**TABLE 1**
**HUMAN HEALTH RISK ASSESSMENT SELECTION OF EXPOSURE PATHWAYS**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Scenario Timeframe | Medium | Exposure Medium | Exposure Point | Receptor Population | Receptor Age | Exposure Route | Type of Analysis | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|---|---|---|---|---|---|---|
| Current | Surface Soil | Surface Soil | Surface Soil | On-Site Trespasser | Adult<br>Youth (7-16 years) | Ingestion | Quant. | Trespassers may incidentally ingest surface soil. |
| | | | | | | Dermal | Quant. | Trespassers may have exposed skin come into contact with surface soil. |
| | | Particulates and Vapors | Outdoor Air | On-Site Trespasser | Adult<br>Youth (7-16 years) | Inhalation | Quant. | Trespassers may inhale volatiles and fugitive dust that migrate from surface soil to air. |
| Future | All Soil | All Soil | All Soil | On-Site Trespasser | Adult<br>Youth (7-16 years) | Ingestion | Quant. | Trespassers may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | | | | | | Dermal | Quant. | Trespassers may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | | Particulates and Vapors | Outdoor Air | On-Site Trespasser | Adult<br>Youth (7-16 years) | Inhalation | Quant. | Trespassers may inhale volatiles and fugitive dust that migrate from all soil to air, if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| Current/Future | Sediment | Sediment | Sediment | On-Site Trespasser | Adult<br>Youth (7-16 years) | Ingestion | Quant. | Trespassers may incidentally ingest on-site sediment. |
| | | | | | | Dermal | Quant. | Trespassers may have exposed skin come into contact with on-site sediment. |
| | Surface Water | Surface Water | Surface Water | On-Site Trespasser | Adult<br>Youth (7-16 years) | Ingestion | Quant. | Trespassers may incidentally ingest on-site surface water. |
| | | | | | | Dermal | Quant. | Trespassers may have exposed skin come into contact with on-site surface water. |
| Current/Future | All Soil | All Soil | All Soil | On-Site Construction/Utility Worker | Adult | Ingestion | Quant. | Current/Future construction/utility workers may incidentally ingest soil. |
| | | | | | | Dermal | Quant. | Current/Future construction/utility workers may have exposed skin come into contact with soil. |
| | | Particulates and Vapors | Outdoor Air | On-Site Construction/Utility Worker | Adult | Inhalation | Quant. | Current/Future construction/utility workers may inhale volatiles and fugitive dust that migrate from soil to outdoor air. |
| | Groundwater | Groundwater | Groundwater | On-Site Construction/Utility Worker | Adult | Dermal | Quant. | Current/Future construction/utility workers may have exposed skin come into contact with groudnwater during trench work. |
| | | Vapors | Outdoor Air (trenches) | On-Site Construction/Utility Worker | Adult | Inhalation | Quant. | Current/Future construction/utility workers may inhale groundwater vapors from trench air. |
| Future | All Soil | All Soil | All Soil | On-Site Recreationalist | Adult<br>Youth (7-16 years)<br>Child (1-6 years) | Ingestion | Quant. | Recreationalists may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Recreationalist | Adult<br>Youth (7-16 years)<br>Child (1-6 years) | Inhalation | Quant. |
| | | Sediment | Sediment | Sediment | On-Site Recreationalist | Adult<br>Youth (7-16 years) | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | Surface Water | Surface Water | Surface Water | On-Site Recreationalist | Adult<br>Youth (7-16 years) | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| Future | Future | Surface Soil | Surface Soil | Surface Soil | On-Site Outdoor Worker | Adult | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Outdoor Worker | Adult | Inhalation | Quant. |
| | | All Soil | All Soil | All Soil | On-Site Outdoor Worker | Adult | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Outdoor Worker | Adult | Inhalation | Quant. |
| Future | Future | Surface Soil | Surface Soil | Surface Soil | On-Site Commercial/ Industrial Worker | Adult | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Commercial/ Industrial Worker | Adult | Inhalation | Quant. |
| | | All Soil | All Soil | All Soil | On-Site Commercial/ Industrial Worker | Adult | Ingestion | Quant. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | On-Site Commercial/ Industrial Worker | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Commercial/ Industrial Worker | Adult | Inhalation | Quant. |
| | | Groundwater | Groundwater | Groundwater | On-Site Commercial/ Industrial Worker | Adult | Ingestion | Quant. |
| | | | | | | | Dermal | Qualt. |
| | | | Vapors | Indoor Air - Domestic Use | On-Site Commercial/ Industrial Worker | Adult | Inhalation | Quant. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Vapors | Indoor Air - Vapor Intrusion | On-Site Commercial/ Industrial Worker | Adult | Inhalation | Quant. |
| | | | Vapors | Outdoor Air | On-Site Commercial/ Industrial Worker | Adult | Inhalation | Qualt. |
| Future | Future | Surface Soil | Surface Soil | Surface Soil | On-Site Resident | Adult Child | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Resident | Adult Child | Inhalation | Quant. |
| | | All Soil | All Soil | All Soil | On-Site Resident | Adult Child | Ingestion | Quant. |
| | | | | | | | Dermal | Quant. |
| | | | Particulates and Vapors | Outdoor Air | On-Site Resident | Adult Child | Inhalation | Quant. |
| | | Groundwater | Groundwater | Groundwater | On-Site Resident | Adult Child | Ingestion | Quant. |
| | | | | | | | Dermal Contact | Quant. |
| | | | Vapors | Indoor Air - Household Use | On-Site Resident | Adult Child | Inhalation | Quant. |
| | | | Vapors | Indoor Air - Vapor Intrusion | On-Site Resident | Adult Child | Inhalation | Quant. |
| | | | Vapors | Outdoor Air | On-Site Resident | Adult Child | Inhalation | Qualt. |

| **Notes:** | **Notes:** | |
|---|---|---|
| All Soils | All Soils | Assumed to be soils from 0 to 10 feet below ground surface |
| Surface Soils | Surface Soils | Assumed to be soils from 0 to 2 feet below ground surface |
| Qualt. | Qualt. | Qualitative; this scenario is expected to be insignificant and is not included in the quantitative risk assessment. |
| Quant. | Quant. | Quantitative; this scenario was quantitatively assessed in the human health risk assessment |

**TABLE 1**
**HUMAN HEALTH RISK ASSESSMENT SELECTION OF EXPOSURE PATHWAYS**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Scenario Timeframe | Rationale for Selection or Exclusion of Exposure Pathway |
|---|---|
| Current | Trespassers may incidentally ingest surface soil. |
| | Trespassers may have exposed skin come into contact with surface soil. |
| | Trespassers may inhale volatiles and fugitive dust that migrate from surface soil to air. |
| Future | Trespassers may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Trespassers may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Trespassers may inhale volatiles and fugitive dust that migrate from all soil to air, if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| Current/Future | Trespassers may incidentally ingest on-site sediment. |
| | Trespassers may have exposed skin come into contact with on-site sediment. |
| | Trespassers may incidentally ingest on-site surface water. |
| | Trespassers may have exposed skin come into contact with on-site surface water. |
| Current/Future | Current/Future construction/utility workers may incidentally ingest soil. |
| | Current/Future construction/utility workers may have exposed skin come into contact with soil. |
| | Current/Future construction/utility workers may inhale volatiles and fugitive dust that migrate from soil to outdoor air. |
| | Current/Future construction/utility workers may have exposed skin come into contact with groudnwater during trench work. |
| | Current/Future construction/utility workers may inhale groundwater vapors from trench air. |
| Future | Recreationalists may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |

| | |
|---|---|
| | Recreationalists may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Recreationalists may inhale volatiles and fugitive dust that migrate from all soil to air, if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Recreationalist may incidentally ingest on-site sediment. |
| | Recreationalist may have exposed skin come into contact with on-site sediment. |
| | Recreationalist may incidentally ingest on-site surface water. |
| | Recreationalist may have exposed skin come into contact with on-site surface water. |
| Future | Future outdoor workers may incidentally ingest surface soil. |
| | Future outdoor workers may have exposed skin come into contact with surface soil. |
| | Future outdoor workers may inhale volatiles and fugitive dust that migrate from surface soil to air. |
| | Future outdoor workers may incidentally ingest all soils if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future outdoor workers may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future outdoor workers may inhale volatiles and fugitive dust that migrate from all soils to air if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| Future | Future commercial/industrial workers may incidentally ingest surface soil. |
| | Future commercial/industrial workers may have exposed skin come into contact with surface soil. |
| | Future commercial/industrial workers may inhale volatiles and fugitive dust that migrate from surface soil to air. |
| | Future commercial/industrial workers may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |

| | |
|---|---|
| | Future commercial/industrial workers may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future commercial/industrial workers may inhale volatiles and fugitive dust that migrate from all soil to air if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future commercial/industrial workers may ingest groundwater from the Site. |
| | Future commercial/industrial workers may have dermal contact with groundwater from the Site; however, this exposure is expected to be insignificant. |
| | Future commercial/industrial workers may be exposed to volatile groundwater contaminants migrating into indoor air due to domestic use of groundwater. |

| | |
|---|---|
| | Future commercial/industrial workers may be exposed to volatile groundwater contaminants migrating into indoor air via |
| | Future commercial/industrial workers may inhale groundwater vapors from the Site. However, this exposure is expected to be insignificant. |
| Future | Future residents may incidentally ingest surface soil. |
| | Future residents may have exposed skin come into contact with surface soil. |
| | Future residents may inhale volatiles and fugitive dust that migrate from surface soil to air. |
| | Future residents may incidentally ingest all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future residents may have exposed skin come into contact with all soil if subsurface soil is brought to the surface and mixed with surface soil as the result of Site development. |
| | Future residents may inhale volatiles and fugitive dust that migrate from all soil to air, if subsurface soil is brought to the surface and mixed with surface soil as a result of Site development. |
| | Future residents may ingest groundwater from the Site. |
| | Future residents may have dermal contact with groundwater from the Site. |
| | Future residents may be exposed to volatile groundwater contaminants released from groundwater to indoor air from household groundwater use (e.g., showering). |
| | Future residents may be exposed to volatile groundwater contaminants migrating into indoor air via vapor intrusion. |
| | Future residents may inhale groundwater vapors from the Site. However, this exposure is expected to be insignificant. |

**Notes:**
All Soils
Surface Soils
Qualt.
Quant.

**TABLE 2.1**
**OCCURANCE DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE SOILS**
**DES MOINES TCE SITE, DES MOINES IOWA**

