| 4-Nitrophenol | 100-02-7 | NA | | NA | | NA | 2.0E-03 | *t* | 2.9E-04 | *t* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| n-Nitrosodimethylamine | 62-75-9 | 5.1E+01 | *i* | 4.9E+01 | *i* | 5.1E+01 | 8.0E-06 | *p* | 8.0E-06 | *r* | 8.0E-06 | 0.1 | *RE* | 1.0 |
| n-Nitrosodi-n-propylamine | 621-64-7 | 7.0E+00 | *i* | 7.0E+00 | *c* | 7.0E+00 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| n-Nitrosodiphenylamine | 86-30-6 | 4.9E-03 | *i* | 9.0E-03 | *c* | 4.9E-03 | 2.0E-02 | *p* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| n-Nitrosopyrrolidine | 930-55-2 | 2.1E+00 | *i* | 2.1E+00 | *i* | 2.1E+00 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| 2-Nitrotoluene | 88-72-2 | 2.3E-01 | *p* | 2.3E-01 | *r* | 2.3E-01 | 1.0E-02 | *t* | 3.1E-03 | *t* | 1.0E-02 | N/A | *RE* | 1.0 |
| 3-Nitrotoluene | 99-08-1 | NA | | NA | | NA | 2.0E-02 | *p* | 2.0E-02 | *r* | 2.0E-02 | N/A | *RE* | 1.0 |
| 4-Nitrotoluene | 99-99-0 | 1.7E-02 | *p* | 1.7E-02 | *r* | 1.7E-02 | 1.0E-02 | *p* | 1.0E-02 | *r* | 1.0E-02 | N/A | *RE* | 1.0 |
| Pentachlorobenzene | 608-93-5 | NA | | NA | | NA | 8.0E-04 | *i* | 8.0E-04 | *r* | 8.0E-04 | 0.1 | *RE* | 1.0 |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | *h* | 2.6E-01 | *r* | 2.6E-01 | 3.0E-03 | *i* | 3.0E-03 | *r* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | *i* | 1.8E-02 | *c* | 1.2E-01 | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 0.25 | *RE* | 1.0 |
| Pentaerythritol tetranitrate | 78-11-5 | NA | | NA | | NA | 4.0E-01 | *t* | 4.0E-01 | *r* | 4.0E-01 | 0.1 | *RE* | 1.0 |
| Phenanthrene | 85-01-8 | NA | | NA | | NA | 3.0E-02 | *t* | 3.0E-02 | *r* | 3.0E-02 | N/A | *RE* | 1.0 |
| Phenol | 108-95-2 | NA | | NA | | NA | 3.0E-01 | *i* | 5.7E-02 | *c* | 3.0E-01 | 0.1 | *RE* | 1.0 |
| m-Phenylenediamine | 108-45-2 | NA | | NA | | NA | 6.0E-03 | *i* | 6.0E-03 | *r* | 6.0E-03 | 0.1 | *RE* | 1.0 |
| Polychlorinated biphenyls (PCBs) | 1336-36-3 | 2.0E+00 | *i* | 3.5E-01 | *i* | 2.0E+00 | NA | | NA | | NA | 0.14 | *RE* | 1.0 |
| n-Propylbenzene | 103-65-1 | NA | | NA | | NA | 4.0E-02 | *n* | 4.0E-02 | *r* | 4.0E-02 | N/A | *RE* | 1.0 |
| Pyrene | 129-00-0 | NA | | NA | | NA | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 0.13 | *RE* | 1.0 |
| RDX | 121-82-4 | 1.1E-01 | *i* | 1.1E-01 | *r* | 1.1E-01 | 3.0E-03 | *i* | 3.0E-03 | *r* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| Styrene | 100-42-5 | NA | | NA | | NA | 2.0E-01 | *i* | 2.9E-01 | *i* | 2.0E-01 | N/A | *RE* | 1.0 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 2.6E-02 | *i* | 2.6E-02 | *i* | 2.6E-02 | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | N/A | *RE* | 1.0 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 2.0E-01 | *i* | 2.0E-01 | *i* | 2.0E-01 | 6.0E-02 | *p* | 6.0E-02 | *r* | 6.0E-02 | N/A | *RE* | 1.0 |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | NA | | NA | | NA | 3.0E-04 | *i* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | *c* | 2.1E-02 | *c* | 5.4E-01 | 1.0E-02 | *i* | 7.7E-02 | *t* | 1.0E-02 | N/A | *RE* | 1.0 |
| Tetrahydrofuran | 109-99-9 | 7.6E-03 | *n* | 6.8E-03 | *n* | 7.6E-03 | 2.1E-01 | *n* | 8.6E-02 | *n* | 2.1E-01 | N/A | *RE* | 1.0 |
| Tertiary-amyl-methyl-ether (TAME) | 994-05-8 | NA | | NA | | NA | 4.0E-02 | *t* | 2.3E-02 | *t* | 4.0E-02 | N/A | *RE* | 1.0 |
| Tertiary-butyl-alcohol (TBA) | 75-65-0 | NA | | NA | | NA | 9.0E-02 | *t* | 8.6E-02 | *t* | 9.0E-02 | N/A | *RE* | 1.0 |
| Toluene | 108-88-3 | NA | | NA | | NA | 8.0E-02 | *i* | 1.4E+00 | *i* | 8.0E-02 | N/A | *RE* | 1.0 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 3.6E-03 | *c* | 3.6E-03 | *r* | 3.6E-03 | 1.0E-02 | *i* | 1.0E-03 | *p* | 1.0E-02 | N/A | *RE* | 1.0 |
| 1,3,5-Trichlorobenzene | 108-70-3 | NA | | NA | | NA | 3.0E-03 | *t* | 1.1E-02 | *t* | 3.0E-03 | N/A | *RE* | 1.0 |
| 1,1,1-Trichloroethane | 71-55-6 | NA | | NA | | NA | 2.8E-01 | *n* | 6.3E-01 | *p* | 2.8E-01 | N/A | *RE* | 1.0 |
| 1,1,2-Trichloroethane | 79-00-5 | 5.7E-02 | *i* | 5.6E-02 | *i* | 5.7E-02 | 4.0E-03 | *i* | 4.0E-03 | *r* | 4.0E-03 | N/A | *RE* | 1.0 |
| Trichloroethylene | 79-01-6 | 1.3E-02 | *c* | 7.0E-03 | *c* | 1.3E-02 | 1.7E-01 | *r* | 1.7E-01 | *c* | 1.7E-01 | N/A | *RE* | 1.0 |
| Trichlorofluoromethane | 75-69-4 | NA | | NA | | NA | 3.0E-01 | *i* | 2.0E-01 | *h* | 3.0E-01 | N/A | *RE* | 1.0 |
| 2,4,5-Trichlorophenol | 95-95-4 | NA | | NA | | NA | 1.0E-01 | *i* | 1.0E-01 | *r* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| 2,4,6-Trichlorophenol | 88-06-2 | 1.1E-02 | *i* | 1.1E-02 | *i* | 1.1E-02 | 1.0E-04 | *n* | 1.0E-04 | *r* | 1.0E-04 | 0.1 | *RE* | 1.0 |
| 1,2,3-Trichloropropane | 96-18-4 | 2.0E+00 | *n* | 2.0E+00 | *r* | 2.0E+00 | 6.0E-03 | *i* | 1.4E-03 | *n* | 6.0E-03 | N/A | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ (mg/kg-day)$^{-1}$ | | Inhalation, $SF_i$ (mg/kg-day)$^{-1}$ | | Dermal, $SF_d$ (mg/kg-day)$^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| 1,1,2-Trichlorotrifluoroethane | 76-13-1 | NA | | NA | | NA | 3.0E+01 | *i* | 8.6E+00 | *h* | 3.0E+01 | N/A | *RE* | 1.0 |
| 1,2,4-Trimethylbenzene | 95-63-6 | NA | | NA | | NA | 5.0E-02 | *n* | 1.7E-03 | *p* | 5.0E-02 | N/A | *RE* | 1.0 |
| 1,3,5-Trimethylbenzene | 108-67-8 | NA | | NA | | NA | 5.0E-02 | *n* | 1.7E-03 | *p* | 5.0E-02 | N/A | *RE* | 1.0 |
| 1,3,5-Trinitrobenzene | 99-35-4 | NA | | NA | | NA | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 0.1 | *RE* | 1.0 |
| 2,4,6-Trinitrotoluene (TNT) | 118-96-7 | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 5.0E-04 | *i* | 5.0E-04 | *r* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| Vinyl chloride (for residential scenario) | 75-01-4 | 1.4E+00 | *m* | 3.1E-02 | *m* | 1.4E+00 | 3.0E-03 | *i* | 2.9E-02 | *i* | 3.0E-03 | N/A | *RE* | 1.0 |
| Vinyl chloride (for occupational scenatio) | 75-01-4 | 7.2E-01 | *m* | 1.5E-02 | *m* | 7.2E-01 | 3.0E-03 | *i* | 2.9E-02 | *i* | 3.0E-03 | N/A | *RE* | 1.0 |
| Xylenes (total) | 1330-20-7 | NA | | NA | | NA | 2.0E-01 | *i* | 2.9E-02 | *i* | 2.0E-01 | N/A | *RE* | 1.0 |
| **Pesticides** | | | | | | | | | | | | | | |
| Acetochlor | 34256-82-1 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Acifluorfen | 62476-59-9 | NA | | NA | | NA | 1.3E-02 | *i* | 2.9E-03 | *t* | 1.3E-02 | 0.1 | *RE* | 1.0 |
| Acrolein | 107-02-8 | NA | | NA | | NA | 5.0E-04 | *i* | 5.7E-06 | *i* | 5.0E-04 | N/A | *RE* | 1.0 |
| Alachlor | 15972-60-8 | 5.6E-02 | *c* | 8.0E-02 | *r* | 5.6E-02 | 1.0E-02 | *i* | 1.0E-02 | *r* | 1.0E-02 | 0.1 | *RE* | 1.0 |
| Aldicarb | 116-06-3 | NA | | NA | | NA | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Aldicarb sulfone | 1646-88-4 | NA | | NA | | NA | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Aldrin | 309-00-2 | 1.7E+01 | *i* | 1.7E+01 | *i* | 1.7E+01 | 3.0E-05 | *i* | 3.0E-05 | *r* | 3.0E-05 | 0.1 | *RE* | 1.0 |
| Ametryn | 834-12-8 | NA | | NA | | NA | 9.0E-03 | *i* | 9.0E-03 | *r* | 9.0E-03 | 0.1 | *RE* | 1.0 |
| Atrazine | 1912-24-9 | 2.3E-01 | *c* | 2.2E-01 | *r* | 2.3E-01 | 3.5E-02 | *i* | 3.5E-02 | *r* | 3.5E-02 | 0.1 | *RE* | 1.0 |
| Baygon | 114-26-1 | NA | | NA | | NA | 4.0E-03 | *i* | 4.0E-03 | *r* | 4.0E-03 | 0.1 | *RE* | 1.0 |
| Butylate | 2008-41-5 | NA | | NA | | NA | 5.0E-02 | *i* | 5.0E-02 | *r* | 5.0E-02 | 0.1 | *RE* | 1.0 |
| Captan | 133-06-2 | 2.3E-03 | *c* | 2.3E-03 | *c* | 2.3E-03 | 1.3E-01 | *i* | 1.3E-01 | *r* | 1.3E-01 | 0.1 | *RE* | 1.0 |
| Carbaryl | 63-25-2 | NA | | NA | | NA | 1.0E-01 | *i* | 1.1E-01 | *r* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| Carbofuran | 1563-66-2 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Carboxin | 5234-68-4 | NA | | NA | | NA | 1.0E-01 | *i* | 1.0E-01 | *r* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| Chloramben | 133-90-4 | NA | | NA | | NA | 1.5E-02 | *i* | 1.5E-02 | *r* | 1.5E-02 | 0.1 | *RE* | 1.0 |
| Chlordane (technical) | 12789-03-6 | 3.5E-01 | *i* | 3.5E-01 | *i* | 3.5E-01 | 5.0E-04 | *i* | 2.0E-04 | *i* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| Chlordane, gamma | 57-74-9 | 3.5E-01 | *t* | 3.5E-01 | *t* | 3.5E-01 | 5.0E-04 | *t* | 2.0E-04 | *t* | 5.0E-04 | 0.04 | *RE* | 1.0 |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | *c* | 3.1E-03 | *c* | 3.1E-03 | 1.5E-02 | *i* | 1.5E-02 | *r* | 1.5E-02 | 0.04 | *RE* | 1.0 |
| Chlorpyrifos | 2921-88-2 | NA | | NA | | NA | 3.0E-03 | *i* | 3.0E-03 | *r* | 3.0E-03 | 0.1 | *RE* | 1.0 |
| Coumaphos | 56-72-4 | NA | | NA | | NA | 7.0E-03 | *t* | 7.0E-03 | *r* | 7.0E-03 | 0.1 | *RE* | 1.0 |
| Cyanazine | 21725-46-2 | 8.4E-01 | *h* | 8.4E-01 | *r* | 8.4E-01 | 2.0E-03 | *h* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| Dacthal | 1861-32-1 | NA | | NA | | NA | 1.0E-02 | *i* | 1.0E-02 | *r* | 1.0E-02 | 0.1 | *RE* | 1.0 |
| Dalapon, sodium salt | 75-99-0 | NA | | NA | | NA | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 0.1 | *RE* | 1.0 |
| DDD | 72-54-8 | 2.4E-01 | *i* | 2.4E-01 | *c* | 2.4E-01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| DDE | 72-55-9 | 3.4E-01 | *i* | 3.4E-01 | *c* | 3.4E-01 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| DDT | 50-29-3 | 3.4E-01 | *i* | 3.4E-01 | *i* | 3.4E-01 | 5.0E-04 | *i* | 5.0E-04 | *r* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| DEF | 78-48-8 | NA | | NA | | NA | 3.0E-05 | *i* | 3.0E-05 | *r* | 3.0E-05 | 0.03 | *RE* | 1.0 |
| Demeton | 8065-48-3 | NA | | NA | | NA | 4.0E-04 | *i* | 4.0E-05 | *r* | 4.0E-04 | 0.1 | *RE* | 1.0 |
| Diazinon | 333-41-5 | NA | | NA | | NA | 9.0E-04 | *h* | 9.0E-04 | *r* | 9.0E-04 | 0.1 | *RE* | 1.0 |
| Dicamba | 1918-00-9 | NA | | NA | | NA | 3.0E-02 | *i* | 3.0E-02 | *r* | 3.0E-02 | 0.1 | *RE* | 1.0 |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 94-75-7 | NA | | NA | | NA | 1.0E-02 | *i* | 1.0E-02 | *r* | 1.0E-02 | 0.1 | *RE* | 1.0 |
| 4-(2,4-Dichlorophenoxy) butyric acid (2,4-DB) | 94-82-6 | NA | | NA | | NA | 8.0E-03 | *i* | 8.0E-03 | *r* | 8.0E-03 | 0.04 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| Dichloroprop (2,4-DP) | 120-36-5 | NA | | NA | | NA | 1.0E-02 | *t* | 1.0E-02 | *r* | 1.0E-02 | 0.05 | *RE* | 1.0 |
| Dieldrin | 60-57-1 | 1.6E+01 | *i* | 1.6E+01 | *i* | 1.6E+01 | 5.0E-05 | *i* | 5.0E-05 | *r* | 5.0E-05 | 0.1 | *RE* | 1.0 |
| Dimethoate | 60-51-5 | NA | | NA | | NA | 2.0E-04 | *i* | 2.0E-04 | *r* | 2.0E-04 | 0.1 | *RE* | 1.0 |
| 2,4-Dinitro-6-sec-butylphenol (Dinoseb) | 88-85-7 | NA | | NA | | NA | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Diquat | 85-00-7 | NA | | NA | | NA | 2.2E-03 | *i* | 2.2E-03 | *r* | 2.2E-03 | 0.1 | *RE* | 1.0 |
| Disulfoton | 298-04-4 | NA | | NA | | NA | 4.0E-05 | *i* | 4.0E-05 | *r* | 4.0E-05 | 0.1 | *RE* | 1.0 |
| Diuron | 330-54-1 | NA | | NA | | NA | 2.0E-03 | *i* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| Endosulfan | 115-29-7 | NA | | NA | | NA | 6.0E-03 | *i* | 6.0E-03 | *r* | 6.0E-03 | 0.1 | *RE* | 1.0 |
| Endothall | 145-73-3 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Endrin | 72-20-8 | NA | | NA | | NA | 3.0E-04 | *i* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Endrin aldehyde | 7421-93-4 | NA | | NA | | NA | 3.0E-04 | *t* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Endrin Ketone | 53494-70-5 | NA | | NA | | NA | 3.0E-04 | *t* | 2.9E-05 | *t* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Eptam | 759-94-4 | NA | | NA | | NA | 2.5E-02 | *i* | 2.5E-02 | *r* | 2.5E-02 | N/A | *RE* | 1.0 |
| Ethoprop | 13194-48-4 | 2.8E-02 | *t* | 2.8E-02 | *r* | 2.8E-02 | 1.0E-04 | *t* | 1.0E-04 | *r* | 1.0E-04 | 0.1 | *RE* | 1.0 |
| Fenamiphos | 22224-92-6 | NA | | NA | | NA | 2.5E-04 | *i* | 2.5E-04 | *r* | 2.5E-04 | 0.1 | *RE* | 1.0 |
| Fenthion | 55-38-9 | NA | | NA | | NA | 7.0E-05 | *t* | 7.0E-05 | *r* | 7.0E-05 | 0.1 | *RE* | 1.0 |
| Fluometuron | 2164-17-2 | NA | | NA | | NA | 1.3E-02 | *i* | 1.3E-02 | *r* | 1.3E-02 | 0.1 | *RE* | 1.0 |
| Fonofos | 944-22-9 | NA | | NA | | NA | 2.0E-03 | *i* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| alpha-Hexachlorocyclohexane | 319-84-6 | 6.3E+00 | *i* | 6.3E+00 | *i* | 6.3E+00 | 5.0E-04 | *n* | 5.0E-04 | *r* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| beta-Hexachlorocyclohexane | 319-85-7 | 1.8E+00 | *i* | 1.8E+00 | *i* | 1.8E+00 | 2.0E-04 | *n* | 2.0E-04 | *r* | 2.0E-04 | 0.1 | *RE* | 1.0 |
| delta-Hexachlorocyclohexane | 319-86-8 | 1.8E+00 | *t* | 1.8E+00 | *t* | 1.8E+00 | 3.0E-04 | *t* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| gamma-Hexachlorocyclohexane | 58-89-9 | 1.1E+00 | *c* | 1.1E+00 | *c* | 1.1E+00 | 3.0E-04 | *i* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Glyphosate | 1071-83-6 | NA | | NA | | NA | 1.0E-01 | *i* | 1.0E-01 | *r* | 1.0E-01 | 0.1 | *RE* | 1.0 |
| Guthion | 86-50-0 | NA | | NA | | NA | 1.5E-03 | *t* | 1.5E-03 | *r* | 1.5E-03 | 0.1 | *RE* | 1.0 |
| Heptachlor | 76-44-8 | 4.5E+00 | *i* | 4.5E+00 | *i* | 4.5E+00 | 5.0E-04 | *i* | 5.0E-04 | *r* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| Heptachlor epoxide | 1024-57-3 | 9.1E+00 | *i* | 9.1E+00 | *i* | 9.1E+00 | 1.3E-05 | *i* | 1.3E-05 | *r* | 1.3E-05 | 0.1 | *RE* | 1.0 |
| Hexazinone | 51235-04-2 | NA | | NA | | NA | 3.3E-02 | *i* | 3.3E-02 | *r* | 3.3E-02 | 0.1 | *RE* | 1.0 |
| Malathion | 121-75-5 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Maleic hydrazide | 123-33-1 | NA | | NA | | NA | 5.0E-01 | *i* | 5.0E-01 | *r* | 5.0E-01 | 0.1 | *RE* | 1.0 |
| Maneb | 12427-38-2 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Methomyl | 16752-77-5 | NA | | NA | | NA | 2.5E-02 | *i* | 2.5E-02 | *r* | 2.5E-02 | 0.1 | *RE* | 1.0 |
| Methoxychlor | 72-43-5 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| 2-Methyl-4-chlorophenoxyacetic acid (MCPA) | 94-74-6 | NA | | NA | | NA | 5.0E-04 | *i* | 5.0E-04 | *r* | 5.0E-04 | 0.1 | *RE* | 1.0 |
| MCPP | 93-65-2 | NA | | NA | | NA | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Metolachlor | 51218-45-2 | NA | | NA | | NA | 1.5E-01 | *i* | 1.5E-01 | *r* | 1.5E-01 | 0.1 | *RE* | 1.0 |
| Metribuzin | 21087-64-9 | NA | | NA | | NA | 2.5E-02 | *i* | 2.5E-02 | *r* | 2.5E-02 | 0.1 | *RE* | 1.0 |
| Mirex | 2385-85-5 | 1.8E+01 | *c* | 1.8E+01 | *c* | 1.8E+01 | 2.0E-04 | *i* | 2.0E-04 | *r* | 2.0E-04 | 0.1 | *RE* | 1.0 |
| Naled | 300-76-5 | NA | | NA | | NA | 2.0E-03 | *i* | 2.0E-03 | *r* | 2.0E-03 | 0.1 | *RE* | 1.0 |
| o,o,o-Triethylphosphorothioate | 126-68-1 | NA | | NA | | NA | 8.3E-06 | *t* | 8.3E-06 | *r* | 8.3E-06 | N/A | *RE* | 1.0 |
| Oxamyl | 23135-22-0 | NA | | NA | | NA | 2.5E-02 | *i* | 2.5E-02 | *r* | 2.5E-02 | 0.1 | *RE* | 1.0 |
| Paraquat | 4685-14-7 | NA | | NA | | NA | 4.5E-03 | *i* | 4.5E-03 | *r* | 4.5E-03 | 0.1 | *RE* | 1.0 |
| ethyl-Parathion | 56-38-2 | NA | | NA | | NA | 6.0E-03 | *h* | 6.0E-03 | *r* | 6.0E-03 | 0.1 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| methyl-Parathion | 298-00-0 | NA | | NA | | NA | 2.5E-04 | *i* | 2.5E-04 | *r* | 2.5E-04 | 0.1 | *RE* | 1.0 |
| Pendimethalin | 40487-42-1 | NA | | NA | | NA | 4.0E-02 | *i* | 4.0E-02 | *r* | 4.0E-02 | 0.1 | *RE* | 1.0 |
| Phenylmercuric acetate | 62-38-4 | NA | | NA | | NA | 8.0E-05 | *i* | 8.0E-05 | *r* | 8.0E-05 | 0.1 | *RE* | 1.0 |
| Phorate | 298-02-2 | NA | | NA | | NA | 2.0E-04 | *h* | 2.0E-04 | *r* | 2.0E-04 | 0.1 | *RE* | 1.0 |
| Picloram | 1918-02-1 | NA | | NA | | NA | 7.0E-02 | *i* | 7.0E-02 | *r* | 7.0E-02 | 0.1 | *RE* | 1.0 |
| Prometon | 1610-18-0 | NA | | NA | | NA | 1.5E-02 | *i* | 1.5E-02 | *r* | 1.5E-02 | 0.1 | *RE* | 1.0 |
| Pronamide | 23950-58-5 | NA | | NA | | NA | 7.5E-02 | *i* | 7.5E-02 | *r* | 7.5E-02 | 0.1 | *RE* | 1.0 |
| Propachlor | 1918-16-7 | NA | | NA | | NA | 1.3E-02 | *i* | 1.3E-02 | *r* | 1.3E-02 | 0.1 | *RE* | 1.0 |
| Propanil | 709-98-8 | NA | | NA | | NA | 5.0E-03 | *i* | 5.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Propazine | 139-40-2 | 4.5E-02 | *t* | 4.5E-02 | *r* | 4.5E-02 | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Propham | 122-42-9 | NA | | NA | | NA | 2.0E-02 | *i* | 2.0E-02 | *r* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Silvex (2,4,5-TP) | 93-72-1 | NA | | NA | | NA | 8.0E-03 | *i* | 8.0E-03 | *r* | 8.0E-03 | 0.1 | *RE* | 1.0 |
| Simazine | 122-34-9 | 1.2E-01 | *h* | 1.2E-01 | *r* | 1.2E-01 | 5.0E-03 | *i* | 2.0E-03 | *r* | 5.0E-03 | 0.1 | *RE* | 1.0 |
| Strychnine | 57-24-9 | NA | | NA | | NA | 3.0E-04 | *i* | 3.0E-04 | *r* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| Tebuthiuron | 34014-18-1 | NA | | NA | | NA | 7.0E-02 | *i* | 7.0E-02 | *r* | 7.0E-02 | 0.1 | *RE* | 1.0 |
| Terbacil | 5902-51-2 | NA | | NA | | NA | 1.3E-02 | *i* | 1.3E-02 | *r* | 1.3E-02 | 0.1 | *RE* | 1.0 |
| Terbufos | 13071-79-9 | NA | | NA | | NA | 2.5E-05 | *h* | 2.5E-05 | *r* | 2.5E-05 | 0.1 | *RE* | 1.0 |
| Terbutryn | 886-50-0 | NA | | NA | | NA | 1.0E-03 | *i* | 1.0E-03 | *r* | 1.0E-03 | 0.1 | *RE* | 1.0 |
| Toxaphene | 8001-35-2 | 1.1E+00 | *i* | 1.1E+00 | *i* | 1.1E+00 | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| Triallate | 2303-17-5 | NA | | NA | | NA | 1.3E-02 | *i* | 1.3E-02 | *r* | 1.3E-02 | 0.1 | *RE* | 1.0 |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | 93-76-5 | NA | | NA | | NA | 1.0E-02 | *i* | 1.0E-02 | *r* | 1.0E-02 | 0.1 | *RE* | 1.0 |
| Trifluralin | 1582-09-8 | 7.7E-03 | *i* | 7.7E-03 | *r* | 7.7E-03 | 7.5E-03 | *i* | 7.5E-03 | *r* | 7.5E-03 | 0.1 | *RE* | 1.0 |
| Warfarin | 81-81-2 | NA | | NA | | NA | 3.0E-04 | *i* | 2.9E-05 | *t* | 3.0E-04 | 0.1 | *RE* | 1.0 |
| **Metals** | | | | | | | | | | | | | | |
| Aluminum | 7429-90-5 | NA | | NA | | NA | 1.0E+00 | *p* | 1.4E-03 | *p* | 1.0E+00 | 0.01 | *RE* | 1.0 |
| Antimony | 7440-36-0 | NA | | NA | | NA | 4.0E-04 | *i* | 1.4E-05 | *t* | 4.0E-04 | 0.01 | *RE* | 1.0 |
| Arsenic | 7440-38-2 | 1.5E+00 | *i* | 1.5E+01 | *i* | 1.5E+00 | 3.0E-04 | *i* | 8.6E-06 | *c* | 3.0E-04 | 0.03 | *RE* | 1.0 |
| Barium | 7440-39-3 | NA | | NA | | NA | 2.0E-01 | *i* | 1.4E-04 | *h* | 2.0E-01 | 0.01 | *R3* | 1.0 |
| Beryllium | 7440-41-7 | 8.4E+00 | *r* | 8.4E+00 | *i* | 8.4E+00 | 2.0E-03 | *i* | 5.7E-06 | *i* | 2.0E-03 | 0.01 | *RE* | 1.0 |
| Cadmium | 7440-43-9 | 3.8E-01 | *c* | 6.3E+00 | *i* | 3.8E-01 | 1.0E-03 | *m* | NA | | 1.0E-03 | 0.001 | *RE* | 1.0 |
| Chromium (III) total chromium | 7440-47-3 | NA | | NA | | NA | 1.5E+00 | *i* | 2.9E-05 | *t* | 1.5E+00 | 0.01 | *R3* | 1.0 |
| Chromium (VI) | 18540-29-9 | 4.2E+01 | *r* | 4.2E+01 | *i* | 4.2E+01 | 3.0E-03 | *i* | 2.3E-06 | *i* | 3.0E-03 | 0.01 | *R3* | 1.0 |
| Copper | 7440-50-8 | NA | | NA | | NA | 4.0E-02 | *h* | 2.9E-04 | *t* | 4.0E-02 | 0.01 | *RE* | 1.0 |
| Lead | 7439-92-1 | NA | | NA | | NA | NA | | NA | | NA | NA | | NA |
| Manganese | 7439-96-5 | NA | | NA | | NA | 1.4E-01 | *i* | 1.4E-05 | *i* | 1.4E-01 | 0.01 | *RE* | 1.0 |
| Mercury | 7439-97-6 | NA | | NA | | NA | NA | | 8.6E-05 | *i* | NA | 0.01 | *RE* | 1.0 |
| Molybdenum | 7439-98-7 | NA | | NA | | NA | 5.0E-03 | *i* | 1.4E-03 | *t* | 5.0E-03 | 0.01 | *RE* | 1.0 |
| Nickel | 7440-02-0 | NA | | 9.1E-01 | *c* | *NA* | 2.0E-02 | *i* | 2.6E-05 | *t* | 2.0E-02 | 0.01 | *RE* | 1.0 |
| Selenium | 7782-49-2 | NA | | NA | | NA | 5.0E-03 | *i* | 5.7E-05 | *t* | 5.0E-03 | 0.01 | *R3* | 1.0 |
| Silver | 7440-22-4 | NA | | NA | | NA | 5.0E-03 | *i* | 2.9E-06 | *t* | 5.0E-03 | 0.01 | *RE* | 1.0 |
| Strontium | 7440-24-6 | NA | | NA | | NA | 6.0E-01 | *i* | NA | | 6.0E-01 | 0.01 | *RE* | 1.0 |
| Thallium chloride | 7791-12-0 | NA | | NA | | NA | 8.0E-05 | *i* | 2.9E-05 | *t* | 8.0E-05 | 0.01 | *RE* | 1.0 |