| Exposure Area | Analyte Class | Cas Number | Analyte Name | Minimum Concentration (Qualifier)[1] | Maximum Concentration (Qualifier)[1] | Units | Location of Maximum | Frequency of Detection | Range of Detection Limits | Screening Concentration[2] | Screening Value[3, 4(Basis)] mg/kg | | COPC | Rationale[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dico Property | Dioxin | 1746-01-6 | 2,3,7,8-TCDD Equivalent | 0.00000001 | 0.00005 | mg/kg -dry | SB-14 (0-2) | 14/16 | 0.00000001 | 0.00005 | 0.0000048 | c* | Y | ASL |
| Dico Property | Herbicide | 93-76-5 | 2,4,5-T (Trichlorophenoxyacetic Acid) | 0.078 J | 0.078 J | mg/kg -dry | SB-13 (0-2) | 1/17 | 0.036-0.2 | 0.078 | 630 | n | N | BSL |
| Dico Property | Herbicide | 94-75-7 | 2,4-D (Dichlorophenoxyacetic Acid) | 0.38 J | 0.38 J | mg/kg -dry | SB-13 (0-2) | 1/17 | 0.036-0.2 | 0.38 | 700 | n | N | BSL |
| Dico Property | Pesticide | 309-00-2 | Aldrin | 0.0037 | 0.0048 | mg/kg -dry | SB-17 (0-2) | 2/17 | 0.0019-0.021 | 0.0048 | 0.039 | c* | N | BSL |
| Dico Property | Pesticide | 5103-71-9 | alpha-Chlordane | 0.0024 | 0.0068 | mg/kg -dry | SB-14 (0-2) | 3/17 | 0.0019-0.021 | 0.0068 | 1.7 | c* | N | BSL |
| Dico Property | Pesticide | 319-85-7 | Beta BHC (beta Hexachlorocyclohexane) | 0.0024 | 0.0024 | mg/kg -dry | SB-16 (0-2) | 1/17 | 0.0019-0.021 | 0.0024 | 0.3 | c | N | BSL |
| Dico Property | Pesticide | 60-57-1 | Dieldrin | 0.012 | 0.012 | mg/kg -dry | SB-14 (0-2) | 1/17 | 0.0036-0.04 | 0.012 | 0.034 | c* | N | BSL |
| Dico Property | Pesticide | 115-29-7 | Endosulfan Sulfate | 0.0075 | 0.0075 | mg/kg -dry | SB-14 (0-2) | 1/17 | 0.0036-0.04 | 0.0075 | 470 | n | N | BSL |
| Dico Property | Pesticide | 7421-93-4 | Endrin Aldehyde | 0.0045 J | 0.0061 | mg/kg -dry | SB-14 (0-2) | 2/17 | 0.0036-0.04 | 0.0061 | 19 | n | N | BSL |
| Dico Property | Pesticide | 53494-70-5 | Endrin Ketone | 0.0052 | 0.014 J | mg/kg -dry | SB-14 (0-2) | 2/17 | 0.0036-0.04 | 0.014 | 19 | n | N | BSL |
| Dico Property | Pesticide | 58-89-9 | Gamma BHC (Lindane) | 0.0028 J | 0.0028 J | mg/kg -dry | SB-9 (0-2) | 1/17 | 0.0019-0.021 | 0.0028 | 0.57 | c* | N | BSL |
| Dico Property | Pesticide | 12789-03-6 | gamma-Chlordane | 0.0027 | 0.0077 | mg/kg -dry | SB-14 (0-2) | 7/17 | 0.0019-0.021 | 0.0077 | 1.7 | c* | N | BSL |
| Dico Property | Pesticide | 1024-57-3 | Heptachlor Epoxide | 0.0024 J | 0.0024 J | mg/kg -dry | SB-9 (0-2) | 1/17 | 0.0019-0.021 | 0.0024 | 0.07 | c* | N | BSL |
| Dico Property | Pesticide | 72-54-8 | p,p'-DDD | 0.006 | 0.083 | mg/kg -dry | SB-11 (0-2) | 8/17 | 0.0036-0.04 | 0.083 | 2.3 | c | N | BSL |
| Dico Property | Pesticide | 72-55-9 | p,p'-DDE | 0.0041 | 1.4 | mg/kg -dry | SB-12 (0-2) | 2/17 | 0.0036-0.0056 | 1.4 | 2.0 | c | N | BSL |
| Dico Property | Pesticide | 50-29-3 | p,p'-DDT | 0.0052 | 3.3 | mg/kg -dry | SB-12 (0-2) | 9/17 | 0.0036-0.028 | 3.3 | 1.9 | c* | Y | ASL |
| Dico Property | VOC | 71-55-6 | 1,1,1-Trichloroethane | 0.41 | 0.41 | mg/kg -dry | SB-13 (0-2) | 1/17 | 0.0044-1.2 | 0.41 | 8100 | ns | N | BSL |
| Dico Property | VOC | 107-06-2 | 1,2-Dichloroethane | 0.0073 | 0.0073 | mg/kg -dry | SB-11 (8-10) | 1/17 | 0.0044-1.2 | 0.0073 | 0.46 | c* | N | BSL |
| Dico Property | VOC | 67-64-1 | Acetone | 0.011 | 0.19 | mg/kg -dry | SB-9 (0-2) | 11/17 | 0.011-2.4 | 0.19 | 61000 | n | N | BSL |
| Dico Property | VOC | 75-15-0 | Carbon Disulfide | 0.0079 | 0.0079 | mg/kg -dry | SB-2 (0-2) | 1/17 | 0.0046-1.2 | 0.0079 | 770 | ns | N | BSL |
| Dico Property | VOC | 67-66-3 | Chloroform | 0.74 | 0.74 | mg/kg -dry | SB-12 (0-2) | 1/17 | 0.0044-1.2 | 0.74 | 0.32 | c | Y | ASL |
| Dico Property | VOC | 156-59-2 | cis-1,2-Dichloroethylene | 0.15 | 24 | mg/kg -dry | SB-17 (0-2) | 2/17 | 0.0044-0.38 | 24 | 160 | n | Y | ASL |
| Dico Property | VOC | 79-20-9 | Methyl Acetate | 0.31 | 0.31 | mg/kg -dry | SB-15 (0-2) | 1/17 | 0.0044-1.2 | 0.31 | 78000 | ns | N | BSL |
| Dico Property | VOC | 78-93-3 | Methyl Ethyl Ketone (2-Butanone) | 0.0096 | 0.03 | mg/kg -dry | SB-9 (0-2) | 5/17 | 0.0092-2.4 | 0.03 | 27000 | n | N | BSL |
| Dico Property | VOC | 108-10-1 | Methyl Isobutyl Ketone (4-Methyl-2-Pentanone) | 0.012 J | 0.012 J | mg/kg -dry | SB-9 (0-2) | 1/17 | 0.0088-2.4 | 0.012 | 33000 | ns | N | BSL |
| Dico Property | VOC | 127-18-4 | Tetrachloroethene | 0.013 | 7.3 | mg/kg -dry | SB-12 (0-2) | 5/17 | 0.0044-1.2 | 7.3 | 24 | c** | N | BSL |
| Dico Property | VOC | 156-60-5 | Trans-1,2-Dichloroethene | 0.012 | 0.94 | mg/kg -dry | SB-14 (0-2) | 2/17 | 0.0044-1.2 | 0.94 | 1600 | n | N | BSL |
| Dico Property | VOC | 79-01-6 | Trichloroethene | 0.015 | 15 | mg/kg -dry | SB-14 (0-2) | 9/17 | 0.0044-1.2 | 15 | 0.94 | c** | Y | ASL |

**Notes:**
* Soil samples taken 0-2 feet below ground surface
Shaded constituents indicate chemicals of potential concern.

1. Minimum/maximum detected concentration.
2. Maximum detected concentration used as the screening concentration.
3. Screening value the RSL for residential receptors
   Screening Value Basis Codes:
   - c Cancer endpoint and a target cancer risk of 1 x $10^{-6}$
   - c* Cancer endpoint where: nc SL < 100X ca SL
   - c** Cancer endpoint where nc SL < 10X ca SL
   - nc non-cancer endpoint and a target hazard quotient of 0.1
4. The following surrogate values were used for screening:
   Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane.
   Endosulfan was used as a surrogate for endosulfan sulfate.
   Endrin was used as a surrogate for endrin aldehyde and endrin ketone
5. Rationale Codes for selection or exclusion as COPC:
   Selection:
   - ASL Above screening level
   - NSC No screening criteria

**Definitions:**
- CAS Chemical Abstract Service
- COPC Chemical of potential concern
- J Estimated value(+/- bias)
- mg/kg Milligram per kilogram
- RSL Regional Screening Level
- VOC Volatile organic compound

Deletion:
- BSL Below screening level

**Source:**
U.S. Environmental Protection Agency (EPA). 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 2.2**
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - ALL SOILS**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Exposure Area | Analyte Class | Cas Number | Analyte Name | Minimum Concentration (Qualifier)[1] | Maximum Concentration (Qualifier)[1] | Units | Location of Maximum | Frequency of Detection | Range of Detection Limits | Screening Concentration[2] | Screening Value[3, 4] (Basis) mg/kg | | COPC | Rationale[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dico Property | Dioxin | 1746-01-6 | 2,3,7,8-TCDD Equivalent | 0.00000001 | 0.00005 | mg/kg -dry | SB-14 (0-2) | 14/16 | 0.00000001 | 0.00005 | 0.0000048 | c* | Y | ASL |
| Dico Property | Herbicide | 93-76-5 | 2,4,5-T (Trichlorophenoxyacetic Acid) | 0.078J | 0.078J | mg/kg -dry | SB-13 (0-2) | 1/34 | 0.036-0.2 | 0.078 | 630 | n | N | BSL |
| Dico Property | Herbicide | 94-75-7 | 2,4-D (Dichlorophenoxyacetic Acid) | 0.11 | 0.38J | mg/kg -dry | SB-13 (0-2) | 2/34 | 0.036-0.2 | 0.38 | 700 | n | N | BSL |
| Dico Property | Pesticide | 309-00-2 | Aldrin | 0.0037 | 0.031 | mg/kg -dry | SB-17 (8-10) | 3/34 | 0.0019-0.021 | 0.031 | 0.039 | c* | N | BSL |
| Dico Property | Pesticide | 319-85-7 | Beta BHC (beta Hexachlorocyclohexane) | 0.0024 | 0.034 | mg/kg -dry | SB-17 (8-10) | 2/34 | 0.0019-0.021 | 0.034 | 0.3 | c | N | BSL |
| Dico Property | Pesticide | 5103-71-9 | Chlordane; Alpha- | 0.0024 | 0.015 | mg/kg -dry | SB-13 (8-10) | 6/34 | 0.0019-0.021 | 0.015 | 1.7 | c* | N | BSL |
| Dico Property | Pesticide | 12789-03-6 | Chlordane; Gamma- | 0.0021 | 0.091 | mg/kg -dry | SB-17 (8-10) | 16/34 | 0.0019-0.021 | 0.091 | 1.7 | c* | N | BSL |
| Dico Property | Pesticide | 60-57-1 | Dieldrin | 0.0056 | 0.012 | mg/kg -dry | SB-15 (0-2) | 2/34 | 0.0036-0.04 | 0.012 | 0.034 | c* | N | BSL |
| Dico Property | Pesticide | 115-29-7 | Endosulfan Sulfate | 0.0075 | 0.23 | mg/kg -dry | SB-17 (8-10) | 2/34 | 0.0036-0.04 | 0.23 | 470 | n | N | BSL |
| Dico Property | Pesticide | 72-20-8 | Endrin | 0.0043 | 0.056J | mg/kg -dry | SB-17 (8-10) | 2/34 | 0.0036-0.04 | 0.056 | 19.0 | n | N | BSL |
| Dico Property | Pesticide | 7421-93-4 | Endrin Aldehyde | 0.0045J | 0.01 | mg/kg -dry | SB-6 (8-10) | 3/34 | 0.0036-0.04 | 0.01 | 19.0 | n | N | BSL |
| Dico Property | Pesticide | 53494-70-5 | Endrin Ketone | 0.0044 | 0.26J | mg/kg -dry | SB-17 (8-10) | 5/34 | 0.0036-0.04 | 0.26 | 19.0 | n | N | BSL |
| Dico Property | Pesticide | 58-89-9 | Gamma BHC (Lindane) | 0.0028J | 0.0028J | mg/kg -dry | SB-9 (0-2) | 1/34 | 0.0019-0.021 | 0.0028 | 0.57 | c* | N | BSL |
| Dico Property | Pesticide | 1024-57-3 | Heptachlor Epoxide | 0.0024J | 0.0024J | mg/kg -dry | SB-9 (0-2) | 1/34 | 0.0019-0.021 | 0.0024 | 0.07 | c* | N | BSL |
| Dico Property | Pesticide | 72-43-5 | Methoxychlor | 0.54 | 0.54 | mg/kg -dry | SB-17 (8-10) | 1/34 | 0.019-0.21 | 0.54 | 320 | n | N | BSL |
| Dico Property | Pesticide | 72-54-8 | p,p'-DDD | 0.0055 | 0.16 | mg/kg -dry | SB-14 (8-10) | 16/34 | 0.0036-0.04 | 0.16 | 2.3 | c | N | BSL |
| Dico Property | Pesticide | 72-55-9 | p,p'-DDE | 0.0041 | 1.4 | mg/kg -dry | SB-12 (0-2) | 9/34 | 0.0036-0.039 | 1.4 | 2.0 | c | N | BSL |
| Dico Property | Pesticide | 50-29-3 | p,p'-DDT | 0.0051J | 3.3 | mg/kg -dry | SB-12 (0-2) | 15/34 | 0.0036-0.028 | 3.3 | 1.9 | c* | Y | ASL |
| Dico Property | VOC | 71-55-6 | 1,1,1-Trichloroethane | 0.41 | 12 | mg/kg -dry | SB-13 (8-10) | 2/34 | 0.0044-1.2 | 12 | 8100 | ns | N | BSL |
| Dico Property | VOC | 107-06-2 | 1,2-Dichloroethane | 0.0073 | 0.0073 | mg/kg -dry | SB-11 (8-10) | 1/34 | 0.0044-1.2 | 0.0073 | 0.46 | c* | N | BSL |
| Dico Property | VOC | 67-64-1 | Acetone | 0.011 | 0.19 | mg/kg -dry | SB-9 (0-2) | 23/34 | 0.011-2.4 | 0.19 | 61000 | n | N | BSL |
| Dico Property | VOC | 75-15-0 | Carbon Disulfide | 0.0079 | 0.0079 | mg/kg -dry | SB-2 (0-2) | 1/34 | 0.0046-1.2 | 0.0079 | 770 | ns | N | BSL |
| Dico Property | VOC | 67-66-3 | Chloroform | 0.74 | 0.74 | mg/kg -dry | SB-12 (0-2) | 1/34 | 0.0044-1.2 | 0.74 | 0.32 | c | Y | ASL |
| Dico Property | VOC | 156-59-2 | cis-1,2-Dichloroethylene | 0.0077 | 24 | mg/kg -dry | SB-17 (0-2) | 5/34 | 0.0044-0.38 | 24 | 160 | n | Y | ASL |
| Dico Property | VOC | 100-41-4 | Ethylbenzene | 0.95 | 0.95 | mg/kg -dry | SB-12 (0-2) | 1/34 | 0.0044-1.2 | 0.95 | 5.8 | c | N | BSL |
| Dico Property | VOC | 98-82-8 | Isopropylbenzene (Cumene) | 0.69 | 0.69 | mg/kg -dry | SB-12 (0-2) | 1/34 | 0.0044-1.2 | 0.69 | 1900 | ns | N | BSL |
| Dico Property | VOC | 106-42-3 | m, p Xylenes | 3 | 3 | mg/kg -dry | SB-12 (0-2) | 1/34 | 0.0044-1.2 | 3 | 560 | ns | N | BSL |
| Dico Property | VOC | 79-20-9 | Methyl Acetate | 0.31 | 0.63 | mg/kg -dry | SB-13 (8-10) | 3/34 | 0.0044-1.2 | 0.63 | 78000 | ns | N | BSL |
| Dico Property | VOC | 78-93-3 | Methyl Ethyl Ketone (2-Butanone) | 0.0096 | 0.03 | mg/kg -dry | SB-9 (0-2) | 12/34 | 0.0092-2.4 | 0.03 | 27000 | n | N | BSL |
| Dico Property | VOC | 108-10-1 | Methyl Isobutyl Ketone (4-Methyl-2-Pentanone) | 0.012J | 0.012J | mg/kg -dry | SB-9 (0-2) | 1/34 | 0.0088-2.4 | 0.012 | 33000 | ns | N | BSL |
| Dico Property | VOC | 95-47-6 | o-Xylene | 0.73 | 0.73 | mg/kg -dry | SB-12 (8-10) | 1/34 | 0.0044-1.2 | 0.73 | 650 | ns | N | BSL |
| Dico Property | VOC | 127-18-4 | Tetrachloroethene | 0.0053 | 7.3 | mg/kg -dry | SB-12 (0-2) | 8/34 | 0.0044-1.2 | 7.3 | 24 | c** | N | BSL |
| Dico Property | VOC | 156-60-5 | Trans-1,2-Dichloroethene | 0.012 | 0.94 | mg/kg -dry | SB-14 (0-2) | 2/34 | 0.0044-1.2 | 0.94 | 1600 | n | N | BSL |
| Dico Property | VOC | 79-01-6 | Trichloroethene | 0.015 | 15 | mg/kg -dry | SB-14 (0-2) | 14/34 | 0.0044-1.2 | 15 | 0.94 | c** | Y | ASL |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dico Property | Dico Property | VOC | 75-01-4 | Vinyl Chloride | 0.0047 | 0.0047 | mg/kg -dry | SB-5 (8-10) | 1/34 | 0.0044-1.2 | 0.0047 | 0.059 | c | N | BSL |

**Notes:** **Notes:**

* Soil samples taken [illegible] below ground surface

Shaded constituents [illegible] of potential concern.

1. Minimum/maximum [illegible] detected concentration.
2. Maximum detected [illegible] screening concentration.
3. Screening value [illegible] residential RSL value

Screening Value Basis Codes:

| | | |
|---|---|---|
| c | c | Cancer endpoint and a target cancer risk of 1 x $10^{-6}$ |
| c* | c* | Cancer endpoint where: nc SL < 100X ca SL |
| c** | c** | Cancer endpoint where nc SL < 10X ca SL |
| nc | nc | non-cancer endpoint and a target hazard quotient of 0.1 |

4. The following [illegible] used for screening:

Chlordane was used [illegible] gamma-Chlordane.

Endosulfan was used [illegible] endosulfan sulfate.

Endrin was used [illegible] and endrin ketone

5. Rationale Codes [illegible] exclusion as COPC:

Selection:

ASL ASL Above screening level

**Definitions:**

| | |
|---|---|
| CAS | Chemical Abstract Service |
| COPC | Chemical of potential concern |
| J | Estimated value(+/- bias) |
| mg/kg | Milligram per kilogram |
| NA | Not applicable |
| RSL | Regional Screening Level |
| U | Analyzed for, but not detected |
| VOC | Volatile organic compound |

Deletion:

BSL Below screening level

**Source:** **Source:**

U.S. Environmental [illegible] Regional Screening Level [illegible] tables-may-2016

**TABLE 2.3**
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Exposure Area | Analyte Class | CAS Number | Analyte Name | Minimum Concentration (Qualifier)[1] | Maximum Concentration (Qualifier)[1] | Units | Location of Maximum | Frequency of Detection | Range of Detection Limits | Screening Concentration[2] | Screening Value[3, 4(Basis)] mg/kg | | COPC | Rationale[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Pond | Pesticide | 309-00-2 | Aldrin | 0.0016 | 15 | mg/kg -dry | SD-5 | 11/11 | - | 15 | 0.04 | c* | Y | ASL |
| South Pond | Pesticide | 959-98-8 | alpha-Endosulfan | 0.0029 | 0.0029 | mg/kg -dry | SD-4 | 1/11 | 0.0028-0.33 | 0.0029 | 470 | n | N | BSL |
| South Pond | Pesticide | 5103-71-9 | alpha-Chlordane | 0.11 | 2.2 | mg/kg -dry | SD-5 | 11/11 | - | 2.2 | 1.7 | c* | Y | ASL |
| South Pond | Pesticide | 33213-65-9 | beta-Endosulfan | 0.0054 | 0.0054 | mg/kg -dry | SD-4 | 1/11 | 0.0055-0.64 | 0.0054 | 470 | n | N | BSL |
| South Pond | Pesticide | 60-57-1 | Dieldrin | 0.086 | 9.5 | mg/kg -dry | SD-2 | 11/11 | - | 9.5 | 0.03 | c* | Y | ASL |
| South Pond | Pesticide | 72-20-8 | Endrin | 0.0095 J | 0.0095 J | mg/kg -dry | SD-10 | 1/11 | 0.0048-0.64 | 0.0095 | 19.0 | n | N | BSL |
| South Pond | Pesticide | 53494-70-5 | Endrin Ketone | 0.064 J | 0.066 J | mg/kg -dry | SD-2 | 2/11 | 0.0048-0.64 | 0.066 | 19.0 | n | N | BSL |
| South Pond | Pesticide | 5566-34-7 | gamma-Chlordane | 0.1 | 2.5 | mg/kg -dry | SD-5 | 11/11 | - | 2.5 | 1.7 | c* | Y | ASL |
| South Pond | Pesticide | 1024-57-3 | Heptachlor Epoxide | 0.0056 | 0.034 | mg/kg -dry | SD-2 | 4/11 | 0.0025-0.33 | 0.034 | 0.07 | c* | N | BSL |
| South Pond | Pesticide | 72-54-8 | p,p'-DDD | 0.012 J | 0.81 | mg/kg -dry | SD-2 | 11/11 | - | 0.81 | 2.3 | c | N | BSL |
| South Pond | Pesticide | 72-55-9 | p,p'-DDE | 0.012 J | 0.24 J | mg/kg -dry | SD-9 | 8/11 | 0.041-0.64 | 0.24 | 2.0 | c | N | BSL |
| South Pond | Pesticide | 50-29-3 | p,p'-DDT | 0.0061 J | 0.44 J | mg/kg -dry | SD-2 | 8/11 | 0.041-0.64 | 0.44 | 1.9 | c* | N | BSL |
| South Pond | VOC | 67-64-1 | Acetone | 0.1 | 1 | mg/kg -dry | SD-3 | 11/11 | - | 1 | 61000 | n | N | BSL |
| South Pond | VOC | 156-59-2 | cis-1,2-Dichloroethylene | 0.049 | 0.049 | mg/kg -dry | SD-4 | 1/11 | 0.0082-0.032 | 0.049 | 160 | n | N | BSL |
| South Pond | VOC | 79-20-9 | Methyl Acetate | 0.011 J | 0.054 | mg/kg -dry | SD-3 | 2/11 | 0.0082-0.015 | 0.054 | 78000 | ns | N | BSL |
| South Pond | VOC | 78-93-3 | Methyl Ethyl Ketone (2-Butanone) | 0.018 | 0.17 | mg/kg -dry | SD-3 | 7/11 | 0.02-0.026 | 0.17 | 27000 | n | N | BSL |
| South Pond | VOC | 108-88-3 | Tolune | 0.014 | 0.13 | mg/kg -dry | SD-3 | 4/11 | 0.0082-0.015 | 0.13 | 4900 | ns | N | BSL |
| South Pond | VOC | 79-01-6 | Trichloroethene | 0.027 | 0.027 | mg/kg -dry | SD-4 | 1/11 | 0.0082-0.032 | 0.027 | 0.94 | c** | N | BSL |

**Notes:**
Shaded constituents indicate chemicals of potential concern.

1. Minimum/maximum detected concentration.
2. Maximum detected concentration used as the screening concentration.
3. Screening value is the residential RSL value
   Screening Value Basis Codes:
   - c Cancer endpoint and a target cancer risk of $1 \times 10^{-6}$
   - c* Cancer endpoint where: nc SL < 100X ca SL
   - c** Cancer endpoint where nc SL < 10X ca SL
   - nc non-cancer endpoint and a target hazard quotient of 0.1
4. The following surrogate values were used for screening:
   Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane.
   Endosulfan was used as a surrogate for alpha-Endosulfan.
   Endrin was used as a surrogate for Endrin ketone
5. Rationale Codes for selection or exclusion as COPC:

Selection:
ASL Above screening level

**Definitions:**
CAS Chemical Abstract Service
COPC Chemical of potential concern
J Estimated value(+/- bias)
mg/kg Milligram per kilogram
RSL Regional Screening Level

Deletion:
BSL Below screening level

**Source:**
U.S. Environmental Protection Agency (EPA). 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 2.4**
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Exposure Area | Analyte Class | CAS Number | Analyte Name | Minimum Concentration (Qualifier)[1] | Maximum Concentration (Qualifier)[1] | Units | Location of Maximum | Frequency of Detection | Range of Detection Limits | Screening Concentration[2] | Screening Value[3,4(Basis)] µg/L | | COPC | Rationale[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South Pond | Pesticide | 5103-71-9 | alpha-Chlordane | 0.054 | 0.11 | µg/L | SW-1 | 2/2 | - | 0.11 | 0.02 | c* | Y | ASL |
| South Pond | Pesticide | 60-57-1 | Dieldrin | 0.15 | 0.26 | µg/L | SW-1 | 2/2 | - | 0.26 | 0.002 | c | Y | ASL |
| South Pond | Pesticide | 12789-03-6 | gamma-Chlordane | 0.098 | 0.098 | µg/L | SW-1 | 1/2 | 0.00005 | 0.098 | 0.02 | c* | Y | ASL |
| South Pond | VOC | 67-64-1 | Acetone | 6.5 | 6.5 | µg/L | SW-2 | 1/2 | 0.005 | 6.5 | 14000 | n | N | BSL |

**Notes:**
Shaded constituents indicate chemicals of potential concern.

1. Minimum/maximum detected concentration.
2. Maximum detected concentration used as the screening concentration.
3. Screening value the lower of the RSL or MCL values
   Screening Value Basis Codes:
   - c Cancer endpoint and a target cancer risk of $1 \times 10^{-6}$
   - c* Cancer endpoint where: nc SL < 100X ca SL
   - c** Cancer endpoint where nc SL < 10X ca SL
   - nc non-cancer endpoint and a target hazard quotient of 0.1
4. The following surrogate values were used for screening:
   Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane.
5. Rationale Codes for selection or exclusion as COPC:

Selection:
ASL Above screening level

Deletion:
BSL Below screening level

**Definitions:**
µg/L Microgram per liter
CAS Chemical Abstract Service
COPC Chemical of potential concern
MCL Maximum Contaminant Level
RSL Regional Screening Level

**Source:**
U.S. Environmental Protection Agency (EPA). 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 2.5**
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| Exposure Area | Analyte Class | CAS Number | Analyte Name | Minimum Concentration (Qualifier)[1] | Maximum Concentration (Qualifier)[1] | Units | Location of Maximum | Frequency of Detection | Range of Detection Limits | Screening Concentration[2] | Screening Value[3, 4(Basis)] µg/L | | COPC | Rationale[5] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Groundwater | VOC | 107-06-2 | 1,2-Dichloroethane | 0.6 | 0.6 | µg/L | P-9 | 1/14 | 0.5 - 5 | 0.6 | 0.17 | c* | Y | ASL |
| Groundwater | VOC | 156-59-2 | 1,2-Dichloroethylene (total) | 3.9 | 71 | µg/L | ERW-6 | 11/14 | 0.5 | 71 | 36.000 | n | Y | ASL |
| Groundwater | VOC | 79-01-6 | Trichloroethene | 0.8 | 480 | µg/L | ERW-7 | 8/14 | 0.5 | 480 | 0.49 | c** | Y | ASL |
| Groundwater | VOC | 75-01-4 | Vinyl Chloride | 1.5 | 3.4 | µg/L | NW-22 | 3/14 | 0.5 - 5 | 3.4 | 0 | c | Y | ASL |

**Notes:**
Shaded constituents indicate chemicals of potential concern.

1. Minimum/maximum detected concentration.
2. Maximum detected concentration used as the screening concentration.
3. Screening value the lower of the RSL or MCL values
   Screening Value Basis Codes:
   - c Cancer endpoint and a target cancer risk of $1 \times 10^{-6}$
   - c* Cancer endpoint where: nc SL < 100X ca SL
   - c** Cancer endpoint where nc SL < 10X ca SL
   - nc non-cancer endpoint and a target hazard quotient of 0.1
4. The following surrogate values were used for screening:
   Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane.
5. Rationale Codes for selection or exclusion as COPC:

Selection:
ASL Above screening level

Deletion:
BSL Below screening level

**Definitions:**

| | |
|---|---|
| µg/L | Microgram per Liter |
| CAS | Chemical Abstract Service |
| COPC | Chemical of potential concern |
| µg/L | Microgram per Liter |
| RSL | Regional Screening Level |

**Source:**
U.S. Environmental Protection Agency (EPA). 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 3.1: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Medium: | Surface Soil |
| Exposure Medium: | Surface Soil |

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Frequency of Detection | Number of High Censored Results (a) | Arithmetic Mean (b) | 95 UCL Distribution (c) | | Maximum Concentration (qualifier) | Exposure Point Concentration | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Value | Statistic | Method (d) |
| Dico Property | Dioxins | 1746-01-6 | 2,3,7,8-TCDD Equivalent | 14/16 | 0 | 1.19E-05 | 1.92E-05 | N | 5.40E-05 | 1.92E-05 | 95 UCL | (8) |
| Dico Property | Pesticide | 50-29-3 | p,p'-DDT | 9/17 | 0 | 2.49E-01 | 2.26E+00 | NP | 3.30E+00 | 2.26E+00 | 95 UCL | (15) |
| Dico Property | VOC | 67-66-3 | Chloroform | 1/38 | 0 | -- | -- | -- | 7.40E-01 | 7.40E-01 | Maximum | (1) |
| Dico Property | VOC | 156-59-2 | cis-1,2-Dichloroethylene | 4/17 | 0 | 1.68E+00 | 1.20E+01 | G | 2.40E+01 | 1.20E+01 | 95 UCL | (16) |
| Dico Property | VOC | 79-01-6 | Trichloroethene | 9/17 | 0 | 2.35E+00 | 4.41E+00 | N | 1.50E+01 | 4.41E+00 | 95 UCL | (8) |

**Notes:**

All concentrations in milligrams per kilogram.
Surface soils are those soils from 0 to 2 feet below ground surface.
The maximum detected value was selected as the EPC unless the number of samples collected is ≥ 10 and the number of detections is ≥ 4. If these conditions are met, the EPC is calculated in accordance with EPA guidance (2002, 2013).