**Table E-1**
**Toxicity Values of Chemicals**

| Chemicals | CAS # | Slope Factor | | | Reference Dose | | | | | Absorption Factor | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oral, $SF_o$ $(mg/kg\text{-}day)^{-1}$ | Inhalation, $SF_i$ $(mg/kg\text{-}day)^{-1}$ | Dermal, $SF_d$ $(mg/kg\text{-}day)^{-1}$ | Oral, $RfD_o$ (mg/kg-day) | | Inhalation, $RfD_i$ (mg/kg-day) | | Dermal, $RfD_d$ (mg/kg-day) | Dermal, $RAF_d$ (unitless) | | Oral, $RAF_o$ (unitless) |
| Vanadium | 7440-62-2 | NA | NA | NA | 7.0E-03 | *h* | 1.4E-05 | *t* | 7.0E-03 | 0.01 | *RE* | 1.0 |
| Zinc | 7440-66-6 | NA | NA | NA | 3.0E-01 | *i* | NA | | 3.0E-01 | 0.01 | *RE* | 1.0 |
| **Inorganics** | | | | | | | | | | | | |
| Ammonia | 7664-41-7 | NA | NA | NA | NA | | 2.9E-02 | *i* | NA | 0.1 | *RE* | 1.0 |
| Cyanide | 57-12-5 | NA | NA | NA | 2.0E-02 | *i* | 1.4E-03 | *t* | 2.0E-02 | 0.1 | *RE* | 1.0 |
| Cyanide (as Sodium Cyanide) | 143-33-9 | NA | NA | NA | 4.0E-02 | *i* | NA | | 4.0E-02 | 0.1 | *RE* | 1.0 |
| Cyanogen bromide | 506-68-3 | NA | NA | NA | 9.0E-02 | *i* | 9.0E-02 | *r* | 9.0E-02 | 0.1 | *RE* | 1.0 |
| Fluoride (as Sodium Fluoride) | 7681-49-4 | NA | NA | NA | NA | | NA | | NA | 0.1 | *RE* | 1.0 |
| Perchlorate | 14797-73-0 | NA | NA | NA | 7.0E-04 | *i* | NA | | 7.0E-04 | 0.1 | *RE* | 1.0 |
| White phosphorus | 7723-14-0 | NA | NA | NA | 2.0E-05 | *i* | 2.9E-05 | *t* | 2.0E-05 | 0.1 | *RE* | 1.0 |
| **Total Petroleum Hydrocarbons** | | | | | | | | | | | | |
| **TPH-GR0** | | | | | | | | | | | | |
| Aliphatics - > C6-C8 | NA | NA | NA | NA | 5.0E+00 | *th* | 5.3E+00 | *th* | 5.0E+00 | N/A | *t* | 1.0 |
| Aliphatics - > C8-C10 | NA | NA | NA | NA | 1.0E-01 | *th* | 2.9E-01 | *th* | 1.0E-01 | N/A | *t* | 1.0 |
| Aromatics - >C8-C10 | NA | NA | NA | NA | 4.0E-02 | *th* | 5.7E-02 | *th* | 4.0E-02 | N/A | *t* | 1.0 |
| **TPH-DR0** | | | | | | | | | | | | |
| Aliphatics - >C10-C12 | NA | NA | NA | NA | 1.0E-01 | *th* | 2.9E-01 | *th* | 1.0E-01 | 0.1 | *t* | 1.0 |
| Aliphatics - >C12-C16 | NA | NA | NA | NA | 1.0E-01 | *th* | 2.9E-01 | *th* | 1.0E-01 | 0.1 | *t* | 1.0 |
| Aliphatics - >C16-C21 | NA | NA | NA | NA | 2.0E+00 | *th* | NA | | 2.0E+00 | 0.1 | *t* | 1.0 |
| Aromatics - >C10-C12 | NA | NA | NA | NA | 4.0E-02 | *th* | 5.7E-02 | *th* | 4.0E-02 | 0.1 | *t* | 1.0 |
| Aromatics - >C12-C16 | NA | NA | NA | NA | 4.0E-02 | *th* | 5.7E-02 | *th* | 4.0E-02 | 0.1 | *t* | 1.0 |
| Aromatics - >C16-C21 | NA | NA | NA | NA | 3.0E-02 | *th* | NA | | 3.0E-02 | 0.13 | *t* | 1.0 |
| **TPH-ORO** | | | | | | | | | | | | |
| Aliphatics - >C21-C35 | NA | NA | NA | NA | 2.0E+00 | *th* | NA | | 2.0E+00 | 0.1 | *t* | 1.0 |
| Aromatics - >C21-C35 | NA | NA | NA | NA | 3.0E-02 | *th* | NA | | 3.0E-02 | 0.13 | *t* | 1.0 |

The letters in the table represent following sources:

i - USEPA IRIS
n - USEPA NCEA
h - HEAST
m - MDNR/DHSS Memo, August 12, 2004
a - Values assigned based on the most conservative Aroclor values found in the tiered hierarchy
th - TPH and carbon fraction properties taken from TPHCWG handbooks
RE - RAGS Part E
Chemicals in MRBCA Process for Petroleum Storage Tanks

p - USEPA PPRTV's
c - CALEPA OEHHA
t - TCEQ's TRRP Tier 1 PCL Table
r - Missing value; value showing is identical to a value available for another route of exposure
e - Estimated by RAGS Part E
N/A - Not applicable since chemical is volatile
R3 - USEPA Region III (1995)
Lead is evaluated seperately using IEUBK model.