-- Not applicable
CAS Chemical Abstract Service
EPA U.S. Environmental Protection Agency
EPC Exposure point concentration
RAGS Risk Assessment Guidance for Superfund
95 UCL One-sided 95 percent upper confidence limit of the mean. Following EPA (2002, 2013), this value may be estimated by either a 95, 97.5, or 99 percent UCL depending on sample size, skewness, and degree of censorship.

a Number of censored (nondetect) results that exceeded the maximum detected concentration. These results are excluded from statistical calculations.
b The arithmetic mean is based on the Kaplan-Meier (KM) mean for chemicals with non-detected values in the dataset.
c Distribution codes as follows: N=Normal, G=Gamma, LN=Lognormal, and NP=Non-parametric
d All methods follow EPA (2002, 2013).
Method (Statistic) Codes are defined as follows (some method codes may not be used in the table):

(1) Maximum detected concentration
(2) 95 percent UCL calculated using Student's t distribution
(3) 95 percent UCL calculated using the approximate gamma method
(4) 95 percent UCL calculated using the adjusted gamma method
(5) 95 percent UCL calculated using the Hall's Bootstrap (or Bootstrap t) method
(6) 95 percent UCL calculated using the KM mean and a BCa bootstrap to estimate the UCL
(7) 95 percent UCL calculated using the KM mean and a percentile bootstrap to estimate the UCL
(8) 95 percent UCL calculated using the KM mean and Student's t cutoff for the UCL
(9) 95 percent UCL calculated using the KM mean and the nonparametric Chebyshev method to estimate the UCL
(10) 95 percent UCL calculated using Land's H statistic
(11) 95 percent UCL calculated using the nonparametric Chebyshev method
(12) 97.5 percent UCL calculated using the nonparametric Chebyshev method
(13) 99 percent UCL calculated using the nonparametric Chebyshev method
(14) 97.5 percent UCL calculated using the KM mean and the nonparametric Chebyshev method to estimate the UCL
(15) 99 percent UCL calculated using the KM mean and the nonparametric Chebyshev method to estimate the UCL
(16) 95 percent UCL calculated using the Gamma Adjusted KM method

**References:**

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
Prepared by Singh, A. and A.K. Singh. EPA/600/R-07/041. October.

**TABLE 3.2: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - ALL SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | All Soils |
| Exposure Medium: | All Soils |

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Frequency of Detection | Number of High Censored Results (a) | Arithmetic Mean (b) | 95 UCL Distribution (c) | | Maximum Concentration (qualifier) | Exposure Point Concentration Value | Statistic | Method (d) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dico Property | Dioxins | 1746-01-6 | 2,3,7,8-TCDD Equivalent | 14/16 | 0 | 1.19E-05 | 1.92E-05 | N | 5.40E-05 | 1.92E-05 | 95 UCL | (8) |
| Dico Property | Pesticide | 50-29-3 | p,p'-DDT | 15/34 | 0 | 1.35E-01 | 5.75E-01 | L | 3.30E+00 | 5.75E-01 | 95 UCL | (9) |
| Dico Property | VOC | 67-66-3 | Chloroform | 1/34 | 0 | -- | -- | -- | 7.40E-01 | 7.40E-01 | Maximum | (1) |
| Dico Property | VOC | 156-59-2 | cis-1,2-Dichloroethylene | 5/34 | 0 | 8.42E-01 | 5.14E+00 | G | 2.40E+01 | 5.14E+00 | 95 UCL | (4) |
| Dico Property | VOC | 79-01-6 | Trichloroethene | 14/34 | 0 | 1.45E+00 | 2.18E+00 | G | 1.50E+01 | 2.18E+00 | 95 UCL | (4) |

**Notes:**

All concentrations in milligrams per kilogram.
All soils are those soils between 0 and 10 feet below ground surface
The maximum detected value was selected as the EPC unless the number of samples collected is ≥ 10 and the number of detections is ≥ 4. If these conditions are met, the EPC is calculated in accordance with EPA guidance (2002, 2013).

-- Not applicable
CAS Chemical Abstract Service
EPA U.S. Environmental Protection Agency
EPC Exposure point concentration
RAGS Risk Assessment Guidance for Superfund
95 UCL One-sided 95 percent upper confidence limit of the mean. Following EPA (2002, 2013), this value may be estimated by either a 95, 97.5, or 99 percent UCL depending on sample size, skewness, and degree of censorship.

a Number of censored (nondetect) results that exceeded the maximum detected concentration. These results are excluded from statistical calculations.
b The arithmetic mean is based on the Kaplan-Meier (KM) mean for chemicals with non-detected values in the dataset.
c Distribution codes as follows: N=Normal, G=Gamma, LN=Lognormal, and NP=Non-parametric
d All methods follow EPA (2002, 2013).
Method (Statistic) Codes are defined as follows (some method codes may not be used in the table):
(1) Maximum detected concentration
(2) 95 percent UCL calculated using Student's t distribution
(3) 95 percent UCL calculated using the approximate gamma method
(4) 95 percent UCL calculated using the adjusted gamma method
(5) 95 percent UCL calculated using the Hall's Bootstrap (or Bootstrap t) method
(6) 95 percent UCL calculated using the KM mean and a BCa bootstrap to estimate the UCL
(7) 95 percent UCL calculated using the KM mean and a percentile bootstrap to estimate the UCL
(8) 95 percent UCL calculated using the KM mean and Student's t cutoff for the UCL
(9) 95 percent UCL calculated using the KM mean and the nonparametric Chebyshev method to estimate the UCL

**References:**

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
EPA. 2013. ProUCL Version 5.1 Technical Guide statistical software for Environmental Applications for Data Sets with and without Nondetect Observations.
Prepared by Singh, A. and A.K. Singh. EPA/600/R-07/041. October.

**TABLE 3.3: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Medium: | Sediment |
| Exposure Medium: | Sediment |

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Frequency of Detection | Number of High Censored Results (a) | Arithmetic Mean (b) | 95 UCL Distribution (c) | | Maximum Concentration (qualifier) | Exposure Point Concentration | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Value | Statistic | Method (d) |
| South Pond | Pesticide | 309-00-2 | Aldrin | 11/11 | 0 | 2.35E+00 | 9.04E+00 | G | 1.50E+01 | 9.04E+00 | 95 UCL | (4) |
| South Pond | Pesticide | 5103-71-9 | alpha-Chlordane | 11/11 | 0 | 6.95E-01 | 1.33E+00 | G | 2.20E+00 | 1.33E+00 | 95 UCL | (4) |
| South Pond | Pesticide | 60-57-1 | Dieldrin | 11/11 | 0 | 2.38E+00 | 6.09E+00 | G | 9.50E+00 | 6.09E+00 | 95 UCL | (4) |
| South Pond | Pesticide | 12789-03-6 | gamma-Chlordane | 11/11 | 0 | 6.98E-01 | 1.51E+00 | G | 2.50E+00 | 1.51E+00 | 95 UCL | (4) |

**Notes:** All concentrations in milligrams per kilogram.

The maximum detected value was selected as the EPC unless the number of samples collected is ≥ 10 and the number of detections is ≥ 4. If these conditions are met, the EPC is calculated in accordance with EPA guidance (2002, 2013).

-- Not applicable
CAS Chemical Abstract Service
EPA U.S. Environmental Protection Agency
EPC Exposure point concentration
RAGS Risk Assessment Guidance for Superfund
95 UCL One-sided 95 percent upper confidence limit of the mean. Following EPA (2002, 2013), this value may be estimated by either a 95, 97.5, or 99 percent UCL depending on sample size, skewness, and degree of censorship.

a Number of censored (nondetect) results that exceeded the maximum detected concentration. These results are excluded from statistical calculations.
b The arithmetic mean is based on the Kaplan-Meier (KM) mean for chemicals with non-detected values in the dataset.
c Distribution codes as follows: N=Normal, G=Gamma, LN=Lognormal, and NP=Non-parametric
d All methods follow EPA (2002, 2013).

Method (Statistic) Codes are defined as follows (some method codes may not be used in the table):
(1) Maximum detected concentration
(2) 95 percent UCL calculated using Student's t distribution
(3) 95 percent UCL calculated using the approximate gamma method
(4) 95 percent UCL calculated using the adjusted gamma method

**References:**

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
Prepared by Singh, A. and A.K. Singh. EPA/600/R-07/041. October.

**TABLE 3.4: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Curent/Future |
| Medium: | Surface Water |
| Exposure Medium: | Surface Water |

| Exposure Area | Analyte Class | CAS Number | Chemical of Potential Concern | Frequency of Detection | Number of High Censored Results (a) | Arithmetic Mean (b) | 95 UCL Distribution (c) | | Maximum Concentration (qualifier) | Exposure Point Concentration | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Value | Statistic | Method (d) |
| South Pond | Pesticide | 5103-71-9 | alpha-Chlordane | 2/2 | 0 | -- | -- | -- | 1.10E-01 | 1.10E-01 | Maximum | (1) |
| South Pond | Pesticide | 60-57-1 | Dieldrin | 2/2 | 0 | -- | -- | -- | 2.60E-01 | 2.60E-01 | Maximum | (1) |
| South Pond | Pesticide | 12789-03-6 | gamma-Chlordane | 1/2 | 0 | -- | -- | -- | 9.80E-02 | 9.80E-02 | Maximum | (1) |

**Notes:**

All concentrations in micrograms per liter.
The maximum detected value was selected as the EPC unless the number of samples collected is ≥ 8 and the number of detections is ≥ 3.
If these conditions are met, the EPC is calculated in accordance with EPA guidance (2002, 2013).

-- Not applicable
CAS Chemical Abstract Service
EPA U.S. Environmental Protection Agency
EPC Exposure point concentration
RAGS Risk Assessment Guidance for Superfund

a Number of censored (nondetect) results that exceeded the maximum detected concentration. These results are excluded from statistical calculations.
b The arithmetic mean is based on the Kaplan-Meier (KM) mean for chemicals with non-detected values in the dataset.
c Distribution codes as follows: N=Normal, G=Gamma, LN=Lognormal, and NP=Non-parametric
d All methods follow EPA (2002, 2013).
Method (Statistic) Codes are defined as follows (some method codes may not be used in the table):
(1) Maximum detected concentration

**References:**

U.S. Environmental Protection Agency (EPA). 2002. "Calculating Exposure Point Concentrations at Hazardous Waste Sites." OSWER 9285.6-10. Office of Emergency and Remedial Response. Washington, DC. December.
Prepared by Singh, A. and A.K. Singh. EPA/600/R-07/041. October.

**TABLE 3.5: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Frequency of Detection | Number of High Censored Results (a) | Arithmetic Mean (b) | 95 UCL Distribution (c) | | Maximum Concentration (qualifier) | Exposure Point Concentration | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Value | Statistic | Method (d) |
| Groundwater | VOC | 107-06-2 | 1,2-Dichloroethane | 1/14 | 2 | -- | -- | -- | 6.00E-01 | 6.00E-01 | Maximum | (1) |
| Groundwater | VOC | 540-59-0 | 1,2-Dichloroethylene (total) | 11/14 | 0 | -- | -- | -- | 7.10E+01 | 7.10E+01 | Maximum | (1) |
| Groundwater | VOC | 79-01-6 | Trichloroethene | 8/14 | 0 | -- | -- | -- | 4.80E+02 | 4.80E+02 | Maximum | (1) |
| Groundwater | VOC | 75-01-4 | Vinyl Chloride | 3/14 | 2 | -- | -- | -- | 3.40E+00 | 3.40E+00 | Maximum | (1) |

**Notes:** All concentrations in micrograms per liter.
The maximum detected value was selected as the EPC consistent with EPA guidance (EPA 2014).
-- Not applicable
CAS Chemical Abstract Service
EPA U.S. Environmental Protection Agency
RAGS Risk Assessment Guidance for Superfund

a Number of censored (nondetect) results that exceeded the maximum detected concentration. These results are excluded from statistical calculations.
b The arithmetic mean is based on the Kaplan-Meier (KM) mean for chemicals with non-detected values in the dataset.
c Distribution codes as follows: N=Normal, G=Gamma, LN=Lognormal, and NP=Non-parametric
d All methods follow EPA (2002, 2013).
Method (Statistic) Codes are defined as follows (some method codes may not be used in the table):
(1) Maximum detected concentration

**References:**
U.S. Environmental Protection Agency (EPA). 2014. "Determining Groundwater Exposure Point Concentrations." OSWER Directive 9283.1-42. February

## TABLE 3.6: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - INDOOR AIR (VAPOR INTRUSION)
## DES MOINES TCE SITE, DES MOINES, IOWA

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Groundwater |
| Exposure Medium: | Indoor Air |

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Exposure Point Concentration in Groundwater | | | Exposure Point Concentration in Indoor Air | |
|---|---|---|---|---|---|---|---|---|
| | | | | Value | Units | Statistic | Value | Units |
| Indoor Air | VOC | 107-06-2 | 1,2-Dichloroethane | 6.00E-01 | µg/L | Maximum | 1.39E-02 | µg/m3 |
| Indoor Air | VOC | 540-59-0 | 1,2-Dichloroethylene (total) | 7.10E+01 | µg/L | Maximum | 6.15E+00 | µg/m3 |
| Indoor Air | VOC | 79-01-6 | Trichloroethene | 4.80E+02 | µg/L | Maximum | 9.29E+01 | µg/m3 |
| Indoor Air | VOC | 75-01-4 | Vinyl Chloride | 3.40E+00 | µg/L | Maximum | 2.52E+00 | µg/m3 |

**Notes:**

The maximum detected value was selected as the groundwater EPC consistent with EPA guidance (EPA 2014).
The EPA's Vapor Intrusion Screening Level Calculator (EPA 2016) was used to calculate the indoor air concentrations based on the groundwater EPCs with an average groundwater temperature of 51 degees Fahrenheit (10.6 degrees Celsius) (USGS 1925).

| | |
|---|---|
| -- | Not applicable |
| µg/L | Micrograms per liter |
| µg/m3 | Micrograms per cubic meter |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| RAGS | Risk Assessment Guidance for Superfund |

**References:**

U.S. Environmental Protection Agency (EPA). 2014. "Determining Groundwater Exposure Point Concentrations." OSWER Directive 9283.1-42. February
EPA. 2016. Vapor Intrusion Screening Level (VISL) Calculator Version 3.5.1 (May 2016 RSLs). July 11.
Water
Supply Paper 520-F.