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs and SVOCs** | | | | | | | | | | | |
| Acenaphthene | 83-32-9 | 1.02E-01 | *e* | 4.89E-01 | *e* | 7.68E-01 | *e* | 1.84E+00 | *e* | 1.00 | *e* |
| Acenaphthylene | 208-96-8 | 8.84E-02 | *e* | 4.19E-01 | *e* | 7.47E-01 | *e* | 1.79E+00 | *e* | 0.99 | *e* |
| Acetone | 67-64-1 | 5.23E-04 | *e* | 1.53E-03 | *e* | 2.22E-01 | *e* | 5.34E-01 | *e* | 1.00 | *e* |
| Acetonitrile | 75-05-8 | 5.57E-04 | *e* | 1.37E-03 | *e* | 1.79E-01 | *e* | 4.28E-01 | *e* | 1.00 | *e* |
| Acrylamide | 79-06-1 | 2.20E-04 | *RE* | 7.28E-04 | *RE* | 2.66E-01 | *RE* | 6.39E-01 | *RE* | 1.00 | *RE* |
| Acrylic acid | 79-10-7 | 1.23E-03 | *e* | 4.00E-03 | *e* | 2.66E-01 | *e* | 6.39E-01 | *e* | 1.00 | *e* |
| Acrylonitrile | 107-13-1 | 1.20E-03 | *RE* | 3.24E-03 | *RE* | 2.11E-01 | *RE* | 5.07E-01 | *RE* | 1.00 | *RE* |
| Allyl alcohol | 107-18-6 | 9.70E-04 | *e* | 2.84E-03 | *e* | 2.22E-01 | *e* | 5.34E-01 | *e* | 1.00 | *e* |
| Allyl chloride | 107-05-1 | 5.40E-03 | *RE* | 1.80E-02 | *RE* | 2.86E-01 | *RE* | 6.86E-01 | *RE* | 1.00 | *RE* |
| Aniline | 62-53-3 | 1.90E-03 | *RE* | 6.92E-03 | *RE* | 3.54E-01 | *RE* | 8.50E-01 | *RE* | 1.00 | *RE* |
| Anthracene | 120-12-7 | 1.92E-01 | *e* | 9.88E-01 | *e* | 1.05E+00 | *e* | 4.04E+00 | *e* | 0.97 | *e* |
| Aroclor 1016 | 12674-11-2 | 2.84E-01 | *e* | 1.75E+00 | *e* | 2.91E+00 | *e* | 1.17E+01 | *e* | 0.90 | *e* |
| Aroclor 1221 | 11104-28-2 | 1.51E-01 | *e* | 8.21E-01 | *e* | 1.40E+00 | *e* | 5.38E+00 | *e* | 0.95 | *e* |
| Aroclor 1242 | 53469-21-9 | 2.53E-01 | *e* | 1.59E+00 | *e* | 3.27E+00 | *e* | 1.31E+01 | *e* | 0.87 | *e* |
| Aroclor 1248 | 12672-29-6 | 4.11E-01 | *e* | 2.74E+00 | *e* | 5.00E+00 | *e* | 2.10E+01 | *e* | 0.80 | *e* |
| Aroclor 1254 | 11097-69-1 | 4.56E-01 | *e* | 3.17E+00 | *e* | 7.13E+00 | *e* | 3.03E+01 | *e* | 0.70 | *e* |
| Aroclor 1260 | 11096-82-5 | 3.84E-01 | *e* | 2.86E+00 | *e* | 1.34E+01 | *e* | 5.62E+01 | *e* | 0.55 | *e* |
| Azobenzene | 103-33-3 | 2.12E-01 | *e* | 1.10E+00 | *e* | 1.10E+00 | *e* | 4.27E+00 | *e* | 0.92 | *e* |
| Benzene | 71-43-2 | 1.49E-02 | *RE* | 5.05E-02 | *RE* | 2.92E-01 | *RE* | 7.00E-01 | *RE* | 1.00 | *RE* |
| Benzidine | 92-87-5 | 1.10E-03 | *RE* | 5.88E-03 | *RE* | 1.15E+00 | *RE* | 2.76E+00 | *RE* | 1.00 | *RE* |
| Benzo(a)anthracene | 56-55-3 | 4.74E-01 | *RE* | 2.75E+00 | *RE* | 2.03E+00 | *RE* | 8.53E+00 | *RE* | 1.00 | *RE* |
| Benzo(a)pyrene | 50-32-8 | 7.01E-01 | *RE* | 4.27E+00 | *RE* | 2.69E+00 | *RE* | 1.17E+01 | *RE* | 1.00 | *RE* |
| Benzo(b)fluoranthene | 205-99-2 | 7.02E-01 | *RE* | 4.29E+00 | *RE* | 2.77E+00 | *RE* | 1.20E+01 | *RE* | 1.00 | *RE* |
| Benzo(g,h,i)perylene | 191-24-2 | 1.19E+00 | *e* | 7.59E+00 | *e* | 3.71E+00 | *e* | 1.66E+01 | *e* | 0.70 | *e* |
| Benzo(k)fluoranthene | 207-08-9 | 8.69E-01 | *e* | 5.31E+00 | *e* | 2.72E+00 | *e* | 1.20E+01 | *e* | 0.79 | *e* |
| Benzoic acid | 65-85-0 | 5.70E-03 | *RE* | 2.41E-02 | *RE* | 5.15E-01 | *RE* | 1.24E+00 | *RE* | 1.00 | *RE* |
| Benzyl alcohol | 100-51-6 | 2.03E-03 | *e* | 8.12E-03 | *e* | 4.23E-01 | *e* | 1.02E+00 | *e* | 1.00 | *e* |
| 1,1-Biphenyl | 92-52-4 | 6.54E-02 | *e* | 3.13E-01 | *e* | 7.68E-01 | *e* | 1.84E+00 | *e* | 0.99 | *e* |
| Bis(2-chloroethyl) ether | 111-44-4 | 1.80E-03 | *RE* | 8.17E-03 | *RE* | 6.75E-01 | *RE* | 1.62E+00 | *RE* | 1.00 | *RE* |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 8.81E-03 | *e* | 4.43E-02 | *e* | 9.54E-01 | *e* | 2.29E+00 | *e* | 0.98 | *e* |
| Bis(chloromethyl)ether | 542-88-1 | 8.62E-04 | *e* | 3.56E-03 | *e* | 4.63E-01 | *e* | 1.11E+00 | *e* | 1.00 | *e* |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 2.50E-02 | *RE* | 1.90E-01 | *RE* | 1.66E+01 | *RE* | 3.99E+01 | *RE* | 0.80 | *RE* |
| Bromochloromethane | 74-97-5 | 2.22E-03 | *e* | 9.72E-03 | *e* | 5.58E-01 | *e* | 1.34E+00 | *e* | 1.00 | *e* |
| Bromodichloromethane | 75-27-4 | 4.60E-03 | *RE* | 2.27E-02 | *RE* | 8.83E-01 | *RE* | 2.12E+00 | *RE* | 1.00 | *RE* |
| Bromoform | 75-25-2 | 2.20E-03 | *RE* | 1.37E-02 | *RE* | 2.79E+00 | *RE* | 6.70E+00 | *RE* | 1.00 | *RE* |
| Bromomethane | 74-83-9 | 2.80E-03 | *RE* | 1.06E-02 | *RE* | 3.63E-01 | *RE* | 8.71E-01 | *RE* | 1.00 | *RE* |
| 4-Bromophenyl phenyl ether | 101-55-3 | 1.86E-01 | *e* | 1.13E+00 | *e* | 2.61E+00 | *e* | 1.01E+01 | *e* | 0.90 | *e* |
| n-Butylbenzene | 104-51-8 | 2.01E-01 | *e* | 8.82E-01 | *e* | 5.62E-01 | *e* | 2.16E+00 | *e* | 1.00 | *e* |
| sec-Butylbenzene | 135-98-8 | 1.48E-01 | *e* | 6.51E-01 | *e* | 5.62E-01 | *e* | 2.21E+00 | *e* | 1.00 | *e* |
| tert-Butylbenzene | 98-06-6 | 1.70E-01 | *e* | 7.46E-01 | *e* | 5.62E-01 | *e* | 2.17E+00 | *e* | 1.00 | *e* |
| Butyl benzyl phthalate | 85-68-7 | 4.42E-02 | *e* | 3.00E-01 | *e* | 5.90E+00 | *e* | 1.42E+01 | *e* | 0.90 | *e* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbazole | 86-74-8 | 2.49E-02 | *e* | 1.24E-01 | *e* | 9.08E-01 | *e* | 2.18E+00 | *e* | 0.99 | *e* |
| Carbon disulfide | 75-15-0 | 1.70E-02 | *RE* | 5.91E-02 | *RE* | 2.99E-01 | *RE* | 7.18E-01 | *RE* | 1.00 | *RE* |
| Carbon tetrachloride | 56-23-5 | 1.60E-02 | *RE* | 7.78E-02 | *RE* | 7.76E-01 | *RE* | 1.86E+00 | *RE* | 1.00 | *RE* |
| p-Chloroaniline | 106-47-8 | 4.18E-03 | *e* | 1.81E-02 | *e* | 5.45E-01 | *e* | 1.31E+00 | *e* | 1.00 | *e* |
| Chlorobenzene | 108-90-7 | 2.80E-02 | *RE* | 1.15E-01 | *RE* | 4.56E-01 | *RE* | 1.09E+00 | *RE* | 1.00 | *RE* |
| Chloroethane | 75-00-3 | 6.10E-03 | *RE* | 1.88E-02 | *RE* | 2.45E-01 | *RE* | 5.88E-01 | *RE* | 1.00 | *RE* |
| Chloroform | 67-66-3 | 6.80E-03 | *RE* | 2.87E-02 | *RE* | 4.98E-01 | *RE* | 1.19E+00 | *RE* | 1.00 | *RE* |
| Chloromethane | 74-87-3 | 3.30E-03 | *RE* | 8.97E-03 | *RE* | 2.04E-01 | *RE* | 4.90E-01 | *RE* | 1.00 | *RE* |
| 2-Chloronaphthalene | 91-58-7 | 6.62E-02 | *e* | 3.22E-01 | *e* | 8.28E-01 | *e* | 1.99E+00 | *e* | 0.99 | *e* |
| 2-Chlorophenol | 95-57-8 | 8.00E-03 | *RE* | 3.48E-02 | *RE* | 5.60E-01 | *RE* | 1.34E+00 | *RE* | 1.00 | *RE* |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | 2.40E-01 | *e* | 1.32E+00 | *e* | 1.47E+00 | *e* | 5.79E+00 | *e* | 0.95 | *e* |
| 2-Chlorotoluene | 95-49-8 | 3.99E-02 | *e* | 1.73E-01 | *e* | 5.41E-01 | *e* | 1.30E+00 | *e* | 1.00 | *e* |
| 4-Chlorotoluene | 106-43-4 | 4.70E-02 | *e* | 2.04E-01 | *e* | 5.38E-01 | *e* | 1.29E+00 | *e* | 1.00 | *e* |
| Chrysene | 218-01-9 | 4.74E-01 | *RE* | 2.75E+00 | *RE* | 2.03E+00 | *RE* | 8.53E+00 | *RE* | 1.00 | *RE* |
| Dibenzo(a,h)anthracene | 53-70-3 | 1.5E+00 | *RE* | 9.68E+00 | *RE* | 3.88E+00 | *RE* | 1.76E+01 | *RE* | 0.60 | *RE* |
| Dibenzofuran | 132-64-9 | 7.87E-02 | *e* | 3.92E-01 | *e* | 9.20E-01 | *e* | 2.21E+00 | *e* | 0.98 | *e* |
| Dibromochloromethane | 124-48-1 | 3.20E-03 | *RE* | 1.79E-02 | *RE* | 1.57E+00 | *RE* | 3.77E+00 | *RE* | 1.00 | *RE* |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 4.42E-03 | *e* | 2.61E-02 | *e* | 2.21E+00 | *e* | 5.32E+00 | *e* | 0.95 | *e* |
| Dibutyl phthalate | 84-74-2 | 2.40E-02 | *RE* | 1.54E-01 | *RE* | 3.86E+00 | *RE* | 9.27E+00 | *RE* | 0.90 | *RE* |
| 1,2-Dichlorobenzene | 95-50-1 | 4.10E-02 | *RE* | 1.93E-01 | *RE* | 7.11E-01 | *RE* | 1.71E+00 | *RE* | 1.00 | *RE* |
| 1,3-Dichlorobenzene | 541-73-1 | 5.80E-02 | *RE* | 2.70E-01 | *RE* | 7.11E-01 | *RE* | 1.71E+00 | *RE* | 1.00 | *RE* |
| 1,4-Dichlorobenzene | 106-46-7 | 4.20E-02 | *RE* | 1.96E-01 | *RE* | 7.11E-01 | *RE* | 1.71E+00 | *RE* | 1.00 | *RE* |
| 3,3-Dichlorobenzidine | 91-94-1 | 1.30E-02 | *RE* | 7.83E-02 | *RE* | 2.80E+00 | *RE* | 6.72E+00 | *RE* | 1.00 | *RE* |
| Dichlorodifluoromethane | 75-71-8 | 9.00E-03 | *RE* | 3.79E-02 | *RE* | 5.07E-01 | *RE* | 1.22E+00 | *RE* | 1.00 | *RE* |
| 1,1-Dichloroethane | 75-34-3 | 6.70E-03 | *RE* | 2.58E-02 | *RE* | 3.82E-01 | *RE* | 9.18E-01 | *RE* | 1.00 | *RE* |
| 1,1-Dichloroethylene | 75-35-4 | 1.20E-02 | *RE* | 4.41E-02 | *RE* | 3.72E-01 | *RE* | 8.93E-01 | *RE* | 1.00 | *RE* |
| cis-1,2-Dichloroethylene | 156-59-2 | 7.67E-03 | *e* | 2.90E-02 | *e* | 3.67E-01 | *e* | 8.81E-01 | *e* | 1.00 | *e* |
| trans-1,2-Dichloroethylene | 156-60-5 | 1.06E-02 | *e* | 4.00E-02 | *e* | 3.67E-01 | *e* | 8.81E-01 | *e* | 1.00 | *e* |
| 2,4-Dichlorophenol | 120-83-2 | 2.10E-02 | *RE* | 1.01E-01 | *RE* | 8.74E-01 | *RE* | 2.10E+00 | *RE* | 1.00 | *RE* |
| 1,2-Dichloropropane | 78-87-5 | 7.80E-03 | *RE* | 3.17E-02 | *RE* | 4.58E-01 | *RE* | 1.10E+00 | *RE* | 1.00 | *RE* |
| 1,3-Dichloropropene | 542-75-6 | 4.30E-03 | *RE* | 1.75E-02 | *RE* | 4.47E-01 | *RE* | 1.07E+00 | *RE* | 1.00 | *RE* |
| Di(2-ethylhexyl)adipate | 103-23-1 | 3.03E+00 | *e* | 2.24E+01 | *e* | 1.25E+01 | *e* | 5.78E+01 | *e* | 0.01 | *e* |
| Diethyl phthalate | 84-66-2 | 3.90E-03 | *RE* | 2.23E-02 | *RE* | 1.87E+00 | *RE* | 4.50E+00 | *RE* | 1.00 | *RE* |
| Diisopropyl ether (DIPE) | 108-20-3 | 9.04E-03 | *e* | 3.51E-02 | *e* | 3.92E-01 | *e* | 9.40E-01 | *e* | 1.00 | *e* |
| 2,4-Dimethylphenol | 105-67-9 | 1.10E-02 | *RE* | 4.64E-02 | *RE* | 5.16E-01 | *RE* | 1.24E+00 | *RE* | 1.00 | *RE* |
| 2,6-Dimethylphenol | 576-26-1 | NA | | NA | | NA | | NA | | NA | |
| Dimethyl phthalate | 131-11-3 | 1.40E-03 | *RE* | 7.45E-03 | *RE* | 1.30E+00 | *RE* | 3.13E+00 | *RE* | 1.00 | *RE* |
| 1,3-Dinitrobenzene | 99-65-0 | 2.16E-03 | *e* | 1.08E-02 | *e* | 9.19E-01 | *e* | 2.21E+00 | *e* | 0.98 | *e* |
| 2,4-Dinitrophenol | 51-28-5 | 1.50E-03 | *RE* | 8.00E-03 | *RE* | 1.15E+00 | *RE* | 2.76E+00 | *RE* | 1.00 | *RE* |
| 2,4-Dinitrotoluene | 121-14-2 | 3.10E-03 | *RE* | 1.60E-02 | *RE* | 1.12E+00 | *RE* | 2.69E+00 | *RE* | 1.00 | *RE* |
| 2,6-Dinitrotoluene | 606-20-2 | 2.10E-03 | *RE* | 1.07E-02 | *RE* | 1.12E+00 | *RE* | 2.69E+00 | *RE* | 1.00 | *RE* |
| 4-Amino-2,6-dinitrotoluene | 19406-51-0 | 6.69E-03 | *e* | 3.61E-02 | *e* | 1.34E+00 | *e* | 3.21E+00 | *e* | 0.97 | *e* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Amino-4,6-dinitrotoluene | 35572-78-2 | 8.79E-03 | *e* | 4.75E-02 | *e* | 1.34E+00 | *e* | 3.21E+00 | *e* | 0.97 | *e* |
| Di-n-octylphthalate | 117-84-0 | 4.60E+00 | *e* | 3.50E+01 | *e* | 1.62E+01 | *e* | 7.54E+01 | *e* | 0.01 | *e* |
| 1,4-Dioxane | 123-91-1 | 3.30E-04 | *RE* | 1.20E-03 | *RE* | 3.32E-01 | *RE* | 7.97E-01 | *RE* | 1.00 | *RE* |
| Diphenylamine | 122-39-4 | 2.66E-02 | *e* | 1.33E-01 | *e* | 9.32E-01 | *e* | 2.24E+00 | *e* | 0.98 | *e* |
| 1,2-Diphenylhydrazine | 122-66-7 | 1.30E-02 | *RE* | 6.80E-02 | *RE* | 1.15E+00 | *RE* | 2.76E+00 | *RE* | 1.00 | *RE* |
| Ethanol | 64-17-5 | 5.38E-04 | *RE* | 1.40E-03 | *RE* | 1.93E-01 | *RE* | 4.63E-01 | *RE* | 1.00 | *RE* |
| Ethylbenzene | 100-41-4 | 4.93E-02 | *RE* | 1.95E-01 | *RE* | 4.20E-01 | *RE* | 1.01E+00 | *RE* | 1.00 | *RE* |
| Ethylene dibromide (EDB) | 106-93-4 | 2.77E-03 | *RE* | 1.46E-02 | *RE* | 1.21E+00 | *RE* | 2.90E+00 | *RE* | 1.00 | *RE* |
| Ethylene dichloride (EDC) | 107-06-2 | 4.20E-03 | *RE* | 1.61E-02 | *RE* | 3.82E-01 | *RE* | 9.18E-01 | *RE* | 1.00 | *RE* |
| Ethylene glycol | 107-21-1 | 1.15E-04 | *e* | 3.48E-04 | *e* | 2.34E-01 | *e* | 5.62E-01 | *e* | 1.00 | *e* |
| Ethylene thiourea | 96-45-7 | 1.70E-04 | *RE* | 6.22E-04 | *RE* | 3.68E-01 | *RE* | 8.83E-01 | *RE* | 1.00 | *RE* |
| Ethyl-tert-butyl-ether (ETBE) | 637-92-3 | 6.28E-03 | *e* | 2.44E-02 | *e* | 3.92E-01 | *e* | 9.40E-01 | *e* | 1.00 | *e* |
| Fluoranthene | 206-44-0 | 2.24E-01 | *RE* | 1.22E+00 | *RE* | 1.45E+00 | *RE* | 5.68E+00 | *RE* | 1.00 | *RE* |
| Fluorene | 86-73-7 | 1.36E-01 | *e* | 6.75E-01 | *e* | 8.97E-01 | *e* | 3.50E+00 | *e* | 1.00 | *e* |
| Formaldehyde | 50-00-0 | 1.80E-03 | *RE* | 3.83E-03 | *RE* | 1.57E-01 | *RE* | 3.76E-01 | *RE* | 1.00 | *RE* |
| n-Hexane | 110-54-3 | 7.74E-02 | *e* | 2.76E-01 | *e* | 3.19E-01 | *e* | 7.67E-01 | *e* | 1.00 | *e* |
| Hexachlorobenzene | 118-74-1 | 1.30E-01 | *RE* | 8.67E-01 | *RE* | 4.22E+00 | *RE* | 1.62E+01 | *RE* | 0.90 | *RE* |
| Hexachlorobutadiene | 87-68-3 | 8.10E-02 | *RE* | 5.03E-01 | *RE* | 3.09E+00 | *RE* | 7.42E+00 | *RE* | 0.90 | *RE* |
| Hexachlorocyclopentadiene | 77-47-4 | 5.31E-02 | *e* | 3.37E-01 | *e* | 3.54E+00 | *e* | 8.50E+00 | *e* | 0.95 | *e* |
| Hexachloroethane | 67-72-1 | 3.00E-02 | *RE* | 1.78E-01 | *RE* | 2.27E+00 | *RE* | 5.44E+00 | *RE* | 1.00 | *RE* |
| Hexachlorophene | 70-30-4 | 3.09E-01 | *e* | 2.40E+00 | *e* | 2.00E+01 | *e* | 8.28E+01 | *e* | 0.50 | *e* |
| HMX | 2691-41-0 | 4.82E-06 | *e* | 3.19E-05 | *e* | 4.79E+00 | *e* | 1.15E+01 | *e* | 0.94 | *e* |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 1.00E+00 | *RE* | 6.65E+00 | *RE* | 3.78E+00 | *RE* | 1.68E+01 | *RE* | 0.60 | *RE* |
| Isophorone | 78-59-1 | 3.40E-03 | *RE* | 1.53E-02 | *RE* | 6.35E-01 | *RE* | 1.52E+00 | *RE* | 1.00 | *RE* |
| Isopropylbenzene (Cumene) | 98-82-8 | 6.36E-02 | *e* | 2.68E-01 | *e* | 4.95E-01 | *e* | 1.19E+00 | *e* | 1.00 | *e* |
| 4-Isopropyltoluene | 99-87-6 | 1.52E-01 | *e* | 6.76E-01 | *e* | 5.94E-01 | *e* | 2.32E+00 | *e* | 1.00 | *e* |
| Maleic anhydride | 108-31-6 | 5.25E-03 | *e* | 2.00E-02 | *e* | 3.72E-01 | *e* | 8.94E-01 | *e* | 1.00 | *e* |
| Methanol | 67-56-1 | 3.2E-04 | *RE* | 6.94E-04 | *RE* | 1.61E-01 | *RE* | 3.86E-01 | *RE* | 1.00 | *RE* |
| Methyl butyl ketone | 591-78-6 | 4.15E-03 | *e* | 1.60E-02 | *e* | 3.83E-01 | *e* | 9.18E-01 | *e* | 1.00 | *e* |
| Methyl ethyl ketone | 78-93-3 | 9.60E-04 | *RE* | 3.14E-03 | *RE* | 2.70E-01 | *RE* | 6.47E-01 | *RE* | 1.00 | *RE* |
| 2-Methyl-4,6-dinitrophenol | 534-52-1 | 3.10E-03 | *RE* | 1.68E-02 | *RE* | 1.38E+00 | *RE* | 3.30E+00 | *RE* | 1.00 | *RE* |
| Methylene chloride | 75-09-2 | 3.50E-03 | *RE* | 1.26E-02 | *RE* | 3.19E-01 | *RE* | 7.65E-01 | *RE* | 1.00 | *RE* |
| Methyl iodide | 74-88-4 | 2.50E-03 | *RE* | 1.16E-02 | *RE* | 6.66E-01 | *RE* | 1.60E+00 | *RE* | 1.00 | *RE* |
| Methyl isobutyl ketone | 108-10-1 | 2.70E-03 | *RE* | 1.02E-02 | *RE* | 3.87E-01 | *RE* | 9.30E-01 | *RE* | 1.00 | *RE* |
| 2-Methylnaphthalene | 91-57-6 | 7.20E-02 | *e* | 3.30E-01 | *e* | 6.56E-01 | *e* | 1.57E+00 | *e* | 0.98 | *e* |
| 2-Methylphenol | 95-48-7 | 7.70E-03 | *RE* | 3.06E-02 | *RE* | 4.30E-01 | *RE* | 1.03E+00 | *RE* | 1.00 | *RE* |
| 3-Methylphenol | 108-39-4 | 7.80E-03 | *RE* | 3.11E-02 | *RE* | 4.30E-01 | *RE* | 1.03E+00 | *RE* | 1.00 | *RE* |
| 4-Methylphenol | 106-44-5 | 7.70E-03 | *RE* | 3.06E-02 | *RE* | 4.30E-01 | *RE* | 1.03E+00 | *RE* | 1.00 | *RE* |
| Methyl teriary butyl ether (MTBE) | 1634-04-4 | 3.40E-03 | *e* | 1.23E-02 | *e* | 3.28E-01 | *e* | 7.87E-01 | *e* | 1.00 | *e* |
| Methyl-2,4,6-trinitrophenylnitramine | 479-45-8 | 8.68E-04 | *e* | 5.66E-03 | *e* | 4.26E+00 | *e* | 1.02E+01 | *e* | 0.95 | *e* |
| Naphthalene | 91-20-3 | 4.66E-02 | *RE* | 2.03E-01 | RE | 5.58E-01 | RE | 1.34E+00 | RE | 1.00 | RE |
| 2-Nitroaniline | 88-74-4 | 5.76E-03 | *e* | 2.60E-02 | *e* | 6.23E-01 | *e* | 1.50E+00 | *e* | 1.00 | *e* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-Nitroaniline | 99-09-2 | 3.14E-03 | *e* | 1.42E-02 | *e* | 6.23E-01 | *e* | 1.50E+00 | *e* | 1.00 | *e* |
| 4-Nitroaniline | 100-01-6 | 1.36E-03 | *e* | 6.14E-03 | *e* | 6.23E-01 | *e* | 1.50E+00 | *e* | 1.00 | *e* |
| Nitrobenzene | 98-95-3 | 5.07E-03 | *e* | 2.16E-02 | *e* | 5.14E-01 | *e* | 1.23E+00 | *e* | 1.00 | *e* |
| Nitroglycerin | 55-63-0 | 1.77E-03 | *e* | 1.03E-02 | *e* | 1.97E+00 | *e* | 4.72E+00 | *e* | 0.97 | *e* |
| 2-Nitrophenol | 88-75-5 | 4.00E-03 | *RE* | 1.82E-02 | *RE* | 6.42E-01 | *RE* | 1.54E+00 | *RE* | 1.00 | *RE* |
| 4-Nitrophenol | 100-02-7 | 4.80E-03 | *RE* | 2.19E-02 | *RE* | 6.42E-01 | *RE* | 1.54E+00 | *RE* | 1.00 | *RE* |
| n-Nitrosodimethylamine | 62-75-9 | 2.50E-04 | *RE* | 8.32E-04 | *RE* | 2.77E-01 | *RE* | 6.65E-01 | *RE* | 1.00 | *RE* |
| n-Nitrosodi-n-propylamine | 621-64-7 | 2.30E-03 | *RE* | 1.02E-02 | *RE* | 5.72E-01 | *RE* | 1.37E+00 | *RE* | 1.00 | *RE* |
| n-Nitrosodiphenylamine | 86-30-6 | 1.50E-02 | *RE* | 7.88E-02 | *RE* | 1.38E+00 | *RE* | 3.31E+00 | *RE* | 1.00 | *RE* |
| n-Nitrosopyrrolidine* | 930-55-2 | 6.19E-04 | *e* | 2.38E-03 | *e* | 3.82E-01 | *e* | 9.18E-01 | *e* | 1.00 | *e* |
| 2-Nitrotoluene | 88-72-2 | 9.73E-03 | *e* | 4.38E-02 | *e* | 6.16E-01 | *e* | 1.48E+00 | *e* | 1.00 | *e* |
| 3-Nitrotoluene | 99-08-1 | 9.73E-03 | *e* | 4.38E-02 | *e* | 6.16E-01 | *e* | 1.48E+00 | *e* | 1.00 | *e* |
| 4-Nitrotoluene | 99-99-0 | 9.73E-03 | *e* | 4.38E-02 | *e* | 6.16E-01 | *e* | 1.48E+00 | *e* | 1.00 | *e* |
| Pentachlorobenzene | 608-93-5 | 1.75E-01 | *e* | 1.07E+00 | *e* | 2.65E+00 | *e* | 1.03E+01 | *e* | 0.94 | *e* |
| Pentachloronitrobenzene | 82-68-8 | 4.20E-02 | *RE* | 2.76E-01 | *RE* | 4.83E+00 | *RE* | 1.16E+01 | *RE* | 0.90 | *RE* |
| Pentachlorophenol | 87-86-5 | 3.90E-01 | *RE* | 2.47E+00 | *RE* | 3.33E+00 | *RE* | 1.38E+01 | *RE* | 0.90 | *RE* |
| Pentaerythritol tetranitrate | 78-11-5 | 9.55E-03 | *e* | 6.53E-02 | *e* | 6.20E+00 | *e* | 1.49E+01 | *e* | 0.95 | *e* |
| Phenanthrene | 85-01-8 | 1.40E-01 | *RE* | 7.40E-01 | *RE* | 1.06E+00 | *RE* | 4.11E+00 | *RE* | 1.00 | *RE* |
| Phenol | 108-95-2 | 4.30E-03 | *RE* | 1.62E-02 | *RE* | 3.59E-01 | *RE* | 8.61E-01 | *RE* | 1.00 | *RE* |
| m-Phenylenediamine | 108-45-2 | 2.17E-04 | *e* | 8.68E-04 | *e* | 4.24E-01 | *e* | 1.02E+00 | *e* | 1.00 | *e* |
| Polychlorinated biphenyls (PCBs) | 1336-36-3 | 3.41E-01 | *e* | 2.37E+00 | *e* | 7.04E+00 | *e* | 2.91E+01 | *e* | 0.75 | *e* |
| n-Propylbenzene | 103-65-1 | 9.74E-02 | *e* | 4.11E-01 | *e* | 4.95E-01 | *e* | 1.19E+00 | *e* | 1.00 | *e* |
| Pyrene | 129-00-0 | 3.26E-01 | *e* | 1.79E+00 | e | 1.43E+00 | e | 5.76E+00 | e | 0.95 | e |
| RDX | 121-82-4 | 6.42E-04 | *e* | 3.25E-03 | *e* | 9.73E-01 | *e* | 2.34E+00 | *e* | 0.98 | *e* |
| Styrene | 100-42-5 | 3.70E-02 | *RE* | 1.46E-01 | *RE* | 4.08E-01 | *RE* | 9.80E-01 | *RE* | 1.00 | *RE* |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 1.57E-02 | *e* | 7.82E-02 | *e* | 9.16E-01 | *e* | 2.20E+00 | *e* | 0.99 | *e* |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 6.90E-03 | *RE* | 3.46E-02 | *RE* | 9.31E-01 | *RE* | 2.24E+00 | *RE* | 1.00 | *RE* |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | 1.02E-01 | *e* | 5.75E-01 | *e* | 1.70E+00 | *e* | 4.08E+00 | *e* | 0.95 | *e* |
| Tetrachloroethylene | 127-18-4 | 3.30E-02 | *RE* | 1.66E-01 | *RE* | 9.06E-01 | *RE* | 2.18E+00 | *RE* | 1.00 | *RE* |
| Tetrahydrofuran | 109-99-9 | 1.62E-03 | *e* | 5.28E-03 | *e* | 2.66E-01 | *e* | 6.40E-01 | *e* | 1.00 | *e* |
| Tertiary-amyl-methyl-ether (TAME) | 994-05-8 | 6.77E-03 | *e* | 2.63E-02 | *e* | 3.92E-01 | *e* | 9.40E-01 | *e* | 1.00 | *e* |
| Tertiary-butyl-alcohol (TBA) | 75-65-0 | 2.14E-03 | *e* | 7.08E-03 | *e* | 2.73E-01 | *e* | 6.56E-01 | *e* | 1.00 | *e* |
| Toluene | 108-88-3 | 3.11E-02 | *RE* | 1.15E-01 | *RE* | 3.50E-01 | *RE* | 8.39E-01 | *RE* | 1.00 | *RE* |
| 1,2,4-Trichlorobenzene | 120-82-1 | 6.60E-02 | *RE* | 3.43E-01 | *RE* | 1.11E+00 | *RE* | 2.66E+00 | *RE* | 1.00 | *RE* |
| 1,3,5-Trichlorobenzene | 108-70-3 | 8.90E-02 | *e* | 4.61E-01 | *e* | 1.09E+00 | *e* | 2.62E+00 | *e* | 0.97 | *e* |
| 1,1,1-Trichloroethane | 71-55-6 | 1.30E-02 | *RE* | 5.61E-02 | *RE* | 5.96E-01 | *RE* | 1.43E+00 | *RE* | 1.00 | *RE* |
| 1,1,2-Trichloroethane | 79-00-5 | 6.40E-03 | *RE* | 2.86E-02 | *RE* | 5.96E-01 | *RE* | 1.43E+00 | *RE* | 1.00 | *RE* |
| Trichloroethylene | 79-01-6 | 1.20E-02 | *RE* | 5.13E-02 | *RE* | 5.81E-01 | *RE* | 1.39E+00 | *RE* | 1.00 | *RE* |
| Trichlorofluoromethane | 75-69-4 | 1.30E-02 | *RE* | 5.75E-02 | *RE* | 6.28E-01 | *RE* | 1.51E+00 | *RE* | 1.00 | *RE* |
| 2,4,5-Trichlorophenol | 95-95-4 | 2.34E-02 | *e* | 1.26E-01 | *e* | 1.34E+00 | *e* | 3.22E+00 | *e* | 0.98 | *e* |
| 2,4,6-Trichlorophenol | 88-06-2 | 3.50E-02 | *RE* | 1.87E-01 | *RE* | 1.36E+00 | *RE* | 3.27E+00 | *RE* | 1.00 | *RE* |
| 1,2,3-Trichloropropane | 96-18-4 | 1.06E-02 | *e* | 4.97E-02 | *e* | 7.04E-01 | *e* | 1.69E+00 | *e* | 1.00 | *e* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane | 76-13-1 | 1.55E-02 | *e* | 8.15E-02 | *e* | 1.18E+00 | *e* | 2.83E+00 | *e* | 0.97 | *e* |
| 1,2,4-Trimethylbenzene | 95-63-6 | 8.63E-02 | *e* | 3.64E-01 | *e* | 4.95E-01 | *e* | 1.19E+00 | *e* | 1.00 | *e* |
| 1,3,5-Trimethylbenzene | 108-67-8 | 9.31E-02 | *e* | 3.93E-01 | *e* | 4.95E-01 | *e* | 1.19E+00 | *e* | 1.00 | *e* |
| 1,3,5-Trinitrobenzene | 99-35-4 | 9.13E-04 | *e* | 5.13E-03 | *e* | 1.64E+00 | *e* | 3.94E+00 | *e* | 0.98 | *e* |
| 2,4,6-Trinitrotoluene (TNT) | 118-96-7 | 1.75E-03 | *e* | 1.02E-02 | *e* | 1.97E+00 | *e* | 4.72E+00 | *e* | 0.98 | *e* |
| Vinyl chloride (for residential scenario) | 75-01-4 | 5.60E-03 | *RE* | 1.70E-02 | *RE* | 2.39E-01 | *RE* | 5.73E-01 | *RE* | 1.00 | *RE* |
| Vinyl chloride (for occupational scenatio) | 75-01-4 | 5.60E-03 | *RE* | 1.70E-02 | *RE* | 2.39E-01 | *RE* | 5.73E-01 | *RE* | 1.00 | *RE* |
| Xylenes (total) | 1330-20-7 | 2.89E-02 | *e* | 1.14E-01 | *e* | 4.13E-01 | *e* | 9.92E-01 | *e* | 1.00 | *e* |
| **Pesticides** | | | | | | | | | | | |
| Acetochlor | 34256-82-1 | 2.11E-03 | *e* | 1.33E-02 | *e* | 3.41E+00 | *e* | 8.18E+00 | *e* | 0.97 | *e* |
| Acifluorfen | 62476-59-9 | 2.63E-05 | *e* | 1.93E-04 | *e* | 1.12E+01 | *e* | 2.68E+01 | *e* | 0.90 | *e* |
| Acrolein | 107-02-8 | 6.50E-04 | *RE* | 1.88E-03 | *RE* | 2.20E-01 | *RE* | 5.27E-01 | *RE* | 1.00 | *RE* |
| Alachlor | 15972-60-8 | 8.22E-03 | *e* | 5.19E-02 | *e* | 3.40E+00 | *e* | 8.15E+00 | *e* | 0.92 | *e* |
| Aldicarb | 116-06-3 | 1.08E-03 | *e* | 5.71E-03 | *e* | 1.22E+00 | *e* | 2.93E+00 | *e* | 0.98 | *e* |
| Aldicarb sulfone | 1646-88-4 | 3.28E-05 | *e* | 9.80E-01 | *e* | 1.85E+00 | *e* | 7.12E+00 | *e* | 0.95 | *e* |
| Aldrin | 309-00-2 | 1.40E-03 | *RE* | 1.03E-02 | *RE* | 1.19E+01 | *RE* | 2.85E+01 | *RE* | 1.00 | *RE* |
| Ametryn | 834-12-8 | 6.78E-03 | *e* | 3.93E-02 | *e* | 1.97E+00 | *e* | 4.73E+00 | *e* | 0.97 | *e* |
| Atrazine | 1912-24-9 | 7.13E-03 | *e* | 4.03E-02 | *e* | 1.70E+00 | *e* | 4.07E+00 | *e* | 0.95 | *e* |
| Baygon | 114-26-1 | NA | | NA | | NA | | NA | | NA | |
| Butylate | 2008-41-5 | 3.36E-02 | *e* | 1.90E-01 | *e* | 1.73E+00 | *e* | 4.16E+00 | *e* | 0.98 | *e* |
| Captan | 133-06-2 | 1.20E-03 | *RE* | 7.88E-03 | *RE* | 5.13E+00 | *RE* | 1.23E+01 | *RE* | 1.00 | *RE* |
| Carbaryl | 63-25-2 | 4.21E-03 | *e* | 2.30E-02 | *e* | 1.41E+00 | *e* | 3.38E+00 | *e* | 0.98 | *e* |
| Carbofuran | 1563-66-2 | 3.01E-03 | *e* | 1.72E-02 | *e* | 1.82E+00 | *e* | 4.38E+00 | *e* | 0.98 | *e* |
| Carboxin | 5234-68-4 | 7.51E-03 | *e* | 4.43E-02 | *e* | 2.19E+00 | *e* | 5.25E+00 | *e* | 0.97 | *e* |
| Chloramben | 133-90-4 | 4.80E-03 | *e* | 2.65E-02 | *e* | 1.50E+00 | *e* | 3.61E+00 | *e* | 0.98 | *e* |
| Chlordane (technical) | 12789-03-6 | 1.83E-01 | *e* | 1.42E+00 | *e* | 2.07E+01 | *e* | 8.20E+01 | *e* | 0.55 | *e* |
| Chlordane, gamma | 57-74-9 | 3.80E-02 | *RE* | 2.94E-01 | *RE* | 2.12E+01 | *RE* | 5.09E+01 | *RE* | 0.70 | *RE* |
| Chlorothalonil | 1897-45-6 | 1.90E-02 | *RE* | 1.16E-01 | *RE* | 3.30E+00 | *RE* | 7.93E+00 | *RE* | 0.90 | *RE* |
| Chlorpyrifos | 2921-88-2 | 2.05E-02 | *e* | 1.48E-01 | *e* | 9.66E+00 | *e* | 2.32E+01 | *e* | 0.90 | *e* |
| Coumaphos | 56-72-4 | 9.55E-03 | *e* | 7.00E-02 | *e* | 1.13E+01 | *e* | 2.71E+01 | *e* | 0.88 | *e* |
| Cyanazine | 21725-46-2 | 9.71E-04 | *e* | 5.79E-03 | *e* | 2.34E+00 | *e* | 5.62E+00 | *e* | 0.97 | *e* |
| Dacthal | 1861-32-1 | 2.81E-02 | *e* | 1.97E-01 | *e* | 7.60E+00 | *e* | 1.82E+01 | *e* | 0.90 | *e* |
| Dalapon, sodium salt | 75-99-0 | 2.85E-03 | *e* | 1.31E-02 | *e* | 6.64E-01 | *e* | 1.59E+00 | *e* | 1.00 | *e* |
| DDD | 72-54-8 | 1.80E-01 | *RE* | 1.23E+00 | *RE* | 6.65E+00 | *RE* | 2.60E+01 | *RE* | 0.80 | *RE* |
| DDE | 72-55-9 | 1.60E-01 | *RE* | 1.07E+00 | *RE* | 6.48E+00 | *RE* | 2.51E+01 | *RE* | 0.80 | *RE* |
| DDT | 50-29-3 | 2.70E-01 | *RE* | 1.95E+00 | *RE* | 1.04E+01 | *RE* | 4.25E+01 | *RE* | 0.70 | *RE* |
| DEF | 78-48-8 | 1.59E-01 | *e* | 1.08E+00 | *e* | 6.07E+00 | *e* | 2.35E+01 | *e* | 0.85 | *e* |
| Demeton | 8065-48-3 | 5.17E-03 | *e* | 3.20E-02 | *e* | 2.94E+00 | *e* | 7.06E+00 | *e* | 0.97 | *e* |
| Diazinon | 333-41-5 | 1.11E-02 | *e* | 7.46E-02 | *e* | 5.32E+00 | *e* | 1.28E+01 | *e* | 0.92 | *e* |
| Dicamba | 1918-00-9 | 2.37E-03 | *e* | 1.35E-02 | *e* | 1.82E+00 | *e* | 4.36E+00 | *e* | 0.98 | *e* |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 94-75-7 | 4.89E-03 | *e* | 2.80E-02 | *e* | 1.82E+00 | *e* | 4.36E+00 | *e* | 0.98 | *e* |
| 4-(2,4-Dichlorophenoxy) butyric acid (2,4-DB) | 94-82-6 | 2.02E-02 | *e* | 1.22E-01 | *e* | 2.61E+00 | *e* | 6.27E+00 | *e* | 0.97 | *e* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichloroprop (2,4-DP) | 120-36-5 | 1.09E-02 | *e* | 6.43E-02 | *e* | 2.18E+00 | *e* | 5.23E+00 | *e* | 0.97 | *e* |
| Dieldrin | 60-57-1 | 1.20E-02 | *RE* | 9.18E-02 | *RE* | 1.46E+01 | *RE* | 3.51E+01 | *RE* | 0.80 | *RE* |
| Dimethoate | 60-51-5 | 1.26E-04 | *e* | 7.33E-04 | *e* | 2.02E+00 | *e* | 4.85E+00 | *e* | 0.97 | *e* |
| 2,4-Dinitro-6-sec-butylphenol (Dinoseb) | 88-85-7 | 1.90E-02 | *e* | 1.13E-01 | *e* | 2.33E+00 | *e* | 5.59E+00 | *e* | 0.97 | *e* |
| Diquat | 85-00-7 | 2.58E-07 | *e* | 1.84E-06 | *e* | 8.88E+00 | *e* | 2.13E+01 | *e* | 0.92 | *e* |
| Disulfoton | 298-04-4 | 1.63E-02 | *e* | 1.04E-01 | *e* | 3.62E+00 | *e* | 8.68E+00 | *e* | 0.95 | *e* |
| Diuron | 330-54-1 | 4.56E-03 | *e* | 2.68E-02 | *e* | 2.12E+00 | *e* | 5.10E+00 | *e* | 0.97 | *e* |
| Endosulfan | 115-29-7 | 2.85E-03 | *e* | 2.21E-02 | *e* | 2.00E+01 | *e* | 4.80E+01 | *e* | 0.80 | *e* |
| Endothall | 145-73-3 | 2.54E-03 | *e* | 1.33E-02 | *e* | 1.16E+00 | *e* | 2.78E+00 | *e* | 0.99 | *e* |
| Endrin | 72-20-8 | 1.20E-02 | *RE* | 9.18E-02 | *RE* | 1.46E+01 | *RE* | 3.51E+01 | *RE* | 0.80 | *RE* |
| Endrin aldehyde | 7421-93-4 | 2.07E-01 | *e* | 1.56E+00 | *e* | 1.43E+01 | *e* | 5.70E+01 | *e* | 0.68 | *e* |
| Endrin Ketone | 53494-70-5 | 3.84E-02 | *e* | 2.88E-01 | *e* | 1.43E+01 | *e* | 3.43E+01 | *e* | 0.83 | *e* |
| Eptam | 759-94-4 | 1.35E-02 | *e* | 7.16E-02 | *e* | 1.21E+00 | *e* | 2.90E+00 | *e* | 0.99 | *e* |
| Ethoprop | 13194-48-4 | 8.23E-03 | *e* | 4.93E-02 | *e* | 2.39E+00 | *e* | 5.74E+00 | *e* | 0.97 | *e* |
| Fenamiphos | 22224-92-6 | NA | | NA | | NA | | NA | | NA | |
| Fenthion | 55-38-9 | 4.58E-03 | *e* | 2.94E-02 | *e* | 3.81E+00 | *e* | 9.13E+00 | *e* | 0.95 | *e* |
| Fluometuron | 2164-17-2 | NA | | NA | | NA | | NA | | NA | |
| Fonofos | 944-22-9 | 2.89E-02 | *e* | 1.74E-01 | *e* | 2.52E+00 | *e* | 6.05E+00 | *e* | 0.97 | *e* |
| alpha-Hexachlorocyclohexane | 319-84-6 | 2.42E-02 | *e* | 1.58E-01 | *e* | 4.47E+00 | *e* | 1.07E+01 | *e* | 0.92 | *e* |
| beta-Hexachlorocyclohexane | 319-85-7 | 2.42E-02 | *e* | 1.58E-01 | *e* | 4.47E+00 | *e* | 1.07E+01 | *e* | 0.95 | *e* |
| delta-Hexachlorocyclohexane | 319-86-8 | 1.63E-02 | *e* | 1.07E-01 | *e* | 4.47E+00 | *e* | 1.07E+01 | *e* | 0.95 | *e* |
| gamma-Hexachlorocyclohexane | 58-89-9 | 1.10E-02 | *RE* | 7.10E-02 | *RE* | 4.57E+00 | *RE* | 1.10E+01 | *RE* | 0.90 | *RE* |
| Glyphosate | 1071-83-6 | 1.57E-05 | *e* | 7.88E-05 | *e* | 9.30E-01 | *e* | 2.23E+00 | *e* | 0.99 | *e* |
| Guthion | 86-50-0 | 1.18E-03 | *e* | 8.10E-03 | *e* | 6.29E+00 | *e* | 1.51E+01 | *e* | 0.93 | *e* |
| Heptachlor | 76-44-8 | 8.60E-03 | *RE* | 6.43E-02 | *RE* | 1.33E+01 | *RE* | 3.19E+01 | *RE* | 0.80 | *RE* |
| Heptachlor epoxide | 1024-57-3 | 1.81E-02 | *e* | 1.37E-01 | *e* | 1.59E+01 | *e* | 3.82E+01 | *e* | 0.86 | *e* |
| Hexazinone | 51235-04-2 | 1.61E-03 | *e* | 9.85E-03 | *e* | 2.72E+00 | *e* | 6.53E+00 | *e* | 0.97 | *e* |
| Malathion | 121-75-5 | 7.24E-04 | *e* | 5.06E-03 | *e* | 7.45E+00 | *e* | 1.79E+01 | *e* | 0.91 | *e* |
| Maleic hydrazide | 123-33-1 | 9.70E-05 | *e* | 3.95E-04 | *e* | 4.46E-01 | *e* | 1.07E+00 | *e* | 1.00 | *e* |
| Maneb | 12427-38-2 | NA | | NA | | NA | | NA | | NA | |
| Methomyl | 16752-77-5 | 4.95E-04 | *e* | 2.42E-03 | *e* | 8.52E-01 | *e* | 2.04E+00 | *e* | 0.99 | *e* |
| Methoxychlor | 72-43-5 | 1.01E-01 | *e* | 7.23E-01 | *e* | 9.07E+00 | *e* | 3.51E+01 | *e* | 0.82 | *e* |
| 2-Methyl-4-chlorophenoxyacetic acid (MCPA) | 94-74-6 | 2.06E-02 | *e* | 1.12E-01 | *e* | 1.40E+00 | *e* | 3.35E+00 | *e* | 0.98 | *e* |
| MCPP | 93-65-2 | 1.16E-02 | *e* | 6.55E-02 | *e* | 1.67E+00 | *e* | 4.02E+00 | *e* | 0.97 | *e* |
| Metolachlor | 51218-45-2 | 3.33E-03 | *e* | 2.16E-02 | *e* | 4.08E+00 | *e* | 9.80E+00 | *e* | 0.95 | *e* |
| Metribuzin | 21087-64-9 | 1.76E-04 | *e* | 9.92E-04 | *e* | 1.67E+00 | *e* | 4.00E+00 | *e* | 0.97 | *e* |
| Mirex | 2385-85-5 | 2.54E+01 | *e* | 2.28E+02 | *e* | 1.19E+02 | *e* | 5.61E+02 | *e* | 0.00 | *e* |
| Naled | 300-76-5 | 1.33E-04 | *e* | 9.98E-04 | *e* | 1.43E+01 | *e* | 3.42E+01 | *e* | 0.86 | *e* |
| o,o,o-Triethylphosphorothioate | 126-68-1 | 6.80E-03 | *e* | 3.68E-02 | *e* | 1.35E+00 | *e* | 3.25E+00 | *e* | 0.97 | *e* |
| Oxamyl | 23135-22-0 | 1.52E-05 | *e* | 8.63E-05 | *e* | 1.78E+00 | *e* | 4.26E+00 | *e* | 0.97 | *e* |
| Paraquat | 4685-14-7 | 6.16E-08 | *e* | 3.80E-07 | *e* | 2.90E+00 | *e* | 6.95E+00 | *e* | 0.96 | *e* |
| ethyl-Parathion | 56-38-2 | 1.30E-02 | *RE* | 8.40E-02 | *RE* | 4.57E+00 | *RE* | 1.10E+01 | *RE* | 0.90 | *RE* |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| methyl-Parathion | 298-00-0 | 3.47E-03 | *e* | 2.16E-02 | *e* | 3.13E+00 | *e* | 7.52E+00 | *e* | 0.95 | *e* |
| Pendimethalin | 40487-42-1 | 1.48E-01 | *e* | 9.52E-01 | *e* | 3.96E+00 | *e* | 1.52E+01 | *e* | 0.89 | *e* |
| Phenylmercuric acetate | 62-38-4 | 7.97E-05 | *e* | 5.63E-04 | *e* | 8.08E+00 | *e* | 1.94E+01 | *e* | 0.89 | *e* |
| Phorate | 298-02-2 | 9.21E-03 | *e* | 5.72E-02 | *e* | 3.02E+00 | *e* | 7.25E+00 | *e* | 0.96 | *e* |
| Picloram | 1918-02-1 | 6.14E-03 | *e* | 3.67E-02 | *e* | 2.37E+00 | *e* | 5.68E+00 | *e* | 0.97 | *e* |
| Prometon | 1610-18-0 | 6.90E-03 | *e* | 3.99E-02 | *e* | 1.92E+00 | *e* | 4.61E+00 | *e* | 0.97 | *e* |
| Pronamide | 23950-58-5 | 1.33E-02 | *e* | 8.21E-02 | *e* | 2.86E+00 | *e* | 6.86E+00 | *e* | 0.96 | *e* |
| Propachlor | 1918-16-7 | NA | | NA | | NA | | NA | | NA | |
| Propanil | 709-98-8 | 8.75E-03 | *e* | 4.97E-02 | *e* | 1.75E+00 | *e* | 4.20E+00 | *e* | 0.97 | *e* |
| Propazine | 139-40-2 | 1.14E-02 | *e* | 6.67E-02 | *e* | 2.03E+00 | *e* | 4.88E+00 | *e* | 0.97 | *e* |
| Propham | 122-42-9 | 8.95E-03 | *e* | 4.61E-02 | *e* | 1.06E+00 | *e* | 2.55E+00 | *e* | 0.99 | *e* |
| Silvex (2,4,5-TP) | 93-72-1 | 1.32E-02 | *e* | 8.31E-02 | *e* | 3.40E+00 | *e* | 8.15E+00 | *e* | 0.95 | *e* |
| Simazine | 122-34-9 | 6.50E-03 | *e* | 3.55E-02 | *e* | 1.42E+00 | *e* | 3.40E+00 | *e* | 0.98 | *e* |
| Strychnine | 57-24-9 | 3.52E-04 | *e* | 2.48E-03 | *e* | 7.85E+00 | *e* | 1.88E+01 | *e* | 0.91 | *e* |
| Tebuthiuron | 34014-18-1 | 1.27E-03 | *e* | 7.36E-03 | *e* | 2.00E+00 | *e* | 4.79E+00 | *e* | 0.97 | *e* |
| Terbacil | 5902-51-2 | NA | | NA | | NA | | NA | | NA | |
| Terbufos | 13071-79-9 | 2.26E-02 | *e* | 1.48E-01 | *e* | 4.34E+00 | *e* | 1.04E+01 | *e* | 0.93 | *e* |
| Terbutryn | 886-50-0 | 2.07E-02 | *e* | 1.24E-01 | *e* | 2.36E+00 | *e* | 5.67E+00 | *e* | 0.97 | *e* |
| Toxaphene | 8001-35-2 | 1.20E-02 | *RE* | 9.30E-02 | *RE* | 2.24E+01 | *RE* | 5.38E+01 | *RE* | 0.80 | *RE* |
| Triallate | 2303-17-5 | 3.24E-02 | *e* | 2.17E-01 | *e* | 5.35E+00 | *e* | 1.28E+01 | *e* | 0.92 | *e* |
| 2,4,5-Trichlorophenoxy acetic acid (2,4,5-T) | 93-76-5 | 8.42E-03 | *e* | 5.17E-02 | *e* | 2.82E+00 | *e* | 6.76E+00 | *e* | 0.97 | *e* |
| Trifluralin | 1582-09-8 | 6.73E-02 | *e* | 4.74E-01 | *e* | 7.93E+00 | *e* | 1.90E+01 | *e* | 0.87 | *e* |
| Warfarin | 81-81-2 | 3.84E-03 | *e* | 2.59E-02 | *e* | 5.60E+00 | *e* | 1.35E+01 | *e* | 0.94 | *e* |
| **Metals** | | | | | | | | | | | |
| Aluminum | 7429-90-5 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Antimony | 7440-36-0 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Arsenic | 7440-38-2 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Barium | 7440-39-3 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Beryllium | 7440-41-7 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Cadmium | 7440-43-9 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Chromium (III) total chromium | 7440-47-3 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Chromium (VI) | 18540-29-9 | 2.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Copper | 7440-50-8 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Lead | 7439-92-1 | NA | | NA | | NA | | NA | | NA | |
| Manganese | 7439-96-5 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Mercury | 7439-97-6 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Molybdenum | 7439-98-7 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Nickel | 7440-02-0 | 2.00E-04 | *RE* | NA | | NA | | NA | | NA | |
| Selenium | 7782-49-2 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Silver | 7440-22-4 | 6.00E-04 | *RE* | NA | | NA | | NA | | NA | |
| Strontium | 7440-24-6 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Thallium chloride | 7791-12-0 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |

**Table E-2**
**Parameters for Dermal Contact Pathway**

| Chemicals | CAS # | Permeability Constant, $K_p$ (cm/hr) | | Relative Contribution of Permeability Coefficient, B (unitless) | | Lag Time, $\tau_{event}$ (hr/event) | | Duration of Event, t* (hr) | | Fraction Absorbed Water, FA (unitless) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vanadium | 7440-62-2 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Zinc | 7440-66-6 | 6.00E-04 | *RE* | NA | | NA | | NA | | NA | |
| **Inorganics** | | | | | | | | | | | |
| Ammonia | 7664-41-7 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Cyanide | 57-12-5 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Cyanide (as Sodium Cyanide) | 143-33-9 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Cyanogen bromide | 506-68-3 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Fluoride (as Sodium Fluoride) | 7681-49-4 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| Perchlorate | 14797-73-0 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| White phosphorus | 7723-14-0 | 1.00E-03 | *RE* | NA | | NA | | NA | | NA | |
| **Total Petroleum Hydrocarbons** | | | | | | | | | | | |
| **TPH-GR0** | | | | | | | | | | | |
| Aliphatics - > C6-C8 | NA | NA | | NA | | NA | | NA | | NA | |
| Aliphatics - > C8-C10 | NA | NA | | NA | | NA | | NA | | NA | |
| Aromatics - >C8-C10 | NA | NA | | NA | | NA | | NA | | NA | |
| **TPH-DR0** | | | | | | | | | | | |
| Aliphatics - >C10-C12 | NA | NA | | NA | | NA | | NA | | NA | |
| Aliphatics - >C12-C16 | NA | NA | | NA | | NA | | NA | | NA | |
| Aliphatics - >C16-C21 | NA | NA | | NA | | NA | | NA | | NA | |
| Aromatics - >C10-C12 | NA | NA | | NA | | NA | | NA | | NA | |
| Aromatics - >C12-C16 | NA | NA | | NA | | NA | | NA | | NA | |
| Aromatics - >C16-C21 | NA | NA | | NA | | NA | | NA | | NA | |
| **TPH-ORO** | | | | | | | | | | | |
| Aliphatics - >C21-C35 | NA | NA | | NA | | NA | | NA | | NA | |
| Aromatics - >C21-C35 | NA | NA | | NA | | NA | | NA | | NA | |

Notes:
e - Estimated by RAGS Part E
RE - RAGS Part E
NA - Not available
Chemicals in MRBCA Process for Petroleum Storage Tanks