## TABLE 3.7: EPA RAGS PART D TABLE 3, EXPOSURE POINT CONCENTRATION SUMMARY - TRENCH AIR
## DES MOINES TCE SITE, DES MOINES, IOWA

| | |
|---|---|
| Scenario Timeframe: | Future |
| Medium: | Groundwater |
| Exposure Medium: | Trench Air |

| Exposure Point | Analyte Class | CAS Number | Chemical of Potential Concern | Exposure Point Concentration in Groundwater | | | Exposure Point Concentration in Indoor Air | |
|---|---|---|---|---|---|---|---|---|
| | | | | Value | Units | Statistic | Value | Units |
| Indoor Air | VOC | 107-06-2 | 1,2-Dichloroethane | 6.00E-01 | µg/L | Maximum | 4.58E+00 | µg/m3 |
| Indoor Air | VOC | 540-59-0 | 1,2-Dichloroethylene (total | 7.10E+01 | µg/L | Maximum | 5.66E+02 | µg/m3 |
| Indoor Air | VOC | 79-01-6 | Trichloroethene | 4.80E+02 | µg/L | Maximum | 3.31E+03 | µg/m3 |
| Indoor Air | VOC | 75-01-4 | Vinyl Chloride | 3.40E+00 | µg/L | Maximum | 3.42E+01 | µg/m3 |

**Notes:**

The maximum detected value was selected as the groundwater EPC consistent with EPA guidance (EPA 2014).
The Virginia Department of Environmental Quality's Trench Model (VDEQ 2007) was used to calculate the air concentrations in a trench based on the groundwater EPCs with an average groundwater temperature of 51 degees Fahrenheit (10.6 degrees Celsius) (USGS 1925).

| | |
|---|---|
| -- | Not applicable |
| µg/L | Micrograms per liter |
| µg/m3 | Micrograms per cubic meter |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| RAGS | Risk Assessment Guidance for Superfund |

**References:**


U.S. Environmental Protection Agency (EPA). 2014. "Determining Groundwater Exposure Point Concentrations." OSWER Directive 9283.1-42. February

EPA. 2016. Vapor Intrusion Screening Level (VISL) Calculator Version 3.5.1 (May 2016 RSLs). July 11.

Water

Supply Paper 520-F.

Virginia Department of Environmental Quality. 2007. Exposure-point concentrations (inhalation) for construction/utility workers in a trench: Groundwater less than 15 feet deep. October 5.

**TABLE 4.1.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CHILD RESIDENT - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Child | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | $CDI_{NC}$ (mg/kg-day) = |
| Ingestion | Resident | Age 0-6 | | IRS | Soil Ingestion Rate | 200 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x FI x EF x ED x CFs |
| | | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | BW x ATnc |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Child | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | $CDI_{NC}$ (mg/kg-day) = |
| | Resident | Age 0-6 | | SA | Skin Surface Area | 2,373 | $cm^2$ | EPA, 2016 (7) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | | | | AF | Soil-to-Skin Adherence Factor | 0.2 | $mg/cm^2$ | EPA, 2016 (8) | BW x ATnc |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Future | Child | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_{NC}$ ($mg/m^3$) = |
| | Resident | Age 0-6 | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | and Vapors | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | ATnc |
| | | | from Soil | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | |
| | | | | ET | Exposure Time | 24 | hours/day | EPA, 2016 (10) | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for children.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: Default exposure frequency for residents.

(4) ED: Default exposure duration for child residents.

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 30 years (ED) for carcinogens for residents using the aggregate resident receptor only.

(7) SA: Default skin surface area available for soil contact for child residents, hands, forearms, lower legs and feet (birth to < 6 years).

(8) AF: Default soil to skin adherence factor for children.

(9) PEF: default PEF for Nebraska (Climatic Zone 5).

(10) ET: Default exposure time for residents.

**Notes:**

(1) IRS: Default ingestion rate for children.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: Default exposure frequency for residents.

(4) ED: Default exposure duration for child residents.

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 30 years (ED) for carcinogens for residents using the aggregate resident receptor only.

(7) SA: Default skin surface area available for soil contact for child residents, hands, forearms, lower legs and feet (birth to < 6 years).

(8) AF: Default soil to skin adherence factor for children.

(9) PEF: default PEF for Nebraska (Climatic Zone 5).

(10) ET: Default exposure time for residents.

| | | |
|---|---|---|
| BPJ | BPJ | Best Professional Judgment |
| $cm^2$ | $cm^2$ | Square centimeter |
| kg | kg | Kilogram |
| kg/mg | kg/mg | Kilogram per milogram |
| $m^3/kg$ | $m^3/kg$ | Cubic meter per kilogram |
| mg/µg | mg/µg | Milligrams per microgram |
| $mg/cm^2$ | $mg/cm^2$ | Milligrams per square centimeter |
| mg/kg | mg/kg | Milligrams per kilogram |
| mg/kg-day | mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A)." Office of Emergency and Remedial Response. EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Levels (RSLs) - Generic Tables." Available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may2016. Accessed May 2016.

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A)." Office of Emergency and Remedial Response. EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Levels (RSLs) - Generic Tables." Available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may2016

**TABLE 4.1.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CHILD RESIDENT - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Groundwater
**Exposure Medium:** Groundwater, Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Future Resident | Child Age 0-6 | Groundwater | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| | | | | IRgw | Tapwater Ingestion Rate | 0.78 | L/day | EPA, 2016 (1) | $CDI_{NC}$ (mg/kg-day) = |
| | | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | EPCgw x IRgw x FI x EF x ED x CFw |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | BW x ATnc |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |
| Dermal | Future Resident | Child Age 0-6 | Groundwater | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| | | | | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | For Organics: |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | CDI (mg/kg-day) = |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | EPCgw x FA x Kp x SAgw x EF x ED x DAevent x EV x CFw x CFv |
| | | | | SAgw | Skin Surface Area | 6,365 | $cm^2$ | EPA, 2016 (7) | BW x ATnc |
| | | | | ETb | Exposure Time - Bathing | 0.54 | hour/event | EPA, 2016 (8) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | If ETb < or = t*, then: |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ETb)/\pi}$ |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | |
| | | | | $\tau_{event}$ | Lag Time per Event | chemical-specific | hour/event | See Table 5.3 | If ETb > t*, then: |
| | | | | B | Ratio of Permeability Coefficient of a Compound through t | chemical-specific | unitless | See Table 5.3 | $DAevent = ETb/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | Corneum Relative to its Permeability Coefficient Across th | -- | -- | -- | |
| | | | | | Viable Epidermis | -- | -- | -- | |
| | | | | DAevent | Absorbed Dose per Event | site-specific | $mg/cm^2$-event | -- | |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hour | See Table 5.3 | |
| | | | | EV | Event Frequency | 1 | event/day | EPA, 2016 (9) | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |
| Inhalation | Future Resident | Child Age 0-6 | Indoor Air Vapors (Household Use) | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| | | | | $VF_W$ | Volatilization Factor, Domestic Use | 0.5 | $L/m^3$ | EPA, 2016 (10) | CDE ($mg/m^3$) = |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | EPCgw x VFw x EF x ED x ET x CFgw x CFt |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | ATnc |
| | | | | ET | Exposure Time | 24 | hour/day | EPA, 2016 (11) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Future Resident | Child Age 0-6 | Indoor Air Vapors (Vapor Intrusion) | EPCia | Chemical Concentration in Indoor Air | medium-specific | ug/m$^3$ | See Table 3 Series | CDE (mg/m$^3$) = $\frac{EPCia \times EF \times ED \times ET \times CFt \times CFa}{ATnc}$ |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (3) | |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (4) | |
| | | | | ET | Exposure Time | 24 | hour/day | EPA, 2016 (11) | |
| | | | | CFa | Conversion Factor - Air | 0.001 | mg/ug | -- | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989, 2016 (6) | |

**Notes:**

(1) IRgw: Default water ingestion rate for a child.

(2) FI: Assumes all water is consumed from the residence.

(3) EF: Default exposure frequency for residents.

(4) ED: Default exposure duration for child residents.

(5) BW: Default body weight for a child.

(6) ATnc: 365 days/year x 6 year ED; note, carcinogenic effects for residents were evaluated using the more-sensitive aggregate resident receptor only.

(7) SAgw: Default skin surface area for a child resident during bathing.

(8) ETb: Default exposure time for child resident during bathing.

(9) EV; Default event frequency for bathing.

(10) VFw: Default volatilization factor for domestic use of groundwater.

(11) ET: Default expsoure time for a resident.

| | |
|---|---|
| -- | Not applicable |
| cm/hour | Centimeter per hour |
| cm2 | Square centimeter |
| kg | Kilogram |
| L/cm3 | Liter per cubic centimeter |
| L/day | Liter per day |
| L/m3 | Liter per cubic meter |
| mg/cm2-event | Milligrams per square centimeter per event |
| mg/ug | Milligrams per microgram |
| ug/L | Micorgrams per liter |
| ug/m3 | Microgram per cubic meter |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.2.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE AGGREGATE RESIDENT- SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium: Surface and Subsurface Soil**, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Resident | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | $CDI_C$ (mg/kg-day) = |
| Ingestion | Resident | Age 0 to 26 | | IRSadj | Age-Adjusted Soil Ingestion Rate | 105 | mg-year/kg-day | EPA, 2016 (1) | EPCs x RBA x IRS[M]adj x FI x EF x CFs |
| | | | | IRSMadj | Mutagenic IRSadj | 477 | mg-year/kg-day | EPA, 2016 (2) | ATc |
| | | | | FI | Fractional Intake | 1 | unitless | BPJ (3) | |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Resident | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | $CDI_C$ (mg/kg-day) = |
| | Resident | Age 0 to 26 | | DFSadj | Age-Adjusted Dermal Contact Factor - Soil | 330 | mg-year/kg-day | EPA, 2014 (6) | EPCs x ABSd x DFS[M]adj x EF x CFs |
| | | | | DFSMadj | Mutagenic DFSadj | 1391 | mg-year/kg-day | EPA, 2016 (7) | ATc |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1E-06 | kg/mg | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Future | Resident | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3$/kg | See Table 5.3 | $CDE_C$ (µg/$m^3$) = |
| | Resident | Age 0 to 26 | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3$/kg | EPA, 2016 (8) | EPCs x (1/PEF + 1/VF) x EF x ED[Madj] x ET x CFt |
| | | | and Vapors | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | CFa x ATc |
| | | | from Soil | ED | Exposure Duration | 26 | years | EPA, 2016 (9) | |
| | | | | EDMadj | Mutagenic ED | 72 | years | EPA, 2016 (10) | |
| | | | | ET | Exposure Time | 24 | hours/day | EPA, 2016 (11) | |
| | | | | CFa | Conversion Factor - Air | 1E-03 | mg/µg | -- | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

**Notes:**

(1) IRSadj: Consistent with the EPA (2016) RSL User's Guide, age-adjusted soil ingestion rates for aggregate residents were calculated as:

IRSadj (mg-year/kg-day) = ($ED_{0-2}$ (2 yr) x $IRS_{child}$ (200 mg/day) / $BW_{child}$ (15kg))+($ED_{2-6}$ (4 yr) x $IRS_{child}$ (200 mg/day) / $BW_{child}$ (15kg)) + ($ED_{6-16}$ (10 yr) x $IRS_{adult}$ (100 mg/day) / $BW_{adult}$ (80kg)) + ($ED_{16-26}$ (10 yr) x $IRS_{adult}$ (100 mg/day) / $BW_{adult}$ (80kg))

Where: ED = Exposure Duration (years); IRS = Ingestion Rate of Soil (mg/day); BW = Body Weight (kg)

(2) IRSMadj: Consistent with the EPA (2016) RSL User's Guide, age-adjusted soil ingestion rates for mutagens for aggregate residents were calculated as:

IRSMadj (mg-year/kg-day) = (ED0-2 (2 yr) x IRSchild (200 mg/day) x ADAF0-2 (10)/ BWchild (15kg))+(ED2-6 (4 yr) x IRSchild (200 mg/day) x ADAF2-6 (3) / BWchild (15kg)) + (ED6-16 (10 yr) x IRSadult (100 mg/day) x ADAF6-16 (3) / BWadult (80kg)) + (ED16-26 (10 yr) x IRSadult (100 mg/day) x ADAF16-26 (1) / BWadult (80kg))

Where: ED = Exposure Duration (years); IRS = Ingestion Rate of Soil (mg/day); ADAF = Age-Dependent Adjustment Factor (unitless); BW = Body Weight (kg)

(3) FI: Assumes 100% of soil ingestion occurs at the Site.