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOCs and SVOCs** | | | | | | | | | | | |
| Acenaphthene | 83-32-9 | | 154 | 4.24E+00 | 6.36E-03 | 7.08E+03 | NA | 4.21E-02 | 7.69E-06 | 3.75E-03 | 1.41E+04 |
| Acenaphthylene | 208-96-8 | | 152 | 3.93E+00 | 4.74E-03 | 6.92E+03 | NA | 4.39E-02 | 7.07E-06 | 2.90E-02 | 8.63E+03 |
| Acetone | 67-64-1 | | 58 | 1.00E+06 | 1.59E-03 | 5.75E-01 | NA | 1.24E-01 | 1.14E-05 | 2.27E+02 | 5.80E-01 |
| Acetonitrile | 75-05-8 | | 41 | 1.00E+06 | 1.41E-03 | 1.56E+01 | NA | 1.30E-01 | 1.70E-05 | 9.00E+01 | 4.57E-01 |
| Acrylamide | 79-06-1 | | 71 | 6.40E+05 | 4.10E-08 | 5.00E+01 | NA | 9.70E-02 | 1.28E-05 | 7.00E-03 | 1.56E-01 |
| Acrylic acid | 79-10-7 | | 72 | 1.00E+06 | 4.80E-06 | 1.13E+00 | NA | 9.08E-02 | 1.06E-05 | 3.72E+00 | 2.77E+00 |
| Acrylonitrile | 107-13-1 | | 53 | 7.45E+04 | 5.66E-03 | 8.50E-01 | NA | 1.08E-01 | 1.34E-05 | 1.10E+02 | 1.62E+00 |
| Allyl alcohol | 107-18-6 | | 58 | 3.17E+05 | 2.05E-04 | 2.95E+01 | NA | 1.14E-01 | 1.10E-05 | 2.63E+01 | 1.48E+00 |
| Allyl chloride | 107-05-1 | | 81 | 1.00E+06 | 3.12E-05 | 5.00E+01 | NA | 9.80E-02 | 1.08E-05 | 3.60E+02 | 8.51E+01 |
| Aniline | 62-53-3 | | 93 | 3.60E+04 | 5.82E-05 | 9.12E+00 | NA | 7.00E-02 | 8.30E-06 | 6.69E-01 | 1.20E+01 |
| Anthracene | 120-12-7 | | 178.24 | 4.34E-02 | 2.95E-02 | 2.95E+04 | NA | 3.24E-02 | 7.74E-06 | 2.55E-05 | 2.24E+04 |
| Aroclor 1016 | 12674-11-2 | | 258 | 4.20E-01 | 1.19E-02 | 1.80E+05 | NA | 1.92E-02 | 6.60E-06 | 4.00E-04 | 3.98E+05 |
| Aroclor 1221 | 11104-28-2 | | 201 | 5.90E-01 | 1.41E-01 | 5.80E+03 | NA | 2.85E-02 | 7.00E-06 | 6.70E-03 | 5.01E+04 |
| Aroclor 1242 | 53469-21-9 | | 267 | 3.40E-01 | 2.10E-02 | 6.30E+03 | NA | 1.86E-02 | 6.50E-06 | 4.06E-04 | 3.98E+05 |
| Aroclor 1248 | 12672-29-6 | | 300 | 6.00E-02 | 1.13E-01 | 2.77E+05 | NA | 1.56E-02 | 6.10E-06 | 4.94E-04 | 1.58E+06 |
| Aroclor 1254 | 11097-69-1 | | 327 | 5.70E-02 | 8.20E-02 | 5.30E+05 | NA | 1.56E-02 | 5.00E-06 | 7.71E-05 | 3.16E+06 |
| Aroclor 1260 | 11096-82-5 | | 376 | 8.00E-02 | 1.85E-01 | 6.70E+06 | NA | 1.16E-02 | 6.00E-06 | 4.05E-05 | 6.31E+06 |
| Azobenzene | 103-33-3 | | 182 | 1.60E+00 | 1.89E-03 | 5.32E+04 | NA | 4.96E-02 | 6.36E-06 | 3.02E-04 | 5.86E+04 |
| Benzene | 71-43-2 | 0.005 | 78 | 1.75E+03 | 2.28E-01 | 5.89E+01 | NA | 8.80E-02 | 9.80E-06 | 9.50E+01 | 9.77E+01 |
| Benzidine | 92-87-5 | | 184 | 3.22E+02 | 1.59E-09 | 1.74E+05 | NA | 3.40E-02 | 1.50E-05 | 8.36E-08 | 2.19E+01 |
| Benzo(a)anthracene | 56-55-3 | | 228 | 9.40E-03 | 1.37E-04 | 3.98E+05 | NA | 5.10E-02 | 9.00E-06 | 1.54E-07 | 3.31E+05 |
| Benzo(a)pyrene | 50-32-8 | 0.0002 | 252 | 1.62E-03 | 4.63E-05 | 1.02E+06 | NA | 4.30E-02 | 9.00E-06 | 4.89E-09 | 1.29E+06 |
| Benzo(b)fluoranthene | 205-99-2 | | 252 | 1.50E-03 | 4.55E-03 | 1.23E+06 | NA | 2.26E-02 | 5.56E-06 | 8.06E-08 | 1.29E+06 |
| Benzo(g,h,i)perylene | 191-24-2 | | 276 | 2.60E-04 | 5.82E-06 | 1.58E+06 | NA | 4.90E-02 | 5.65E-05 | 1.00E-10 | 5.01E+06 |
| Benzo(k)fluoranthene | 207-08-9 | | 252.32 | 8.00E-04 | 3.40E-05 | 1.23E+06 | NA | 2.26E-02 | 5.56E-06 | 9.59E-11 | 1.29E+06 |
| Benzoic acid | 65-85-0 | | 122 | 3.50E+03 | 6.31E-05 | 6.00E-01 | NA | 5.36E-02 | 7.97E-06 | 6.51E-03 | 7.41E+01 |
| Benzyl alcohol | 100-51-6 | | 108 | 4.00E+04 | 1.62E-05 | 1.20E+01 | NA | 8.00E-02 | 8.00E-06 | 1.06E-01 | 1.20E+01 |
| 1,1-Biphenyl | 92-52-4 | | 154 | 6.94E+00 | 1.67E-02 | 1.40E+03 | NA | 4.04E-02 | 8.20E-06 | 2.94E+02 | 5.71E+03 |
| Bis(2-chloroethyl)ether | 111-44-4 | | 143 | 1.72E+04 | 7.38E-04 | 1.55E+01 | NA | 6.90E-02 | 7.53E-06 | 1.34E+00 | 3.63E+01 |
| Bis(2-chloroisopropyl)ether | 108-60-1 | | 171 | 1.70E+03 | 4.60E-03 | 5.70E+01 | NA | 6.30E-02 | 6.40E-06 | 8.50E-01 | 3.80E+02 |
| Bis(chloromethyl) ether | 542-88-1 | | 115 | 2.20E+04 | 8.45E-03 | 1.20E+00 | NA | 8.87E-02 | 9.40E-06 | 3.00E+01 | 3.76E+00 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 0.006 | 391 | 3.40E-01 | 4.18E-06 | 1.51E+07 | NA | 3.51E-02 | 3.66E-06 | 6.45E-06 | 2.45E+08 |
| Bromochloromethane | 74-97-5 | | 129 | 2.40E+04 | 3.69E-02 | 2.75E+01 | NA | 9.65E-02 | 1.12E-05 | 1.06E+02 | 2.09E+01 |
| Bromodichloromethane | 75-27-4 | 0.08 | 164 | 6.74E+03 | 6.56E-02 | 5.50E+01 | NA | 2.98E-02 | 1.06E-05 | 5.84E+01 | 4.07E+01 |
| Bromoform | 75-25-2 | 0.08 | 253 | 3.10E+03 | 2.19E-02 | 8.71E+01 | NA | 1.49E-02 | 1.03E-05 | 5.60E+00 | 6.17E+01 |
| Bromomethane | 74-83-9 | | 95 | 1.50E+04 | 2.60E-01 | 9.00E+00 | NA | 7.30E-02 | 1.20E-05 | 1.64E+03 | 1.51E+01 |
| 4-Bromophenyl phenyl ether | 101-55-3 | | 249 | 1.45E+00 | 4.80E-03 | 1.70E+04 | NA | 4.75E-02 | 6.28E-06 | 5.85E-04 | 1.78E+05 |
| n-Butylbenzene | 104-51-8 | | 130 | 1.40E+01 | 5.40E-01 | 2.80E+03 | NA | 7.50E-02 | 7.80E-06 | 8.14E-01 | 1.95E+04 |
| sec-Butylbenzene | 135-98-8 | | 130 | 1.70E+01 | 7.70E-01 | 2.20E+03 | NA | 7.50E-02 | 7.80E-06 | 1.25E+00 | 1.23E+04 |
| tert-Butylbenzene | 98-06-6 | | 130 | 3.00E+01 | 5.00E-01 | 2.20E+03 | NA | 7.50E-02 | 7.80E-06 | 1.76E+00 | 1.51E+04 |
| Butyl benzyl phthalate | 85-68-7 | | 312 | 2.69E+00 | 5.17E-05 | 5.75E+04 | NA | 1.74E-02 | 4.83E-06 | 1.20E-05 | 6.92E+04 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbazole | 86-74-8 | | 167 | 7.48E+00 | 6.27E-07 | 3.39E+03 | NA | 3.90E-02 | 7.03E-06 | 2.66E-04 | 1.70E+03 |
| Carbon disulfide | 75-15-0 | | 76 | 1.19E+03 | 1.24E+00 | 4.57E+01 | NA | 1.04E-01 | 1.00E-05 | 3.40E+02 | 8.71E+01 |
| Carbon tetrachloride | 56-23-5 | 0.005 | 154 | 7.93E+02 | 1.25E+00 | 1.74E+02 | NA | 7.80E-02 | 8.80E-06 | 1.12E+02 | 2.75E+02 |
| p-Chloroaniline | 106-47-8 | | 128 | 5.30E+03 | 1.36E-05 | 6.61E+01 | NA | 4.83E-02 | 1.01E-05 | 2.35E-02 | 5.25E+01 |
| Chlorobenzene | 108-90-7 | | 113 | 4.72E+02 | 1.52E-01 | 2.19E+02 | NA | 7.30E-02 | 8.70E-06 | 1.21E+01 | 4.37E+02 |
| Chloroethane | 75-00-3 | | 65 | 5.70E+03 | 4.50E-01 | 1.50E+01 | NA | 1.00E-01 | 1.20E-05 | 1.20E+03 | 3.80E+01 |
| Chloroform | 67-66-3 | 0.08 | 119 | 7.92E+03 | 1.52E-01 | 3.98E+01 | NA | 1.04E-01 | 1.00E-05 | 1.98E+02 | 3.31E+01 |
| Chloromethane | 74-87-3 | | 51 | 8.20E+03 | 9.80E-01 | 3.50E+01 | NA | 1.10E-01 | 6.50E-06 | 3.77E+03 | 1.23E+01 |
| 2-Chloronaphthalene | 91-58-7 | | 160 | 1.20E+01 | 1.30E-02 | 1.60E+03 | NA | 2.50E-02 | 8.80E-06 | 1.70E-02 | 6.51E+03 |
| 2-Chlorophenol | 95-57-8 | | 129 | 2.20E+04 | 1.60E-02 | 3.88E+02 | NA | 5.01E-02 | 9.46E-06 | 1.42E+00 | 1.45E+02 |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | | 205 | 1.43E+00 | 1.30E-02 | 1.31E+04 | NA | 4.89E-02 | 6.19E-06 | 1.66E-03 | 1.10E+05 |
| 2-Chlorotoluene | 95-49-8 | | 127 | 1.54E+02 | 1.35E-01 | 4.07E+02 | NA | 7.01E-02 | 8.01E-06 | 3.90E-03 | 1.59E+03 |
| 4-Chlorotoluene | 106-43-4 | | 127 | 1.18E+02 | 1.33E-01 | 4.96E+02 | NA | 6.76E-02 | 7.96E-06 | 2.27E+00 | 2.02E+03 |
| Chrysene | 218-01-9 | | 228.3 | 1.60E-03 | 3.88E-03 | 3.98E+05 | NA | 2.48E-02 | 6.21E-06 | 7.80E-09 | 3.31E+05 |
| Dibenzo(a,h)anthracene | 53-70-3 | | 278.4 | 2.49E-03 | 6.03E-07 | 3.80E+06 | NA | 2.02E-02 | 5.18E-06 | 2.10E-11 | 5.01E+06 |
| Dibenzofuran | 132-64-9 | | 168 | 4.22E+00 | 8.73E-03 | 7.76E+03 | NA | 6.01E-02 | 1.00E-05 | 1.64E-03 | 9.92E+03 |
| Dibromochloromethane | 124-48-1 | 0.08 | 208 | 2.60E+03 | 3.21E-02 | 6.31E+01 | NA | 1.96E-02 | 1.05E-05 | 1.50E+01 | 5.01E+01 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.0002 | 236 | 1.23E+03 | 6.03E-03 | 2.80E+01 | NA | 7.00E-06 | 7.00E-06 | 7.60E-01 | 4.79E+02 |
| Dibutyl phthalate | 84-74-2 | | 278 | 1.12E+01 | 3.85E-08 | 3.39E+04 | NA | 4.38E-02 | 7.86E-06 | 4.25E-05 | 4.07E+04 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.6 | 147 | 1.56E+02 | 7.79E-02 | 6.17E+02 | NA | 6.90E-02 | 7.90E-06 | 1.36E+00 | 1.91E+03 |
| 1,3-Dichlorobenzene | 541-73-1 | | 150 | 1.60E+02 | 7.80E-02 | 6.20E+02 | NA | 6.90E-02 | 7.90E-06 | 2.30E+00 | 1.91E+03 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.075 | 147 | 7.38E+01 | 9.96E-02 | 6.17E+02 | NA | 6.90E-02 | 7.90E-06 | 1.06E+00 | 1.91E+03 |
| 3,3-Dichlorobenzidine | 91-94-1 | | 253 | 3.11E+00 | 1.64E-07 | 7.24E+02 | NA | 1.94E-02 | 6.74E-06 | 2.20E-07 | 1.62E+03 |
| Dichlorodifluoromethane | 75-71-8 | | 120 | 2.80E+02 | 4.10E+00 | 5.80E+01 | NA | 8.00E-02 | 1.10E-05 | 4.80E+03 | 6.54E+01 |
| 1,1-Dichloroethane | 75-34-3 | | 99 | 5.10E+03 | 2.30E-01 | 3.20E+01 | NA | 7.40E-02 | 1.10E-05 | 2.28E+02 | 5.75E+01 |
| 1,1-Dichloroethylene | 75-35-4 | 0.007 | 97 | 2.25E+03 | 1.07E+00 | 5.89E+01 | NA | 9.00E-02 | 1.04E-05 | 5.91E+02 | 1.32E+02 |
| cis-1,2-Dichloroethylene | 156-59-2 | 0.07 | 97 | 3.50E+03 | 1.67E-01 | 3.55E+01 | NA | 7.36E-02 | 1.13E-05 | 1.75E+02 | 7.24E+01 |
| trans-1,2-Dichloroethylene | 156-60-5 | 0.1 | 97 | 6.30E+03 | 3.85E-01 | 5.25E+01 | NA | 7.07E-02 | 1.19E-05 | 3.52E+02 | 1.18E+02 |
| 2,4-Dichlorophenol | 120-83-2 | | 163 | 4.50E+03 | 1.30E-04 | 1.47E+02 | NA | 3.46E-02 | 8.77E-06 | 7.15E-02 | 6.31E+02 |
| 1,2-Dichloropropane | 78-87-5 | 0.005 | 113 | 2.80E+03 | 1.15E-01 | 4.37E+01 | NA | 7.82E-02 | 8.73E-06 | 5.00E+01 | 1.78E+02 |
| 1,3-Dichloropropene | 542-75-6 | | 111 | 2.80E+03 | 7.26E-01 | 4.57E+01 | NA | 6.26E-02 | 1.00E-05 | 3.12E+01 | 5.62E+01 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 0.4 | 371 | 1.71E-03 | 9.78E-01 | 3.80E+05 | NA | 3.56E-02 | 3.72E-06 | 8.25E-05 | 1.30E+08 |
| Diethyl phthalate | 84-66-2 | | 222 | 1.08E+03 | 1.85E-05 | 2.88E+02 | NA | 2.56E-02 | 6.35E-06 | 1.65E-03 | 4.42E+02 |
| Diisopropyl ether (DIPE) | 108-20-3 | | 102 | 2.67E+03 | 1.63E-01 | 6.46E+01 | NA | 6.81E-02 | 7.15E-06 | 7.76E+01 | 1.55E+02 |
| 2,4-Dimethylphenol | 105-67-9 | | 122 | 7.87E+03 | 8.20E-05 | 2.09E+02 | NA | 5.84E-02 | 8.69E-06 | 1.26E-01 | 4.07E+02 |
| 2,6-Dimethylphenol | 576-26-1 | | 122 | 6.05E+03 | 2.73E-04 | 1.60E+03 | NA | 5.84E-02 | 8.69E-06 | NA | NA |
| Dimethyl phthalate | 131-11-3 | | 194 | 4.00E+03 | 4.31E-06 | 4.00E+01 | NA | 5.68E-02 | 6.30E-06 | 9.12E-03 | 4.57E+01 |
| 1,3-Dinitrobenzene | 99-65-0 | | 168 | 5.33E+01 | 1.53E-05 | 1.06E+02 | NA | 2.80E-01 | 7.60E-06 | 2.49E-04 | 4.27E+01 |
| 2,4-Dinitrophenol | 51-28-5 | | 184 | 2.79E+03 | 1.82E-05 | 1.00E-02 | NA | 2.73E-02 | 9.06E-06 | 1.14E-04 | 5.37E+01 |
| 2,4-Dinitrotoluene | 121-14-2 | | 182 | 2.70E+02 | 3.80E-06 | 9.55E+01 | NA | 2.03E-01 | 7.06E-06 | 1.74E-04 | 1.50E+02 |
| 2,6-Dinitrotoluene | 606-20-2 | | 182 | 1.82E+02 | 3.06E-05 | 6.92E+01 | NA | 3.27E-02 | 7.26E-06 | 5.70E-04 | 1.50E+02 |
| 4-Amino-2,6-dinitrotoluene | 19406-51-0 | | 197 | 3.64E+01 | 1.74E-07 | 3.63E+02 | NA | 5.60E-02 | 7.31E-06 | 5.86E-07 | 4.17E+02 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Amino-4,6-dinitrotoluene | 35572-78-2 | | 197 | 1.73E+01 | 1.19E-07 | 5.62E+02 | NA | 5.60E-02 | 7.30E-06 | 1.19E-07 | 6.31E+02 |
| Di-n-octylphthalate | 117-84-0 | | 391 | 2.00E-02 | 2.74E-03 | 2.39E+03 | NA | 1.51E-02 | 3.58E-06 | 4.47E-06 | 3.64E+08 |
| 1,4-Dioxane | 123-91-1 | | 88 | 1.00E+06 | 1.97E-04 | 1.70E+01 | NA | 2.30E-01 | 1.00E-05 | 3.80E+01 | 4.79E-01 |
| Diphenylamine | 122-39-4 | | 169 | 5.30E+01 | 1.39E-04 | 6.00E+02 | NA | 6.08E-02 | 6.30E-06 | 4.26E-03 | 1.96E+03 |
| 1,2-Diphenylhydrazine | 122-66-7 | | 184 | 1.84E+03 | 1.42E-07 | 6.61E+02 | NA | 5.62E-02 | 5.70E-06 | 2.60E-05 | 1.14E+03 |
| Ethanol | 64-17-5 | | 46 | 2.96E+05 | 2.77E-04 | 1.19E+00 | NA | 1.15E-01 | 1.22E-05 | 7.76E+01 | 9.95E-01 |
| Ethylbenzene | 100-41-4 | 0.7 | 106 | 1.69E+02 | 3.23E-01 | 3.63E+02 | NA | 7.50E-02 | 7.80E-06 | 9.60E+00 | 1.07E+03 |
| Ethylene dibromide (EDB) | 106-93-4 | 0.00005 | 188 | 4.32E+03 | 2.93E-02 | 5.37E+01 | NA | 2.17E-02 | 1.90E-05 | 1.10E+01 | 1.02E+02 |
| Ethylene dichloride (EDC) | 107-06-2 | 0.005 | 99 | 8.52E+03 | 4.01E-02 | 1.74E+01 | NA | 1.04E-01 | 9.90E-06 | 8.13E+01 | 6.76E+01 |
| Ethylene glycol | 107-21-1 | | 62 | 1.00E+06 | 2.46E-06 | 4.00E+00 | NA | 1.08E-01 | 1.22E-05 | 7.00E-02 | 6.31E-02 |
| Ethylene thiourea | 96-45-7 | | 102 | 2.00E+04 | 1.26E-08 | 1.00E+01 | NA | 7.15E-02 | 1.02E-05 | 8.36E-02 | 3.23E-01 |
| Ethyl-tert-butyl-ether (ETBE) | 637-92-3 | | 102 | 5.03E+03 | 9.99E-02 | 3.72E+01 | NA | 6.95E-02 | 7.34E-06 | 9.00E+01 | 7.59E+01 |
| Fluoranthene | 206-44-0 | | 202 | 2.06E-01 | 6.60E-04 | 1.07E+05 | NA | 3.02E-02 | 6.35E-06 | 8.13E-06 | 8.51E+04 |
| Fluorene | 86-73-7 | | 166 | 1.98E+00 | 2.61E-03 | 1.38E+04 | NA | 3.63E-02 | 7.88E-06 | 3.24E-03 | 1.05E+04 |
| Formaldehyde | 50-00-0 | | 30 | 4.00E+05 | 1.38E-05 | 2.19E+00 | NA | 1.80E-01 | 2.00E-05 | 3.88E+03 | 2.24E+00 |
| n-Hexane | 110-54-3 | | 86 | 9.50E+00 | 7.38E+01 | 8.90E+02 | NA | 2.00E-01 | 7.77E-06 | 1.52E+02 | 1.95E+03 |
| Hexachlorobenzene | 118-74-1 | 0.001 | 285 | 6.20E+00 | 5.41E-02 | 5.50E+04 | NA | 5.42E-02 | 5.91E-06 | 1.23E-05 | 7.24E+05 |
| Hexachlorobutadiene | 87-68-3 | | 261 | 3.23E+00 | 3.34E-01 | 5.37E+04 | NA | 5.61E-02 | 6.16E-06 | 1.77E-01 | 5.21E+04 |
| Hexachlorocyclopentadiene | 77-47-4 | 0.05 | 273 | 1.80E+00 | 1.11E+00 | 2.00E+05 | NA | 1.61E-02 | 7.21E-06 | 7.32E-02 | 4.22E+04 |
| Hexachloroethane | 67-72-1 | | 237 | 5.00E+01 | 1.59E-01 | 1.78E+03 | NA | 2.50E-03 | 6.80E-06 | 4.72E-01 | 1.08E+04 |
| Hexachlorophene | 70-30-4 | | 407 | 1.40E+02 | 2.25E-11 | 5.00E+03 | NA | 8.00E-02 | 8.00E-06 | 2.74E-12 | 8.36E+06 |
| HMX | 2691-41-0 | | 296 | 1.40E+02 | 3.55E-08 | 3.70E+01 | NA | 3.74E-02 | 6.34E-06 | 4.75E-15 | 5.00E-02 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | | 276 | 2.20E-05 | 6.56E-05 | 3.47E+06 | NA | 1.90E-02 | 5.66E-06 | 1.40E-10 | 4.98E+06 |
| Isophorone | 78-59-1 | | 138 | 1.20E+04 | 2.72E-04 | 4.68E+01 | NA | 6.23E-02 | 6.76E-06 | 4.10E-01 | 4.15E+02 |
| Isopropylbenzene (Cumene) | 98-82-8 | | 120 | 6.13E+01 | 3.57E+00 | 4.54E+02 | NA | 7.50E-02 | 7.10E-06 | 4.60E+00 | 2.82E+03 |
| 4-Isopropyltoluene | 99-87-6 | | 134 | 1.72E+01 | 4.66E-01 | 2.29E+03 | NA | 5.72E-02 | 6.73E-06 | 1.08E+00 | 1.38E+04 |
| Maleic anhydride | 108-31-6 | | 98 | 4.91E+03 | 1.61E-04 | 2.57E+01 | NA | 9.50E-02 | 1.11E-05 | 1.34E-03 | 4.17E+01 |
| Methanol | 67-56-1 | | 32 | 1.00E+06 | 1.87E-04 | 9.00E+00 | NA | 1.50E-01 | 1.64E-05 | 1.22E+02 | 2.33E-01 |
| Methyl butyl ketone | 591-78-6 | | 100 | 1.79E+04 | 3.38E-03 | 1.79E+01 | NA | 6.96E-02 | 7.75E-06 | 1.11E+01 | 3.04E+01 |
| Methyl ethyl ketone | 78-93-3 | | 72 | 2.23E+05 | 2.33E-03 | 4.50E+00 | NA | 8.95E-02 | 9.80E-06 | 9.10E+01 | 1.80E+00 |
| 2-Methyl-4,6-dinitrophenol | 534-52-1 | | 198 | 3.00E+03 | 1.07E-07 | 3.16E-02 | NA | 5.31E-02 | 7.27E-06 | 2.87E-05 | 1.17E+02 |
| Methylene chloride | 75-09-2 | 0.005 | 85 | 1.30E+04 | 8.98E-02 | 1.17E+01 | NA | 1.01E-01 | 1.17E-05 | 4.55E+02 | 2.19E+01 |
| Methyl iodide | 74-88-4 | | 142 | 1.39E+04 | 2.16E-01 | 1.58E+02 | NA | 1.02E-01 | 1.17E-05 | 3.79E+02 | 3.55E+01 |
| Methyl isobutyl ketone | 108-10-1 | | 100 | 1.90E+04 | 5.66E-03 | 1.34E+02 | NA | 7.50E-02 | 7.80E-06 | 1.45E+02 | 1.45E+01 |
| 2-Methylnaphthalene | 91-57-6 | | 142 | 2.54E+01 | 1.85E-02 | 4.32E+03 | NA | 6.29E-02 | 7.20E-06 | 6.57E-02 | 5.20E+03 |
| 2-Methylphenol | 95-48-7 | | 108 | 2.60E+04 | 4.92E-05 | 9.12E+01 | NA | 7.40E-02 | 8.30E-06 | 3.20E-01 | 1.15E+02 |
| 3-Methylphenol | 108-39-4 | | 108 | 2.27E+04 | 3.55E-05 | 3.46E+01 | NA | 7.40E-02 | 1.00E-05 | 1.40E-01 | 1.15E+02 |
| 4-Methylphenol | 106-44-5 | | 108 | 2.15E+04 | 4.10E-05 | 4.90E+01 | NA | 7.40E-02 | 1.00E-05 | 1.30E-01 | 1.15E+02 |
| Methyl teriary butyl ether (MTBE) | 1634-04-4 | | 88 | 5.10E+04 | 2.41E-02 | 1.12E+01 | NA | 8.00E-02 | 1.00E-05 | 2.49E+02 | 7.59E+01 |
| Methyl-2,4,6-trinitrophenylnitramine | 479-45-8 | | 287 | 7.50E+01 | 8.31E-11 | 2.34E+02 | NA | 5.69E-02 | 6.40E-06 | 4.00E-10 | 1.10E+02 |
| Naphthalene | 91-20-3 | | 128 | 3.10E+01 | 1.98E-02 | 2.00E+03 | NA | 5.90E-02 | 7.50E-06 | 8.89E-02 | 1.48E+03 |
| 2-Nitroaniline | 88-74-4 | | 138 | 1.26E+03 | 2.08E-05 | 2.69E+01 | NA | 5.99E-02 | 7.18E-06 | 4.75E-03 | 1.05E+02 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-Nitroaniline | 99-09-2 | | 138 | 4.56E+02 | 2.31E-07 | 3.94E+01 | NA | 6.73E-02 | 8.59E-06 | 1.39E-05 | 4.17E+01 |
| 4-Nitroaniline | 100-01-6 | | 138 | 6.49E+02 | 3.33E-08 | 1.12E+01 | NA | 6.69E-02 | 8.59E-06 | 2.86E-06 | 1.18E+01 |
| Nitrobenzene | 98-95-3 | | 123 | 2.09E+03 | 9.84E-04 | 6.46E+01 | NA | 7.60E-02 | 8.60E-06 | 2.44E-01 | 6.46E+01 |
| Nitroglycerin | 55-63-0 | | 227 | 6.70E+04 | 3.40E-06 | 9.25E+01 | NA | 5.53E-02 | 7.34E-06 | 1.00E-04 | 1.00E+02 |
| 2-Nitrophenol | 88-75-5 | | 139 | 1.73E+04 | 2.21E-05 | 2.09E+01 | NA | 6.87E-02 | 8.47E-06 | 5.03E-02 | 2.23E+02 |
| 4-Nitrophenol | 100-02-7 | | 139 | 4.49E+03 | 3.24E-08 | 3.16E+00 | NA | 6.73E-02 | 8.66E-06 | 1.91E-05 | 5.33E+01 |
| n-Nitrosodimethylamine | 62-75-9 | | 74 | 1.00E+06 | 7.46E-05 | 1.20E+01 | NA | 1.34E-01 | 9.72E-06 | 5.37E+00 | 2.30E-01 |
| n-Nitrosodi-n-propylamine | 621-64-7 | | 130 | 9.89E+03 | 9.35E-05 | 2.00E+01 | NA | 5.45E-02 | 8.17E-06 | 4.00E-01 | 2.24E+01 |
| n-Nitrosodiphenylamine | 86-30-6 | | 198 | 3.51E+01 | 2.05E-04 | 1.29E+03 | NA | 3.12E-02 | 6.35E-06 | 9.88E-02 | 1.45E+03 |
| n-Nitrosopyrrolidine | 930-55-2 | | 100 | 7.80E+05 | 7.48E-07 | 6.50E-01 | NA | 8.00E-02 | 8.00E-06 | 1.75E-01 | 1.70E+00 |
| 2-Nitrotoluene | 88-72-2 | | 137 | 6.00E+02 | 1.87E-03 | 1.41E+02 | NA | 6.47E-02 | 7.73E-06 | 1.50E-01 | 2.28E+02 |
| 3-Nitrotoluene | 99-08-1 | | 137 | 4.98E+02 | 2.24E-03 | 1.41E+02 | NA | 6.42E-02 | 7.69E-06 | 1.50E-01 | 2.28E+02 |
| 4-Nitrotoluene | 99-99-0 | | 137 | 4.00E+02 | 2.29E-03 | 1.41E+02 | NA | 6.40E-02 | 7.70E-06 | 1.20E-01 | 2.28E+02 |
| Pentachlorobenzene | 608-93-5 | | 250 | 1.33E+00 | 2.91E-02 | 4.00E+04 | NA | 6.70E-02 | 6.30E-06 | 1.67E-03 | 1.66E+05 |
| Pentachloronitrobenzene | 82-68-8 | | 295 | 5.50E-01 | 3.28E-03 | 2.66E+04 | NA | 1.59E-02 | 6.10E-06 | 1.13E-04 | 1.07E+05 |
| Pentachlorophenol | 87-86-5 | 0.001 | 266 | 1.95E+03 | 1.00E-06 | 5.92E+02 | NA | 5.60E-02 | 6.10E-06 | 1.70E-05 | 5.50E+04 |
| Pentaerythritol tetranitrate | 78-11-5 | | 316 | 2.66E+01 | 5.60E-05 | 6.29E+03 | NA | 4.48E-02 | 6.20E-06 | 8.63E-05 | 7.31E+03 |
| Phenanthrene | 85-01-8 | | 178 | 9.94E-01 | 5.40E-03 | 1.41E+04 | NA | 3.33E-02 | 7.47E-06 | 6.80E-04 | 2.24E+04 |
| Phenol | 108-95-2 | | 94 | 8.28E+04 | 1.63E-05 | 2.88E+01 | NA | 8.20E-02 | 9.10E-06 | 4.63E-01 | 3.24E+01 |
| m-Phenylenediamine | 108-45-2 | | 108 | 2.38E+05 | 3.91E-09 | 1.10E+00 | NA | 6.63E-02 | 9.90E-06 | 2.28E-02 | 4.06E-01 |
| Polychlorinated biphenyls (PCBs) | 1336-36-3 | 0.0005 | 326 | 4.30E-02 | 1.16E-02 | 3.09E+05 | NA | 1.04E-01 | 1.00E-05 | 7.60E-05 | 2.00E+06 |
| n-Propylbenzene | 103-65-1 | | 120 | 5.22E+01 | 4.31E-01 | 7.41E+02 | NA | 7.50E-02 | 7.80E-06 | 2.71E+00 | 5.37E+03 |
| Pyrene | 129-00-0 | | 202 | 1.35E-01 | 4.51E-04 | 1.05E+05 | NA | 2.72E-02 | 7.24E-06 | 4.25E-06 | 8.51E+04 |
| RDX | 121-82-4 | | 173 | 9.33E+02 | 2.28E-06 | 6.31E+01 | NA | 6.65E-02 | 6.39E-06 | 1.00E-09 | 7.41E+00 |
| Styrene | 100-42-5 | 0.1 | 104 | 3.10E+02 | 1.13E-01 | 7.76E+02 | NA | 7.10E-02 | 8.00E-06 | 6.24E+00 | 7.94E+02 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | | 168 | 1.10E+03 | 9.92E-02 | 7.90E+01 | NA | 7.10E-02 | 7.90E-06 | 1.22E+01 | 8.57E+02 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | | 168 | 2.97E+03 | 1.41E-02 | 9.33E+01 | NA | 7.10E-02 | 7.90E-06 | 5.17E+00 | 1.55E+02 |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | | 216 | 3.00E-01 | 4.99E-02 | 1.60E+03 | NA | 2.11E-02 | 8.80E-06 | 5.40E-03 | 3.72E+04 |
| Tetrachloroethylene | 127-18-4 | 0.005 | 166 | 2.00E+02 | 7.54E-01 | 1.55E+02 | NA | 7.20E-02 | 8.20E-06 | 1.84E+01 | 9.23E+02 |
| Tetrahydrofuran | 109-99-9 | | 72 | 1.00E+06 | 2.89E-03 | 9.50E-01 | NA | 9.80E-02 | 1.10E-05 | 1.59E+02 | 4.22E+00 |
| Tertiary-amyl-methyl-ether (TAME) | 994-05-8 | | 102 | 4.29E+03 | 1.30E-01 | 4.17E+01 | NA | 6.99E-02 | 7.37E-06 | 9.97E+01 | 8.91E+01 |
| Tertiary-butyl-alcohol (TBA) | 75-65-0 | | 74 | 2.35E+05 | 5.42E-04 | 4.22E+00 | NA | 8.52E-02 | 9.11E-06 | 3.14E+01 | 4.90E+00 |
| Toluene | 108-88-3 | 1 | 92 | 5.26E+02 | 2.72E-01 | 1.82E+02 | NA | 8.70E-02 | 8.60E-06 | 2.82E+01 | 3.47E+02 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.07 | 181 | 3.00E+02 | 5.80E-02 | 1.78E+03 | NA | 3.00E-02 | 8.20E-06 | 3.36E+01 | 8.44E+03 |
| 1,3,5-Trichlorobenzene | 108-70-3 | | 181 | 6.01E+00 | 8.98E-02 | 7.08E+02 | NA | 6.25E-02 | 7.66E-06 | 1.11E-01 | 1.55E+04 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.2 | 133 | 1.33E+03 | 7.05E-01 | 1.10E+02 | NA | 7.80E-02 | 8.80E-06 | 1.24E+02 | 4.79E+02 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.005 | 133 | 4.42E+03 | 3.74E-02 | 5.01E+01 | NA | 7.80E-02 | 8.80E-06 | 2.52E+01 | 1.02E+02 |
| Trichloroethylene | 79-01-6 | 0.005 | 131 | 1.10E+03 | 4.22E-01 | 1.66E+02 | NA | 7.90E-02 | 9.10E-06 | 7.20E+01 | 2.95E+02 |
| Trichlorofluoromethane | 75-69-4 | | 90 | 2.05E+03 | 3.97E+00 | 1.60E+02 | NA | 8.70E-02 | 1.30E-05 | 6.87E+02 | 1.35E+02 |
| 2,4,5-Trichlorophenol | 95-95-4 | | 197 | 1.20E+03 | 1.78E-04 | 1.60E+03 | NA | 2.91E-02 | 7.03E-06 | 1.63E-02 | 2.79E+03 |
| 2,4,6-Trichlorophenol | 88-06-2 | | 197 | 8.00E+02 | 3.19E-04 | 3.81E+02 | NA | 3.18E-02 | 6.25E-06 | 1.18E-02 | 2.79E+03 |
| 1,2,3-Trichloropropane | 96-18-4 | | 147 | 1.75E+03 | 1.41E-02 | 5.10E+01 | NA | 7.10E-02 | 7.90E-06 | 3.70E+00 | 3.19E+02 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichlorotrifluoroethane | 76-13-1 | | 187 | 1.70E+02 | 2.16E+01 | 3.72E+02 | NA | 2.88E-02 | 8.07E-06 | 3.60E+02 | 1.23E+03 |
| 1,2,4-Trimethylbenzene | 95-63-6 | | 120 | 5.70E+01 | 2.53E-01 | 3.72E+03 | NA | 7.50E-02 | 7.10E-06 | 1.59E+00 | 4.47E+03 |
| 1,3,5-Trimethylbenzene | 108-67-8 | | 120 | 4.82E+01 | 3.60E-01 | 8.19E+02 | NA | 7.50E-02 | 7.10E-06 | 2.13E+00 | 5.01E+03 |
| 1,3,5-Trinitrobenzene | 99-35-4 | | 213 | 2.78E+02 | 1.36E-08 | 1.41E+01 | NA | 8.00E-02 | 8.00E-06 | 9.90E-05 | 2.79E+01 |
| 2,4,6-Trinitrotoluene (TNT) | 118-96-7 | | 227 | 1.30E+02 | 1.87E-05 | 3.08E+02 | NA | 5.41E-02 | 6.57E-06 | 1.24E-04 | 9.85E+01 |
| Vinyl chloride (for residential scenario) | 75-01-4 | 0.002 | 63 | 2.76E+03 | 1.11E+00 | 1.86E+01 | NA | 1.06E-01 | 1.23E-06 | 2.80E+03 | 4.17E+01 |
| Vinyl chloride (for occupational scenatio) | 75-01-4 | 0.002 | 63 | 2.76E+03 | 1.11E+00 | 1.86E+01 | NA | 1.06E-01 | 1.23E-06 | 2.80E+03 | 4.17E+01 |
| Xylenes (total) | 1330-20-7 | 10 | 106 | 1.61E+02 | 3.01E-01 | 4.07E+02 | NA | 7.00E-02 | 7.80E-06 | 8.06E+00 | 1.23E+03 |
| **Pesticides** | | | | | | | | | | | |
| Acetochlor | 34256-82-1 | | 270 | 2.23E+02 | 2.86E-06 | 2.00E+02 | NA | 5.01E-02 | 6.00E-06 | 3.40E-08 | 3.00E+02 |
| Acifluorfen | 62476-59-9 | | 362 | 2.50E+05 | 8.31E-13 | 1.13E+02 | NA | 1.45E-02 | 4.40E-06 | 9.75E-09 | 2.36E+00 |
| Acrolein | 107-02-8 | | 56 | 2.10E+05 | 4.90E-03 | 2.10E+01 | NA | 1.10E-01 | 1.20E-05 | 2.65E+02 | 7.94E-01 |
| Alachlor | 15972-60-8 | 0.002 | 270 | 2.40E+02 | 3.41E-07 | 1.91E+02 | NA | 1.94E-02 | 5.83E-06 | 2.20E-05 | 2.34E+03 |
| Aldicarb | 116-06-3 | 0.003 | 190 | 6.03E+03 | 5.90E-08 | 1.60E+01 | NA | 3.05E-02 | 7.20E-06 | 2.90E-05 | 2.29E+01 |
| Aldicarb sulfone | 1646-88-4 | 0.003 | 222 | 7.80E+03 | 1.38E-07 | 3.00E+00 | NA | 5.55E-02 | 5.79E-06 | 9.00E-05 | 2.16E-01 |
| Aldrin | 309-00-2 | | 365 | 1.80E-01 | 6.97E-03 | 2.45E+06 | NA | 1.32E-02 | 4.86E-06 | 1.67E-05 | 5.62E+06 |
| Ametryn | 834-12-8 | | 227 | 1.85E+02 | 1.88E-07 | 3.89E+02 | NA | 4.24E-02 | 5.70E-06 | 1.81E-07 | 7.67E+02 |
| Atrazine | 1912-24-9 | 0.003 | 216 | 2.80E+01 | 1.83E-07 | 4.89E+02 | NA | 5.64E-02 | 5.58E-06 | 3.00E-07 | 6.60E+02 |
| Baygon | 114-26-1 | | 209 | 1.86E+03 | 1.64E-05 | 1.60E+02 | NA | 5.67E-02 | 7.41E-06 | NA | NA |
| Butylate | 2008-41-5 | | 217 | 4.60E+01 | 3.50E-03 | 1.26E+02 | NA | 4.89E-02 | 5.14E-06 | 1.30E-02 | 7.13E+03 |
| Captan | 133-06-2 | | 301 | 3.30E+00 | 2.95E-04 | 1.98E+02 | NA | 1.83E-02 | 4.90E-06 | 7.50E-06 | 6.98E+01 |
| Carbaryl | 63-25-2 | | 201 | 8.26E+01 | 5.37E-02 | 1.02E+02 | NA | 2.78E-02 | 5.60E-06 | 1.36E-06 | 2.24E+02 |
| Carbofuran | 1563-66-2 | 0.04 | 221 | 3.20E+01 | 1.27E-07 | 4.80E+01 | NA | 5.35E-02 | 5.40E-06 | 8.30E-06 | 2.00E+02 |
| Carboxin | 5234-68-4 | | 235 | 1.99E+02 | 1.15E+01 | 8.46E+02 | NA | 4.48E-02 | 6.14E-06 | 4.82E-08 | 1.05E+03 |
| Chloramben | 133-90-4 | | 206 | 7.00E+02 | 1.59E-05 | 1.90E+02 | NA | 5.71E-02 | 7.46E-06 | 1.94E-05 | 3.02E+02 |
| Chlordane (technical) | 12789-03-6 | | 410 | 5.60E-02 | 1.99E-03 | 1.20E+05 | NA | 1.18E-02 | 4.37E-06 | 1.00E-05 | 3.98E+06 |
| Chlordane, gamma | 57-74-9 | 0.002 | 410 | 2.28E-02 | 4.11E-03 | 3.93E+05 | NA | 3.32E-02 | 4.65E-06 | 4.17E-06 | 9.25E+06 |
| Chlorothalonil | 1897-45-6 | | 266 | 6.00E-01 | 8.20E-05 | 5.78E+03 | NA | 4.90E-02 | 6.57E-06 | 2.41E-06 | 2.88E+03 |
| Chlorpyrifos | 2921-88-2 | | 351 | 4.00E-01 | 1.20E-04 | 1.86E+03 | NA | 4.85E-02 | 5.11E-06 | 1.87E-05 | 4.57E+04 |
| Coumaphos | 56-72-4 | | 363 | 3.86E-01 | 2.17E-07 | 1.60E+04 | NA | 3.53E-02 | 4.81E-06 | 4.22E-09 | 1.82E+04 |
| Cyanazine | 21725-46-2 | | 241 | 1.70E+02 | 1.05E+01 | 2.00E+02 | NA | 4.33E-02 | 5.83E-06 | 7.28E-09 | 5.25E+01 |
| Dacthal | 1861-32-1 | | 332 | 2.20E-01 | 9.35E-06 | 4.68E+04 | NA | 4.20E-02 | 2.05E+00 | 1.13E-07 | 5.13E+04 |
| Dalapon, sodium salt | 75-99-0 | 0.2 | 143 | 7.43E+03 | 2.64E-06 | 2.30E+00 | NA | 6.98E-02 | 8.70E-06 | 1.30E-01 | 3.98E+01 |
| DDD | 72-54-8 | | 320 | 9.00E-02 | 1.64E-04 | 1.00E+06 | NA | 1.69E-02 | 4.76E-06 | 8.66E-07 | 7.47E+05 |
| DDE | 72-55-9 | | 318 | 1.20E-01 | 8.61E-04 | 4.47E+06 | NA | 1.44E-02 | 5.87E-06 | 5.66E-06 | 9.90E+05 |
| DDT | 50-29-3 | | 354 | 2.50E-02 | 3.32E-04 | 2.63E+06 | NA | 1.37E-02 | 4.95E-06 | 3.93E-07 | 6.23E+06 |
| DEF | 78-48-8 | | 315 | 2.30E+00 | 1.20E-05 | 3.16E+05 | NA | 1.45E-02 | 5.90E-06 | 1.38E-05 | 5.01E+05 |
| Demeton | 8065-48-3 | | 258 | 7.20E+02 | 6.65E-03 | 2.69E+02 | NA | 4.56E-02 | 5.45E-06 | 1.00E-04 | 9.33E+02 |
| Diazinon | 333-41-5 | | 304 | 4.00E+01 | 4.63E-06 | 2.29E+02 | NA | 1.80E-02 | 4.90E-06 | 8.40E-05 | 7.31E+03 |
| Dicamba | 1918-00-9 | | 221 | 4.50E+03 | 8.94E-08 | 1.15E+02 | NA | 6.02E-02 | 6.69E-06 | 9.70E-05 | 1.38E+02 |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 94-75-7 | 0.07 | 221 | 6.77E+02 | 4.18E-07 | 8.91E+02 | NA | 5.90E-02 | 6.50E-06 | 2.40E-05 | 4.14E+02 |
| 4-(2,4-Dichlorophenoxy) butyric acid (2,4-DB) | 94-82-6 | | 249 | 5.30E+01 | 9.39E-08 | 5.30E+02 | NA | 4.41E-02 | 6.13E-06 | 1.82E-07 | 6.12E+03 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichloroprop (2,4-DP) | 120-36-5 | | 235 | 2.30E+02 | 9.00E-07 | 2.86E-02 | NA | 4.70E-02 | 6.43E-06 | 1.60E-05 | 1.83E+03 |
| Dieldrin | 60-57-1 | | 381 | 1.95E-01 | 6.19E-04 | 2.14E+04 | NA | 1.25E-02 | 4.74E-06 | 9.96E-07 | 2.82E+05 |
| Dimethoate | 60-51-5 | | 229 | 2.38E+04 | 4.31E-09 | 2.70E+01 | NA | 8.00E-02 | 8.00E-06 | 5.09E-06 | 1.90E+00 |
| 2,4-Dinitro-6-sec-butylphenol (Dinoseb) | 88-85-7 | 0.007 | 240 | 5.20E+01 | 1.87E-05 | 1.24E+02 | NA | 2.25E-02 | 6.25E-06 | 7.52E-02 | 4.71E+03 |
| Diquat | 85-00-7 | 0.02 | 344 | 7.08E+04 | 5.82E-12 | 2.04E+02 | NA | 5.52E-02 | 5.52E-06 | 1.00E-07 | 1.51E-03 |
| Disulfoton | 298-04-4 | | 274 | 1.63E+01 | 1.64E-04 | 1.60E+00 | NA | 8.00E-02 | 8.00E-06 | 2.30E-04 | 7.24E+03 |
| Diuron | 330-54-1 | | 233 | 4.20E+01 | 1.11E-04 | 3.80E+02 | NA | 5.40E-02 | 5.30E-06 | 1.00E-07 | 4.71E+02 |
| Endosulfan | 115-29-7 | | 407 | 5.10E-01 | 4.59E-04 | 2.14E+03 | NA | 1.15E-02 | 4.55E-06 | 9.96E-06 | 6.92E+03 |
| Endothall | 145-73-3 | 0.1 | 186 | 1.00E+05 | 1.48E-13 | 1.23E+02 | NA | 5.72E-02 | 7.50E-06 | 1.80E-04 | 7.76E+01 |
| Endrin | 72-20-8 | 0.002 | 381 | 2.50E-01 | 3.08E-04 | 1.23E+04 | NA | 1.25E-02 | 4.74E-06 | 5.84E-07 | 2.82E+05 |
| Endrin aldehyde | 74-21-93-4 | | 381 | 1.68E-02 | 1.80E-02 | 2.14E+06 | NA | 2.97E-02 | 3.83E-06 | 1.46E-05 | 2.75E+06 |
| Endrin Ketone | 53494-70-5 | | 381 | 8.60E-01 | 3.66E-05 | 1.74E+05 | NA | 3.10E-02 | 4.46E-06 | 1.51E-06 | 2.14E+05 |
| Eptam | 759-94-4 | | 189 | 3.70E+02 | 4.57E-03 | 2.40E+02 | NA | 5.35E-02 | 5.65E-06 | 1.60E-01 | 1.04E+03 |
| Ethoprop | 13194-48-4 | | 242 | 7.50E+02 | 6.73E-06 | 1.22E+03 | NA | 4.16E-02 | 5.56E-06 | 3.80E-04 | 1.38E+03 |
| Fenamiphos | 22224-92-6 | | 303 | 3.29E+02 | 4.96E-08 | 3.31E+02 | NA | 1.82E-02 | 4.88E-06 | NA | NA |
| Fenthion | 55-38-9 | | 278 | 2.17E+01 | 2.13E-05 | 1.10E+03 | NA | 4.35E-02 | 5.42E-06 | 1.38E-04 | 1.15E+03 |
| Fluometuron | 2164-17-2 | | 232 | 1.10E+02 | 7.38E-08 | 1.75E+02 | NA | 4.38E-02 | 5.66E-06 | NA | NA |
| Fonofos | 944-22-9 | | 246 | 1.60E+01 | 2.21E-04 | 3.58E+03 | NA | 4.65E-02 | 5.52E-06 | 3.43E-01 | 1.00E+04 |
| alpha-Hexachlorocyclohexane | 319-84-6 | | 291 | 2.00E+00 | 4.35E-04 | 1.23E+03 | NA | 1.42E-02 | 7.34E-06 | 4.26E-05 | 1.82E+04 |
| beta-Hexachlorocyclohexane | 319-85-7 | | 291 | 2.40E-01 | 3.05E-05 | 1.26E+03 | NA | 1.42E-02 | 7.34E-06 | 4.90E-07 | 1.82E+04 |
| delta-Hexachlorocyclohexane | 319-86-8 | | 291 | 3.14E+01 | 1.76E-05 | 4.26E+03 | NA | 4.50E-02 | 6.20E-06 | 2.87E-05 | 1.00E+04 |
| gamma-Hexachlorocyclohexane | 58-89-9 | 0.0002 | 291 | 6.80E+00 | 5.74E-04 | 1.07E+03 | NA | 1.42E-02 | 7.34E-06 | 3.72E-05 | 1.81E+04 |
| Glyphosate | 1071-83-6 | 0.7 | 169 | 1.20E+04 | 1.67E-17 | 3.63E+03 | NA | 5.07E-02 | 8.30E-06 | 7.50E-08 | 2.51E-02 |
| Guthion | 86-50-0 | | 317 | 9.00E-02 | 8.80E-11 | 2.51E+02 | NA | 4.11E-02 | 5.34E-06 | 4.70E-09 | 3.16E+02 |
| Heptachlor | 76-44-8 | 0.0004 | 373 | 1.80E-01 | 6.10E+01 | 1.41E+06 | NA | 1.12E-02 | 5.69E-06 | 3.26E-04 | 1.61E+06 |
| Heptachlor epoxide | 1024-57-3 | 0.0002 | 389 | 2.00E-01 | 3.90E-04 | 8.32E+04 | NA | 1.32E-02 | 4.23E-06 | 4.34E-06 | 8.04E+04 |
| Hexazinone | 51235-04-2 | | 252 | 3.30E+04 | 1.69E-11 | 3.72E+01 | NA | 5.08E-02 | 5.11E-06 | 2.03E-07 | 1.42E+02 |
| Malathion | 121-75-5 | | 330 | 1.43E+02 | 9.84E-07 | 1.80E+03 | NA | 1.50E-02 | 4.40E-06 | 7.90E-06 | 1.94E+02 |
| Maleic hydrazide | 123-33-1 | | 112 | 6.00E+03 | 1.09E-09 | 4.15E+01 | NA | 9.00E-02 | 1.11E-05 | 7.50E-08 | 1.30E-01 |
| Maneb | 12427-38-2 | | 295 | 6.00E+00 | 2.31E-05 | 5.50E+02 | NA | 1.59E-02 | 6.10E-06 | NA | NA |
| Methomyl | 16752-77-5 | | 162 | 5.80E+04 | 7.54E-09 | 1.50E+01 | NA | 6.93E-02 | 1.00E-05 | 5.00E-05 | 4.07E+00 |
| Methoxychlor | 72-43-5 | 0.04 | 346 | 4.50E-02 | 6.48E-04 | 9.77E+04 | NA | 1.56E-02 | 4.46E-06 | 1.23E-06 | 4.65E+05 |
| 2-Methyl-4-chlorophenoxyacetic acid (MCPA) | 94-74-6 | | 201 | 1.17E+03 | 5.45E-08 | 8.90E+01 | NA | 5.12E-02 | 6.82E-06 | 6.99E-06 | 2.45E+03 |
| MCPP | 93-65-2 | | 215 | 2.80E+02 | 1.00E-06 | 1.73E-02 | NA | 4.70E-02 | 6.36E-06 | 2.50E-05 | 1.36E+03 |
| Metolachlor | 51218-45-2 | | 284 | 5.30E+02 | 3.69E-07 | 7.03E+02 | NA | 3.61E-02 | 5.10E-06 | 2.29E-06 | 7.87E+02 |
| Metribuzin | 21087-64-9 | | 214 | 1.22E+03 | 7.42E-11 | 9.50E+01 | NA | 4.51E-02 | 5.98E-06 | 5.16E-05 | 2.36E+00 |
| Mirex | 2385-85-5 | | 546 | 3.28E+00 | 2.11E-02 | 5.57E+03 | NA | 3.50E-02 | 4.08E-06 | 7.50E-07 | 1.00E+11 |
| Naled | 300-76-5 | | 381 | 2.00E+03 | 2.05E-05 | 1.33E+02 | NA | 4.40E-02 | 6.80E-06 | 2.00E-04 | 3.98E+01 |
| o,o,o-Triethylphosphorothioate | 126-68-1 | | 198 | 8.45E+02 | 2.08E-02 | 4.90E+02 | NA | 5.26E-02 | 6.24E-06 | 7.30E-01 | 4.37E+02 |
| Oxamyl | 23135-22-0 | 0.2 | 219 | 2.80E+05 | 9.72E-09 | 8.00E+00 | NA | 5.57E-02 | 5.75E-06 | 3.83E-07 | 6.32E-02 |
| Paraquat | 4685-14-7 | | 257 | 6.20E+05 | 4.10E-08 | 1.55E+04 | NA | 3.74E-02 | 3.57E-06 | 1.45E-06 | 3.16E-05 |
| ethyl-Parathion | 56-38-2 | | 291 | 1.18E+01 | 2.37E-05 | 5.60E+03 | NA | 1.70E-02 | 5.80E-06 | 1.73E-05 | 5.38E+03 |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| methyl-Parathion | 298-00-0 | | 263 | 3.70E+01 | 4.10E-06 | 5.10E+03 | NA | 8.00E-02 | 8.00E-06 | 1.52E-05 | 5.61E+02 |
| Pendimethalin | 40487-42-1 | | 281 | 2.75E-01 | 3.51E-05 | 1.91E+05 | NA | 3.81E-02 | 5.26E-06 | 7.31E-07 | 2.34E+05 |
| Phenylmercuric acetate | 62-38-4 | | 337 | 4.70E+03 | 2.32E-08 | 6.70E+01 | NA | 8.00E-02 | 8.00E-06 | 3.04E-06 | 7.76E+00 |
| Phorate | 298-02-2 | | 260 | 5.00E+01 | 2.36E-04 | 6.61E+02 | NA | 8.00E-02 | 8.00E-06 | 1.30E-03 | 2.33E+03 |
| Picloram | 1918-02-1 | 0.5 | 241 | 4.30E+02 | 1.66E+02 | 2.60E+01 | NA | 5.50E-02 | 7.27E-06 | 2.15E-06 | 8.71E+02 |
| Prometon | 1610-18-0 | | 225 | 7.50E+02 | 8.12E-08 | 5.25E+02 | NA | 4.25E-02 | 5.54E-06 | 3.43E-06 | 7.59E+02 |
| Pronamide | 23950-58-5 | | 256 | 1.50E+01 | 7.83E-05 | 2.00E+02 | NA | 8.00E-02 | 8.00E-06 | 4.00E-04 | 3.76E+03 |
| Propachlor | 1918-16-7 | | 212 | 6.13E+02 | 4.47E-06 | 2.63E+02 | NA | 8.03E-02 | 8.03E-06 | NA | NA |
| Propanil | 709-98-8 | | 218 | 2.25E+02 | 1.85E-07 | 9.03E+02 | NA | 4.93E-02 | 6.59E-06 | 8.99E-07 | 9.43E+02 |
| Propazine | 139-40-2 | | 230 | 8.60E+00 | 1.89E-07 | 1.55E+02 | NA | 4.40E-02 | 5.69E-06 | 1.23E-06 | 1.78E+03 |
| Propham | 122-42-9 | | 179 | 3.20E+01 | 1.58E-06 | 8.90E+01 | NA | 5.71E-02 | 6.28E-06 | 1.35E-04 | 4.57E+02 |
| Silvex (2,4,5-TP) | 93-72-1 | 0.05 | 270 | 1.40E+02 | 3.71E-07 | 5.60E+01 | NA | 1.94E-02 | 5.80E-06 | 5.20E-06 | 4.78E+03 |
| Simazine | 122-34-9 | 0.004 | 202 | 5.70E+00 | 1.38E-07 | 1.38E+02 | NA | 4.90E-02 | 6.37E-06 | 9.10E-07 | 4.37E+02 |
| Strychnine | 57-24-9 | | 334 | 1.60E+02 | 3.10E-12 | 7.94E+01 | NA | 8.00E-02 | 8.00E-06 | 1.67E-10 | 7.04E+01 |
| Tebuthiuron | 34014-18-1 | | 228.31 | 2.50E+03 | 4.99E-11 | 3.13E+01 | NA | 5.62E-02 | 5.85E-06 | 2.03E-05 | 6.17E+01 |
| Terbacil | 5902-51-2 | | 217 | 7.10E+02 | 4.92E-09 | 4.10E+01 | NA | 4.95E-02 | 6.61E-06 | NA | NA |
| Terbufos | 13071-79-9 | | 288 | 5.07E+00 | 9.84E-04 | 6.61E+02 | NA | 4.18E-02 | 5.08E-06 | 2.96E-02 | 1.57E+04 |
| Terbutryn | 886-50-0 | | 241 | 2.50E+01 | 1.30E-06 | 1.63E+03 | NA | 5.60E-02 | 6.00E-06 | 2.10E-06 | 5.50E+03 |
| Toxaphene | 8001-35-2 | 0.003 | 414 | 7.40E-01 | 2.46E-04 | 2.57E+05 | NA | 1.16E-02 | 4.34E-06 | 4.19E-06 | 6.24E+06 |
| Triallate | 2303-17-5 | | 305 | 4.00E+00 | 7.91E-04 | 2.24E+03 | NA | 4.58E-02 | 4.84E-06 | 1.20E-04 | 3.72E+04 |
| 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) | 93-76-5 | | 255 | 2.78E+02 | 3.62E-07 | 5.30E+01 | NA | 8.00E-02 | 8.00E-06 | 3.61E-06 | 1.83E+03 |
| Trifluralin | 1582-09-8 | | 335 | 8.11E+00 | 1.08E-03 | 1.38E+04 | NA | 1.49E-02 | 4.70E-06 | 1.10E-04 | 2.05E+05 |
| Warfarin | 81-81-2 | | 308 | 1.70E+01 | 1.14E-07 | 9.19E+02 | NA | 1.63E-02 | 4.40E-06 | 1.16E-07 | 1.58E+03 |
| **Metals** | | | | | | | | | | | |
| Aluminum | 7429-90-5 | | 27 | NA | 0.00E+00 | NA | 3.53E+02 | NA | NA | NA | 2.13E+00 |
| Antimony | 7440-36-0 | 0.006 | 122 | NA | 0.00E+00 | NA | 4.47E+01 | NA | NA | NA | 1.00E+00 |
| Arsenic | 7440-38-2 | 0.01 | 74.9 | NA | NA | NA | 2.90E+01 | NA | NA | NA | 4.78E+00 |
| Barium | 7440-39-3 | 2 | 137 | NA | NA | NA | 4.10E+01 | NA | NA | NA | NA |
| Beryllium | 7440-41-7 | 0.004 | 9 | NA | 0.00E+00 | NA | 7.90E+02 | NA | NA | NA | 3.72E+00 |
| Cadmium | 7440-43-9 | 0.005 | 112 | NA | NA | NA | 7.50E+01 | NA | NA | NA | 8.49E-01 |
| Chromium (III) total chromium | 7440-47-3 | 0.1 | 52 | NA | NA | NA | 1.80E+06 | NA | NA | NA | NA |
| Chromium (VI) | 18540-29-9 | | 52 | NA | NA | NA | 1.90E+01 | NA | NA | NA | NA |
| Copper | 7440-50-8 | | 64 | NA | 0.00E+00 | NA | 3.98E+01 | NA | NA | NA | 2.69E-01 |
| Lead | 7439-92-1 | 0.015 | 207 | NA | NA | NA | 1.00E+01 | NA | NA | NA | 5.36E+00 |
| Manganese | 7439-96-5 | | 55 | NA | 0.00E+00 | NA | 5.01E+01 | NA | NA | NA | 1.00E+00 |
| Mercury | 7439-97-6 | | 401 | 3.00E-02 | 4.67E-01 | NA | 5.20E+01 | 3.07E-02 | 6.30E-06 | 1.30E-03 | 3.38E-01 |
| Molybdenum | 7439-98-7 | | 96 | NA | 0.00E+00 | NA | 2.00E+01 | NA | NA | NA | 1.00E+00 |
| Nickel | 7440-02-0 | | 59 | NA | 0.00E+00 | NA | 6.50E+01 | NA | NA | NA | 2.69E-01 |
| Selenium | 7782-49-2 | 0.05 | 79 | NA | NA | NA | 5.00E+00 | NA | NA | NA | 1.73E+00 |
| Silver | 7440-22-4 | | 108 | NA | 0.00E+00 | NA | 8.30E+00 | NA | NA | NA | 1.00E+00 |
| Strontium | 7440-24-6 | | 88 | NA | 0.00E+00 | NA | 2.00E+00 | NA | NA | NA | 1.00E+00 |
| Thallium chloride | 7791-12-0 | | 240 | 2.90E+03 | 0.00E+00 | NA | 7.10E+01 | NA | NA | NA | NA |