(4) EF: Default exposure frequency for residents.

(5) ATc: Assumes 365 days/year for a 70-year lifetime for a non-carcinogenic effect for residents. Note that for a carcinogenic effect for residents, the average daily dose is averaged over a lifetime of 70 years.

(6) $DFS_{adj}$: Consistent with EPA (2014) "Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens", age-adjusted soil ingestion factors for a child resident and a lifetime resident were calculated as:

$$(ED_{0\text{-}2}\ (2\ yr) \times SA_{c}(2.3\ cm^2/cm^2) \times AF_{c}(2.0\ mg/cm^2) \times ABS_{c}(0.1) / BW_{c}(4.1\ kg)) + (ED_{2\text{-}6}\ (4\ yr) \times SA_{c}(2.3\ cm^2/cm^2) \times AF_{c}(2.0\ mg/cm^2) \times ABS_{c}(0.1) / BW_{c}(15\ kg)) + (ED_{6\text{-}16}\ (6.365\ yr) \times SA_{a}(6.365\ cm^2/cm^2) \times AF_{a}(0.07\ mg/cm^2) \times ABS_{a}(0.1) / BW_{a}(80\ kg)) + (ED_{16\text{-}26}\ (6.365\ yr) \times SA_{a}(6.365\ cm^2/cm^2) \times AF_{a}(0.07\ mg/cm^2) \times ABS_{a}(0.1) / BW_{adult}(80\ kg))$$

Where: ED = Exposure Duration (years); SA = Skin Surface Area (cm²/cm²); AF = Soil-to-skin Adherence Factor (mg/cm²); ABS = Dermal Absorption Factor (unitless); BW = Body Weight (kg)

(7) DFSMadj: Consistent with EPA (2014) "Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens", age-adjusted soil ingestion factors for a child resident and a lifetime resident were calculated as:

$$(ED_{0\text{-}2}\ (2\ yr) \times SA_{c}(2.3\ cm^2/cm^2) \times AF_{c}(2.0\ mg/cm^2) \times ABS_{c}(0.1) \times ADAF_{c}(10) / BW_{c}(4.1\ kg)) + (ED_{2\text{-}6}\ (4\ yr) \times SA_{c}(2.3\ cm^2/cm^2) \times AF_{c}(2.0\ mg/cm^2) \times ABS_{c}(0.1) \times ADAF_{c}(3) / BW_{c}(15\ kg)) +$$
$$(ED_{6\text{-}16}\ (10\ yr) \times SA_{a}(6.365\ cm^2/cm^2) \times AF_{a}(0.07\ mg/cm^2) \times ABS_{a}(0.1) \times ADAF_{a}(3) / BW_{a}(80\ kg)) + (ED_{16\text{-}26}\ (6.365\ yr) \times SA_{a}(6.365\ cm^2/cm^2) \times AF_{a}(0.07\ mg/cm^2) \times ABS_{a}(0.1) \times ADAF_{a}(1) / BW_{adult}(80\ kg))$$

Where: ED = Exposure Duration (years); SA = Skin Surface Area (cm²/cm²); AF = Soil-to-skin Adherence Factor (mg/cm²); ADAF = Age-Dependent Adjustment Factor (unitless); BW = Body Weight (kg)

(8) PEF: default PEF, Nebraska (Climatic Zone 5).

(9) ED: Default exposure duration for residents.

(10) EDMadj: To account for potential increased susceptibility to carcinogenic effects during early life stages, age-dependent adjustment factors (ADAFs) of 10 and 3 are applied to the ED for ages 0 to 2 and 2 to 6, respectively, and an ADAF of 1 is applied to the ED for ages 6 to 16 and 16 to 26 [(2 x 10) + (4 x 3) + (6.365 x 1) = 32.365; (10*3)+(10*1)=72].

(11) Default exposure time for residents.

| | | |
|---|---|---|
| BPJ | BPJ | Best Professional Judgment |
| $cm^2$ | $cm^2$ | Square centimeter |
| kg | kg | Kilogram |
| kg/mg | kg/mg | Kilogram per milogram |
| mg/µg | mg/µg | Milligrams per microgram |
| $m^3/kg$ | $m^3/kg$ | Cubic meter per kilogram |
| $mg/cm^2$ | $mg/cm^2$ | Milligrams per square centimeter |
| mg/kg | mg/kg | Milligrams per kilogram |
| mg/kg-day | mg/kg-day | Milligrams per kilogram per day |

**Sources:** **Sources:**


U.S. Environmental Protection Agency (EPA). 1989. Risk Assessment Guidance for Superfund: Volume I. Human Health Evaluation Manual (Part A). Office of Solid Waste and Emergency Response. EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Levels User's Guide." Available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.2.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE AGGREGATE RESIDENT - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Groundwater
**Exposure Medium:** Groundwater, Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| Ingestion | Future | Aggregate Resident | Groundwater | IRGWadj | Age-Adjusted Tapwater Ingestion Rate | 0.94 | L-year/kg-day | EPA, 2016 (1) | CDI (mg/kg-day) = |
| | Resident | Age 0 to 26 | | IRGWMadj | Mutagenic IRGWadj | 2.9 | L-year/kg-day | EPA, 2016 (2) | EPCgw x IRGW[M]adj x FI x EF x CFw |
| | | | | FI | Fractional Intake | 1 | unitless | BPJ (3) | ATc |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Future | Aggregate Resident | Groundwater | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | Resident | Age 0 to 26 | | DFGWadj | Age-Adjusted Dermal Contact Factor - Groundwater | 7,459 | $cm^2$-year/kg | EPA, 2016 (6) | |
| | | | | DFGWMadj | Mutagenic DFGWadj | 23,405 | $cm^2$-year/kg | EPA, 2016 (7) | |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | EPCgw x Kp x DFGW[M]adj x EF x $ET_b$ x CFgw x CFv |
| | | | | ETbadj | Exposure Time-bath | 0.67 | hour/event | EPA, 2016 (8) | AT |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | For Organics: |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | | | | $\tau_{event}$ | Lag Time per Event | chemical-specific | hour/event | See Table 5.3 | DAevent x EV x EF x DFGW[M]adj |
| | | | | B | Ratio of Permeability Coefficient of a Compound through the | chemical-specific | unitless | See Table 5.3 | AT |
| | | | | | Corneum Relative to its Permeability Coefficient Across the | -- | -- | -- | If ET < or = t*, then: |
| | | | | | Viable Epidermis | -- | -- | -- | DAevent = 2 x FA x Kp x EPCgw x CFv x CFgw x [sqrt (6 x τevent x $ET_b$/pi)] |
| | | | | DAevent | Absorbed Dose per Event | site-specific | $mg/cm^2$-event | EPA, 2004 | If ET > t*, then: |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hour | See Table 5.3 | DAevent = FA x Kp x EPCgw x CFv x CFgw x [$ET_b$/(1+B) + 2 x τevent |
| | | | | EV | Event Frequency | 1 | event/day | EPA, 2004 | x ({1+3B+$3B^2$}/{1+B})$^2$)] |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCgw | Exposure Point Concentration - Groundwater | See Table 3s | ug/L | See Table 3 Series | |
| Inhalation | Future | Aggregate Resident | Indoor Air | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | CDE (μg/$m^3$) = |
| | Resident | Age 0 to 26 | Vapors | ED | Exposure Duration | 26 | years | EPA, 2016 (9) | EPCgw x VFw x EF x ED[Madj] xETx CFt |
| | | | (Household Use) | EDMadj | Mutagenic ED | 72 | years | EPA, 2016 (10) | ATc |
| | | | | ET | Exposure Time | 24 | hour/day | EPA, 2016 (11) | |
| | | | | $VF_W$ | Volatilization factor, Domestic Use | 0.5 | $L/m^3$ | EPA, 2016 (12) | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inhalation | Future Resident | Resident Age 0 to 26 | Indoor Air Vapors (Vapor Intrusion) | EPCia | Chemical Concentration in Indoor Air | medium-specific | ug/m$^3$ | See Table 3 Series | CDE (µg/m$^3$) = |
| | | | | EF | Exposure Frequency | 350 | days/year | EPA, 2016 (4) | EPCia x EF x ED[Madj] x ET x CFt |
| | | | | ED | Exposure Duration | 26 | years | EPA, 2016 (2) | ATc |
| | | | | EDMadj | Mutagenic ED | 72 | years | EPA, 2016 (10) | |
| | | | | ET | Exposure Time | 24 | hours/day | EPA, 2016 (11) | |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

**Notes:**

(1) IRGWadj: Consistent with the EPA (2016) RSL User's Guide, an age-adjusted tapwater ingestion rate for aggregate residents calculated as:

IRGWadj (L-year/kg-day) = ($ED_{0-2}$ (2 yr) x $IRS_{child}$ (0.78 L/day) / $BW_{child}$ (15 kg))+($ED_{2-6}$ (4 yr) x $IRS_{child}$ (0.78 L/day) / $BW_{child}$ (15 kg)) + ($ED_{6-16}$ (10 yr) x $IRS_{adult}$ (2.5 L/day) / $BW_{adult}$ (80 kg)) + ($ED_{16-26}$ (10 yr) x $IRS_{adult}$ (2.5 L/day) / $BW_{adult}$ (80 kg))

Where: ED = Exposure Duration (years); IRS = Ingestion Rate of Tap water (L/day); BW = Body Weight (kg) EPA (2016) recommended value for calculating age-adjusted rates.

(2) IRGWMadj: Consistent with the EPA (2016) RSL User's Guide, an age-adjusted tapwater ingestion rate for mutagens for aggregate residents calculated as:

IRSMadj (mg-year/kg-day) = ($ED_{0-2}$ (2 yr) x $IRS_{child}$ (0.78 L/day) x $ADAF_{0-2}$ (10)/ $BW_{child}$ (15 kg))+($ED_{2-6}$ (4 yr) x $IRS_{child}$ (0.78 L/day) x $ADAF_{2-6}$ (3) / $BW_{child}$ (15 kg)) + ($ED_{6-16}$ (10 yr) x $IRS_{adult}$ (2.5 L/day) x $ADAF_{6-16}$ (3) / $BW_{adult}$ (80 kg)) + ($ED_{16-26}$ (10 yr) x $IRS_{adult}$ (2.5 L/day) x $ADAF_{16-26}$ (1) / $BW_{adult}$ (80 kg))

Where: ED = Exposure Duration (years); IRS = Ingestion Rate of Tap water (L/day); BW = Body Weight (kg) EPA (2016) recommended value for calculating age-adjusted rates; ADAF = Age-Dependent Adjustment Factor (unitless)

(3) FI: Assumes 100% of groundwater ingestion occurs at the Site.

(4) EF: Default exposure frequency for residents.

(5) ATc: Assumes 365 days per year over a 70-year lifetime. Note that non-carcinogenic effects for residents were evaluated using the more-sensitive child receptor.

(6) DFGWadj: Consistent with the methodology presented in the EPA (2016) RSL User's Guide, the RME age-adjusted dermal contact rate for residents age 0 to 26 is calculated as:

DFGWadj (cm2-hr-yr/kg-day) = ((ED0-2 (2 yrs) x SAchild (6,365 cm2) / BWchild (15 kg)) + (ED2-6 (4 yrs) x SAchild (6,365 cm2) / BWchild (15 kg)) + (ED6-16 (10 yrs) x SAadult (19,652 cm2) / BWadult (80 kg)) + (ED16-26 (10 yrs) x SAadult (19,652 cm2) / BWadult (80 kg))

Where: ED = Exposure Duration (years); SA = Skin Surface Area (cm$^2$); BW = Body Weight (kg)

(7) DFGWMadj: Consistent with the methodology presented in the EPA (2016) RSL User's Guide, the RME age-adjusted dermal contact rate for mutagens for residents age 0 to 26 is calculated as:

DFGWMadj (cm$^2$-hr-yr/kg-day) = (($ED_{0-2}$ (2 yrs) x SAchild (6,365 cm$^2$) x $ADAF_{0-2}$ (10) / BWchild (15 kg)) + ($ED_{2-6}$ (4 yrs) x SAchild (6,365 cm$^2$) x $ADAF_{2-6}$ (3) / BWchild (15 kg)) + ($ED_{6-16}$ (10 yrs) x SAadult (19,652 cm$^2$) x ADAF6-16 (3) / BWadult (80 kg)) + (ED16-26 (10 yrs) x SAadult (19,652 cm$^2$) x ADAF16-26 (1) / BWadult (80 kg)

Where: ED = Exposure Duration (years); SA = Skin Surface Area (cm$^2$); BW = Body Weight (kg); ADAF = Age-Dependent Adjustment Factor (unitless)

(8) ETbadj: Consistent with the EPA (2016) RSL User's Guide, the RME age-adjusted exposure time for bathing for residents 0 to 26 years was calculated as:

ETbadj (yr-hr/day) = ($ED_{0-6}$ (6 yrs) x ETb-child (0.54 hr/day)) + (ED6-26 (20 yrs) x ETb-adult (0.71 hr))/26

Where: ED = Exposure Duration (years); ETb = Exposure Time - Bathing (hr/day)

(9) ED: Default exposure duration for residents.

(10) EDMadj: To account for potential mutagenic effects via inhalation, age-dependent factors of 10, 3, 3, and 1 were applied to the EDs for ages 0-2, 2-6, 6-16, and 16-26 years, respectively.

(11) ET: Default resident time.

(12) VFw: Default volatilization value (Andelman constant [K]) for transfer of volatiles from groundwater to indoor air from domestic use.

| | |
|---|---|
| -- | Not applicable |
| cm/hour | Centimeter per hour |
| cm2 | Square centimeter |
| kg | Kilogram |
| L/cm3 | Liter per cubic centimeter |
| L/day | Liter per day |
| L/m3 | Liter per cubic meter |
| mg/cm2-event | Milligrams per square centimeter per event |
| mg/ug | Milligrams per microgram |
| ug/L | Micrograms per liter |
| ug/m3 | Microgram per cubic meter |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. “Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A).” Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)." Final. Office of Superfund Remediation and Technology Innovation. EPA/540/R/99/005. July.

EPA. 2016. “Regional Screening Level User's Guide.” May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.3.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE INDUSTRIAL/COMMERCIAL WORKER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Surface and Subsurface Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adult | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | IRS | Soil Ingestion Rate | 50 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x FI x EF x ED x CFs |
| | Commercial/ | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | BW x AT |
| | Industrial | | | EF | Exposure Frequency | 250 | days/year | EPA, 2016 (3) | |
| | Worker | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adult | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 3,527 | $cm^2$ | EPA, 2016 (7) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | Commercial/ | | | AF | Soil-to-Skin Adherence Factor | 0.12 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | Industrial | | | EF | Exposure Frequency | 250 | days/year | EPA, 2016 (3) | |
| | Worker | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Future | Adult | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_C$ ($\mu g/m^3$) = |
| | On-Site | | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | Commercial/ | | and Vapors | EF | Exposure Frequency | 250 | days/year | EPA, 2016 (3) | CFa x ATc |
| | Industrial | | from Soil | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | Worker | | | ET | Exposure Time | 8 | hours/day | EPA, 2016 (10) | $CDE_{NC}$ ($mg/m^3$) = |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | ATnc |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:** **Notes:**

(1) IRS: Default soil ingestion rate for indoor workers.
(2) FI: Assumes 100% of soil ingestion occurs at the Site.
(3) EF: Default exposure frequency for indoor workers.
(4) ED: Default exposure duration for workers.
(5) BW: Default adult body weight.
(6) ATc: 365 days/year x 70 years/year x 365 days/year x 25 year ED.
(7) SA: Default skin surface area for workers.
(8) AF: Default soil to skin adherence factor for outdoor workers.
(9) PEF: Default PEF value for Lincoln, Nebraska (Climatic Zone 5).
(10) ET: Assumes 8 hour work day.

| | | |
|---|---|---|
| BPJ | BPJ | Best Professional Judgment |
| $cm^2$ | $cm^2$ | Square centimeter |
| kg | kg | Kilogram |
| kg/mg | kg/mg | Kilogram per milogram |
| $m^3$/kg | $m^3$/kg | Cubic meter per kilogram |
| mg/µg | mg/µg | Milligrams per microgram |
| mg/$cm^2$ | mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | mg/kg | Milligrams per kilogram |
| mg/kg-day | mg/kg-day | Milligrams per kilogram per day |

**Sources:** **Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response. EPA 540/1-89/002a. December.

EPA. 2016. "Regional Screening Level Users Guide." Maps Available on line at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.3.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE INDUSTRIAL/COMMERCIAL WORKER - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Groundwater
**Exposure Medium:** Groundwater, Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| Ingestion | Future On-Site Commercial/ Industrial Worker | Adult | Groundwater | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| | | | | IRgw | Groundwater Ingestion Rate | 1.25 | L/day | EPA, 2016 (1) | CDI (mg/kg-day) = |
| | | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | EPCgw x IRgw x FI x EF x ED x CFgw |
| | | | | EF | Exposure Frequency | 250 | days/year | EPA 2016 (3) | BW x AT |
| | | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | | | | CFgw | Conversion Factor - Groundwater | 1.0E-03 | mg/ug | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| Inhalation | Future On-Site Commercial/ Industrial Worker | Adult | Indoor Air Vapors (Domestic Use) | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | |
| | | | | $VF_W$ | Volatilization Factor, Domestic Use | 0.5 | $L/m^3$ | EPA, 2016 (10) | CDE ($mg/m^3$) = |
| | | | | EF | Exposure Frequency | 250 | days/year | EPA 2016 (3) | EPCgw x VFw x EF x ED x ET x CFw x CFt |
| | | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | ATnc |
| | | | | ET | Exposure Time | 8 | hour/day | EPA, 2016 (11) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | CDE ($\mu g/m^3$) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hour | -- | EPCgw x VFw x EF x ED x ET x CFt |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | ATc |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| Inhalation | Future On-Site Commercial/ Industrial Worker | Adult | Indoor Air Vapors (Vapor Intrusion) | EPCia | Chemical Concentration in Indoor Air | Calculated | $ug/m^3$ | See Table 3 Series | $CDE_C$ ($\mu g/m^3$) = |
| | | | | EF | Exposure Frequency | 250 | days/year | EPA 2016 (3) | EPCia x EF x ED x ET x CFt |
| | | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | ATc |
| | | | | ET | Exposure Time | 8 | hours/day | EPA, 2016 (7) | |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | $CDE_{NC}$ ($mg/m^3$) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | EPCia x EF x ED x ET x CFa x CFt |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (4) | ATnc |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (4) | |

**Notes:**
(1) IRgw: Default water ingestion rate for worker.
(2) FI: Assumes all the water ingested by the worker is from the site.
(3) EF: Default exposure frequency for indoor workers.
(4) ED: Default exposure duration for workers.
(5) BW: Default adult body weight.
(6) ATc: 365 days/year x 70 year lifetime; ATnc: 365 days/year x 25 year ED.
(7) ET: Assumes 8-hour work day

| | | | |
|---|---|---|---|
| kg | Kilograms | mg/ug | Milligrams per microgram |
| L/day | Liter per day | ug/L | Micrograms per liter |
| $mg/m^3$ | Milligram per cubic meter | $ug/m^3$ | Microgram per cubic meter |
| mg/ug | milligram per microgram | | |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.4.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE OUTDOOR WORKER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Subsurface Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adult | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | On-Site Outdoor | | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x FI x EF x ED x CFs |
| | Worker | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | BW x AT |
| | | | | EF | Exposure Frequency | 225 | days/year | EPA, 2016 (3) | |
| | | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adult | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site Outdoor | | | SA | Skin Surface Area | 3,527 | $cm^2$ | EPA, 2014 (7) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | Worker | | | AF | Soil-to-Skin Adherence Factor | 0.12 | $mg/cm^2$ | EPA, 2014 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 225 | days/year | EPA, 2016 (3) | |
| | | | | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Future | Adult | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | |
| | On-Site Outdoor | | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | $CDE_C$ ($\mu g/m^3$) = |
| | Worker | | and Vapors | EF | Exposure Frequency | 225 | days/year | EPA, 2016 (3) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | from Soil | ED | Exposure Duration | 25 | years | EPA, 2016 (4) | CFa x ATc |
| | | | | ET | Exposure Time | 8 | hours/day | EPA, 2016 (10) | |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | $CDE_{NC}$ ($mg/m^3$) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | | ATnc | Averaging Time - Noncarcinogens | 9,125 | days | EPA, 1989 and 2016 (6) | ATnc |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Recommended soil ingestion rate for outdoor workers.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: These workers are assumed to be present on the year round, which corresponds to an EF of 225 days per year.

(4) ED: Default exposure duration for workers.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 years/year x 365 days/year x 25 year ED.

(7) SA: Default skin surface area for workers.

(8) AF: Default value for outdoor workers.

(9) PEF: Default PEF value for Nebraska (Climatic Zone 5).

(10) ET: Assumes 8 hour work day.

**Notes:**

(1) IRS: Recommended soil ingestion rate for outdoor workers.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: These workers are assumed to be present on the year round, which corresponds to an EF of 225 days per year.

(4) ED: Default exposure duration for workers.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 years/year x 365 days/year x 25 year ED.

(7) SA: Default skin surface area for workers.

(8) AF: Default value for outdoor workers.

(9) PEF: Default PEF value for Nebraska (Climatic Zone 5).

(10) ET: Assumes 8 hour work day.

| | | |
|---|---|---|
| BPJ | BPJ | Best Professional Judgment |
| $cm^2$ | $cm^2$ | Square centimeter |
| kg | kg | Kilogram |
| kg/mg | kg/mg | Kilogram per milogram |
| $m^3$/kg | $m^3$/kg | Cubic meter per kilogram |
| mg/µg | mg/µg | Milligrams per microgram |
| mg/$cm^2$ | mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | mg/kg | Milligrams per kilogram |
| mg/kg-day | mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA 540/1-89/002a. December.

EPA. 2016. "Regional Screening Level Users Guide." Map Available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA 540/1-89/002a. December.

EPA. 2016. "Regional Screening Level Users Guide." Map Available online at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.5.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CONSTRUCTION/UTILITY WORKER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Subsurface Soil, Particulates

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Current/Future | Adult | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | IRS | Soil Ingestion Rate | 330 | mg/day | EPA, 2002 and 2016 (1) | EPCs x RBA x IRS x FI x EF x ED x CFs |
| | Construction | | | FI | Fractional Intake | 1 | unitless | BPJ (2) | BW x AT |
| | Worker | | | EF | Exposure Frequency | 130 | days/year | BPJ (3) | |
| | | | | ED | Exposure Duration | 1 | year | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 182 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Current/Future | Adult | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 3,527 | $cm^2$ | EPA, 2014 (7) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | Construction | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2014 (8) | BW x AT |
| | Worker | | | EF | Exposure Frequency | 130 | days/year | BPJ (3) | |
| | | | | ED | Exposure Duration | 1 | year | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 182 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Current/Future | Adult | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | |
| | On-Site | | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | $CDE_C$ ($\mu g/m^3$) = |
| | Construction | | and Vapors | EF | Exposure Frequency | 130 | days/year | BPJ (3) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | Worker | | from Soil | ED | Exposure Duration | 1 | year | EPA, 2016 (4) | CFa x ATc |
| | | | | ET | Exposure Time | 8 | hours/day | EPA, 2016 (10) | |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | $CDE_{NC}$ ($mg/m^3$) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | | ATnc | Averaging Time - Noncarcinogens | 182 | days | EPA, 1989 and 2016 (6) | ATnc |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Recommended soil ingestion rate for construction workers.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: Assumes 5 days per week for a 26-week construction project.

(4) ED: Recommended exposure duration for construction workers.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 years lifetime, ATc: 365 days/year x 1 year ED.

(7) SA: Default skin surface area for workers.

(8) AF: Recommended soil adherence factor for construction workers.

(9) PEF: Default PEF value for Climatic Zone 5.

(10) ET: Assumes 8 hour work day.

**Notes:**

(1) IRS: Recommended soil ingestion rate for construction workers.

(2) FI: Assumes 100% of soil ingestion occurs at the Site.

(3) EF: Assumes 5 days per week for a 26-week construction project.

(4) ED: Recommended exposure duration for construction workers.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 years lifetime, ATc: 365 days/year x 1 year ED.

(7) SA: Default skin surface area for workers.

(8) AF: Recommended soil adherence factor for construction workers.

(9) PEF: Default PEF value for Climatic Zone 5.

(10) ET: Assumes 8 hour work day.

| | | |
|---|---|---|
| BPJ | BPJ | Best Professional Judgment |
| $cm^2$ | $cm^2$ | Square centimeter |
| kg | kg | Kilogram |
| kg/mg | kg/mg | Kilogram per milogram |
| $m^3$/kg | $m^3$/kg | Cubic meter per kilogram |
| mg/µg | mg/µg | Milligrams per microgram |
| mg/$cm^2$ | mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | mg/kg | Milligrams per kilogram |
| mg/kg-day | mg/kg-day | Milligrams per kilogram per day |

**Sources:**

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I - Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA-540/1-89/002a. December.

EPA. 2016. "Regional Screening Level Users Guide." May. Available on-line at https://www.epa.gov/risk/regional-screening-tables-may-2016.

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund Volume I - Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA-540/1-89/002a. December.

EPA. 2016. "Regional Screening Level Users Guide." May. Available on-line at https://www.epa.gov/risk/regional-screening-tables-may-2016.