**Table E-3**
**Physical and Chemical Properties of Chemicals**

| Chemicals | CAS # | MCL (mg/L) | Molecular Weight, MW (g/mol) | Water Solubility, S (mg/L) | Henry's Law Constant, H (L-water/L-air) | Organic Carbon Adsorption Coefficient, $K_{oc}$ ($cm^3/g$) | Soil-Water Partition Coefficient, $K_d$ (L/kg) | Diffusion Coefficient in Air, $D_a$ ($cm^2/s$) | Diffusion Coefficient in Water, $D_w$ ($cm^2/s$) | Vapor Pressure, P (mmHg) | Octanol-Water Partition Coefficient, $K_{ow}$ ($cm^3/g$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vanadium | 7440-62-2 | | *51* | NA | 0.00E+00 | NA | *1.00E+03* | NA | NA | NA | 1.00E+00 |
| Zinc | 7440-66-6 | | **65** | NA | 0.00E+00 | NA | *6.20E+01* | NA | NA | NA | *3.38E-01* |
| **Inorganics** | | | | | | | | | | | |
| Ammonia | 7664-41-7 | | *17* | *5.31E+05* | *1.36E-02* | *3.09E+00* | NA | *2.59E-01* | *6.93E-05* | *7.47E+03* | *1.69E+00* |
| Cyanide | 57-12-5 | | *26* | *1.00E+05* | 0.00E+00 | NA | *9.90E+00* | *5.21E-01* | *2.28E-05* | *1.38E+01* | *2.03E-01* |
| Cyanide (as Sodium Cyanide) | 143-33-9 | 0.2 | 49 | 5.80E+05 | 0.00E+00 | NA | NA | NA | 6.64E-06 | NA | 2.00E-02 |
| Cyanogen bromide | 506-68-3 | | **106** | **8.50E+03** | **2.05E-01** | **2.60E+01** | NA | **9.60E-02** | **1.00E-05** | NA | NA |
| Fluoride (as Sodium Fluoride) | 7681-49-4 | 4 | 42 | 4.00E+04 | 0.00E+00 | NA | NA | NA | 6.15E-06 | NA | 1.70E-01 |
| Perchlorate1 | 14797-73-0 | | *99.5* | 2.00E+05 | 0.00E+00 | NA | NA | NA | NA | NA | NA |
| White phosphorus | 7723-14-0 | | **31** | **3.00E+00** | *5.65E-02* | *1.12E+03* | NA | **1.85E-01** | **1.68E-05** | *2.50E-02* | *1.20E+03* |
| **Total Petroleum Hydrocarbons** | | | | | | | | | | | |
| **TPH-GR0** | | | | | | | | | | | |
| Aliphatics - > C6-C8 | NA | | 100 | 5.40E+00 | 5.00E+01 | 3.98E+03 | NA | 1.00E-01 | 1.00E-05 | 4.79E+01 | NA |
| Aliphatics - > C8-C10 | NA | | 130 | 4.30E-01 | 8.00E+01 | 3.16E+04 | NA | 1.00E-01 | 1.00E-05 | 4.79E+00 | NA |
| Aromatics - >C8-C10 | NA | | 120 | 6.50E+01 | 4.80E-01 | 1.58E+03 | NA | 1.00E-01 | 1.00E-05 | 4.79E+00 | NA |
| **TPH-DR0** | | | | | | | | | | | |
| Aliphatics - >C10-C12 | NA | | 160 | 3.40E-02 | 1.20E+02 | 2.51E+05 | NA | 1.00E-01 | 1.00E-05 | 4.79E-01 | NA |
| Aliphatics - >C12-C16 | NA | | 200 | 7.60E-04 | 5.20E+02 | 5.01E+06 | NA | 1.00E-01 | 1.00E-05 | 3.65E-02 | NA |
| Aliphatics - >C16-C21 | NA | | 270 | 2.50E-06 | 4.90E+03 | 6.31E+08 | NA | 1.00E-01 | 1.00E-05 | 8.40E-04 | NA |
| Aromatics - >C10-C12 | NA | | 130 | 2.50E+01 | 1.40E-01 | 2.51E+03 | NA | 1.00E-01 | 1.00E-05 | 4.79E-01 | NA |
| Aromatics - >C12-C16 | NA | | 150 | 5.80E+00 | 5.30E-02 | 5.01E+03 | NA | 1.00E-01 | 1.00E-05 | 3.65E-02 | NA |
| Aromatics - >C16-C21 | NA | | 190 | 6.50E-01 | 1.30E-02 | 1.58E+04 | NA | 1.00E-01 | 1.00E-05 | 8.36E-04 | NA |
| **TPH-ORO** | | | | | | | | | | | |
| Aliphatics - >C21-C35 | NA | | 270 | 2.50E-06 | 4.90E+03 | 6.31E+08 | NA | 1.00E-01 | 1.00E-05 | 8.40E-04 | NA |
| Aromatics - >C21-C35 | NA | | 240 | 6.60E-03 | 6.70E-04 | 1.26E+05 | NA | 1.00E-01 | 1.00E-05 | 3.34E-07 | NA |

Sources for properties:

**Bold font**: CALM (1998) as revised in 2001, Table A4.

***Bold and italic font:*** EPA Region IX, PRGs InterCalc Tables: Phys-Chem Data (10/01/02).

*Italic font:* Texas Comission on Environmental Quality's TRRP Chemical/Physical Properties Table; March, 2004.

Regular font: Idaho Risk Based Decision-Making for Remedial Action Guidance Document, Appendix G, 2003.

**Bold underlined font: Properties developed using the following equation:**

$$D_1 = \left(\frac{MW_2}{MW_1}\right)^{1/2} \times D_2$$

where,
$D_1$ = Diffusuion coefficient of chemical 1 ($cm^2/s$)
$D_2$ = Diffusuion coefficient of chemical 2 ($cm^2/s$)
$MW_1$ = Molecular weight of chemical 1 (g/mol)
$MW_2$ = Molecular weight of chemical 2 (g/mol)

This equation comes from Handbook of Chemical Property Estimation Methods (Lyman et at., 1990).

*Italic underlined font:* Soil Screening Guidance: User's Guide, Table C-4, July 1996, values corresponding to pH of 6.8 except for antimony, vandium, and cyanide which are non-pH dependent.

1: Water solubility for Perchlorate is from Hazardous Substance Databank, http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.

MCLs: (Maximum Contaminant Level) USEPA (Winter 2004) Edition of Drinking Water Standards and Health Advisories.

Chemicals in MRBCA Process for Petroleum Storage Tanks