**TABLE 4.5.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CONSTRUCTION/UTILITY WORKER - GROUNDWATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Groundwater
**Exposure Medium:** Groundwater

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCgw | Exposure Point Concentration - Groundwater | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Future | Adult | Groundwater | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 2,275 | $cm^2$ | EPA 2011 (1) | EPCsw x Kp x SA x EF x ED[Madj] x ET x EV x CFw x CFv |
| | Construction | | | EF | Exposure Frequency | 130 | days/year | BPJ (2) | BW x AT |
| | Worker | | | ED | Exposure Duration | 1 | years | EPA, 2016 (3) | For Organics: |
| | | | | ET | Exposure Time | 4 | hours/event | VDEQ, 2014 (4) | CDI (mg/kg-day) = |
| | | | | EV | Events per day | 1 | events/day | PBJ (5) | EPCsw x FA x Kp x SA x EF x ED[Madj] x DAevent x EV x CFw x CFv |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | BW x AT |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | If ET < or = t*, then: |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | If ET > t*, then: |
| | | | | | through the corneum relative to its permeability | -- | -- | | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (6) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 182 | days | EPA, 1989 and 2016 (7) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (7) | |
| | | | | CAtrench | Chemical Concentration in Trench | Calculated | $ug/m^3$ | See Table 3 Series | |
| Inhalation | Future | Adult | Outdoor Air | EF | Exposure Frequency | 130 | days/year | BPJ (2) | CDEc (µg/m3) = |
| | On-Site | | Vapors | ED | Exposure Duration | 1 | years | EPA, 2016 (3) | CAtrench x EF x ET x ED x CFt |
| | Construction | | (Trench) | ET | Exposure Time | 4 | hours/day | VDEQ, 2014 (4) | ATc |
| | Worker | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/ug | -- | CDEnc (mg/m3) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | CAtrench x EF x ET x ED x CFt x CFa |
| | | | | ATnc | Averaging Time - Noncarcinogens | 182 | days | EPA, 1989 and 2016 (7) | ATnc |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (7) | |

**Notes:**

(1) SA: Assumes construction workers are exposed to groudnwater to their hands and feet (EPA 2011).

(2) EF: Assumes 5 days per week for a 26-week construction project.

(3) ED: Recommended exposure duration for construction workers.

(4) ET: Based on the Virginia Department of Environmental Protection (2014) trench exposure model.

(5) EV: Assumes one occurrence per day.

(6) BW: Default body weight for adults.

(7) ATc: 365 days/year x 70 year lifetime; ATnc: 365 days/year x 1 year ED.

| | |
|---|---|
| -- | Not applicable |
| cm/hour | Centimeters per hour |
| cm2 | Centimeters squared |
| kg | Kilograms |
| L/cm3 | Liter per cubic meter |
| mg/ug | Milligrams per microgram |
| ug/L | Microgram per liter |
| ug/m3 | Microgram per cubic meter |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. “Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A).” Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. “Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment).” Final. Office of Superfund Remediation and Technology Innovation. EPA/540/R/99/005. July.

EPA. 2011. "Exposure Factors Handbook: 2011 Edition." Office of Research and Developmental. EPA/600/R-090/052F. September. Available on-line at: http://www.epa.gov/ncea/efh/pdfs/efh_complete_pdf

EPA. 2014. “Regional Screening Level User's Guide.” November. Available on-line at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm

Virginia Department of Environmental Quality (VDEQ). 2014. "Voluntary Remediation Program Risk Assessment Guidance." On-line Address: http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/RemediationProgram/VoluntaryRemediationProgram/VRPRiskAssessmentGuidance.aspx

**TABLE 4.6.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CHILD RECREATIONAL USER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Child | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | Recreational | Age 0-6 | | IRS | Soil Ingestion Rate | 200 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x ED[Madj] x EF x CFs |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Child | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 0-6 | | SA | Skin Surface Area | 2,373 | $cm^2$ | BPJ, EPA 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.2 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | Table 3 Series | |
| Inhalation | Future | Child | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_{NC}$ ($mg/m^3$) = |
| | Recreational | Age 0-6 | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | User | | and Vapors | EF | Exposure Frequency | 134 | days/year | BPJ (2) | ATnc |
| | | | from Soil | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | $CDE_C$ ($\mu g/m^3$) = |
| | | | | ET | Exposure Time | 3 | hours/day | BPJ (10) | EPCs x (1/PEF + 1/VF) x EF x ED[Madj] x ET x CFt |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | CFa x ATc |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for children.
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a child recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Default exposure duration for child 0 to 6 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 10 is applied to the ED for ages 0 to 2, an ADAF of 3 is applied to the ED for ages 2 to 6 [(2x10)+(4x3)=32].

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 6 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Default value for children 0 to 6 years (EPA 2016).

(8) AF: Default soil-to-skin adherence factor for children.

(9) PEF: default PEF value for Lincoln, Nebraska (Climatic Zone 5).

(10) ET: Assumed to be 3 hours per day based on professional judgment

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $\mu g/m^3$ | Microgram per cubic meter |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3/kg$ | Cubic meter per kilogram |
| $mg/cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.6.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CHILD RECREATIONAL USER - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface Water
**Exposure Medium:** Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | µg/L | See Table 3 Series | |
| Incidental | Future | Child | Surface Water | IRsw | Surface water incidental ingestion rate | 0.0125 | L/day | BPJ (1) | CDI (mg/kg-day) = |
| Ingestion | Recreational | Age 0-6 | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | EPCsw x IRsw x ED[Madj] x EF x CFw |
| | User | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | BW x AT |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | µg/L | See Table 3 Series | For Inorganics: |
| Dermal | Future | Child | Surface Water | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 0-6 | | SA | Skin Surface Area | 1,353 | $cm^2$ | BPJ, EPA 2011 (7) | EPCsw x Kp x SA x EF x ED[Madj] x ET x EV x CFw x CFv |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | For Organics: |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | CDI (mg/kg-day) = |
| | | | | ET | Exposure Time | 3 | hours/event | PBJ (8) | EPCsw x FA x Kp x SA x EF x ED[Madj] x DAevent x EV x CFw x CFv |
| | | | | EV | Events per day | 1 | events/day | PBJ (9) | BW x AT |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/µg | -- | |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | If ET < or = t*, then: |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | If ET > t*, then: |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | through the corneum relative to its permeability | -- | -- | | |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRsw: Assumes an incidental ingestion rate of 0.05 L/day (about 1 ounce) (EPA 2016) on one-fourth of the total days (0.05 L/day × 0.25).
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a child recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Default exposure duration for child 0 to 6 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 10 is applied to the ED for ages 0 to 2, an ADAF of 3 is applied to the ED for ages 2 to 6 [(2x10)+(4x3)=32].

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 6 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 1,353 $cm^2$ represents the average surface area of hands, feet, and lower legs for children 0 to 6 years (EPA 2011).

(8) ET: Assumed to be 3 hours per day based on professional judgment.

(9) EV: Assumed 1 event occurs per day.

| | |
|---|---|
| cm/hour | Centimeter per hour |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| $L/cm^3$ | Liter per cubic centimeter |
| L/day | Liter per day |
| mg/µg | Milligrams per microgram |
| µg/L | Micrograms per liter |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.6.3.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE CHILD RECREATIONAL USER - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Sediment
**Exposure Medium:** Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Ingestion | Future | Child | Sediment | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 0-6 | | IRsed | Sediment Ingestion Rate | 200 | mg/day | EPA, 2016 (1) | EPCsed x RBA x IRsed x ED[Madj] x EF x CFs |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Child | Sediment | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 0-6 | | SAsed | Skin Surface Area | 723 | $cm^2$ | BPJ, EPA 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 6 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 32 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 15 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 2,190 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for children.
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a child recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Default exposure duration for child 0 to 6 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 10 is applied to the ED for ages 0 to 2, an ADAF of 3 is applied to the ED for ages 2 to 6 [(2x10)+(4x3)=32].

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 6 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 723 $cm^2$ represents the average surface area of hands and feet for children 0 to 6 years (EPA 2011).

(8) AF: Soil-to-skin adherence factor for reed gatherer (EPA 2004).

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. RAGS, Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Superfund Remediation and Technology Innovation. Washington, DC. OSWER Directive 9285.7-02. EPA/540/R/99/005. July.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.7.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADOLESCENT RECREATIONAL USER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adolescent | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | Recreational | Age 6-16 | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x ED[Madj] x EF x CFs |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adolescent | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 6-16 | | SA | Skin Surface Area | 4,520 | $cm^2$ | EPA, 2004 and 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.07 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | Table 3 Series | |
| Inhalation | Future | Adolescent | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_{NC}$ ($mg/m^3$) = |
| | Recreational | Age 6-16 | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | User | | and Vapors | EF | Exposure Frequency | 134 | days/year | BPJ (2) | ATnc |
| | | | from Soil | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | $CDE_C$ (µg/m3) = |
| | | | | ET | Exposure Time | 3 | hours/day | BPJ (10) | EPCs x (1/PEF + 1/VF) x EF x ED[Madj] x ET x CFt |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | CFa x ATc |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Exposure duration for child 7 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 7 to 16 [(3x10)=30].

(5) BW: Adolescent body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 4,520 $cm^2$ is the resident skin area for age segment 6-16 (EPA 2011).

(8) AF: Default soil-to-skin adherence factor for adults.

(9) PEF: default PEF value for Lincoln, Nebraska (Climatic Zone 5).

(10) ET: Assumed to be 3 hours per day based on professional judgment

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.7.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADOLESCENT RECREATIONAL USER - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface Water
**Exposure Medium:** Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | |
| Incidental | Future | Adolescent | Surface Water | IRsw | Surface water incidental ingestion rate | 0.0125 | L/day | BPJ (1) | CDI (mg/kg-day) = |
| Ingestion | Recreational | Age 6-16 | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | EPCs x IRsw x ED[Madj] x EF x CFw |
| | User | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | BW x AT |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Future | Adolescent | Surface Water | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 6-16 | | SA | Skin Surface Area | 3,093 | $cm^2$ | BPJ, EPA 2011 (7) | EPCsw x Kp x SA x EF x ED[Madj] x ET x EV x CFw x CFv |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | For Organics: |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | CDI (mg/kg-day) = |
| | | | | ET | Exposure Time | 3 | hours/event | PBJ (8) | EPCsw x FA x Kp x SA x EF x ED[Madj] x DAevent x EV x CFw x CFv |
| | | | | EV | Events per day | 1 | events/day | PBJ (9) | BW x AT |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | If ET < or = t*, then: |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | If ET > t*, then: |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | through the corneum relative to its permeability | -- | -- | | |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRsw: Assumes an incidental ingestion rate of 0.05 L/day (about 1 ounce) (EPA 2016) on one-fourth of the total days (0.05 L/day × 0.25)
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a child recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Exposure duration for child 7 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 7 to 16 [(3x10)=30].

(5) BW: Default child body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 3,093 $cm^2$ represents the average surface area of hands, feet, and lower legs for children 7 to 16 years (EPA 2011).

(8) ET: Assumed to be 3 hours per day based on professional judgment

(9) EV: Assumed 1 event occurs per day.

| | |
|---|---|
| cm/hour | Centimeter per hour |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| $L/cm^3$ | Liter per cubic centimeter |
| L/day | Liter per day |
| mg/µg | Milligrams per microgram |
| µg/L | Micrograms per liter |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.7.3.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADOLESCENT RECREATIONAL USER - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Sediment
**Exposure Medium:** Sediment, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adolescent | Sediment | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | Recreational | Age 6-16 | | IRsed | Sediment Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCsed x RBA x IRsed x ED[Madj] x EF x CFs |
| | User | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adolescent | Sediment | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | Age 6-16 | | SA | Skin Surface Area | 1,505 | $cm^2$ | EPA 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 134 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.
(2) EF: Assumed to be 134 days per year based on best professional judgment. Presumably, a recreational user will visit the Site 1 day per week for 3 months (18 weeks) from mid-November to mid-March (18 total days), 2 days/week for 2 months (9 weeks) from mid-September to mid- November and mid-March to mid-May (36 total days), and 5 days/week for 4 months (16 weeks) from mid-May to mid-September (80 total days).

(3) ED: Exposure duration for child 7 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 7 to 16 [(3x10)=30].

(5) BW: Adolescent body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 1,505 $cm^2$ represents the average surface area of hands and feet for children 6 to 16 years (EPA 2011).

(8) AF: Soil-to-skin adherence factor for reed gatherer (EPA 2004).

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. RAGS, Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Superfund Remediation and Technology Innovation. Washington, DC. OSWER Directive 9285.7-02. EPA/540/R/99/005. July.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.8.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADULT RECREATIONAL USER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adult | All Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | Recreational | > 16 years | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x ED x EF x CFs |
| | User | | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adult | All Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | > 16 years | | SA | Skin Surface Area | 6,032 | $cm^2$ | EPA, 2016 (6) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.07 | $mg/cm^2$ | EPA, 2016 (7) | BW x AT |
| | | | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (4) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | Table 3 Series | |
| Inhalation | Future | Adult | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_{NC}$ ($mg/m^3$) = |
| | Recreational | > 16 years | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (8) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | User | | and Vapors | EF | Exposure Frequency | 74 | days/year | BPJ (2) | ATnc |
| | | | from Soil | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | |
| | | | | ET | Exposure Time | 3 | hours/day | BPJ (9) | $CDE_C$ (µg/m3) = |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | CFa x ATc |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.

(2) EF: The adult recreational user is assumed to visit the Site 1 day/week for 7 months (30 weeks) from mid-October to mid-May (30 total days), and 2 days/week for 5 months (22 weeks) from mid-May through mid-October (44 total days).

(3) ED: Default exposure duration for adult residents.

(4) BW: Default adult body weight.

(5) ATnc: 365 days/year x 20 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(6) SA: Skin surface area of 6,032 $cm^2$ is the default value for the adult resident/recreator surface area soil.

(7) AF: Default soil-to-skin adherence factor for adults.

(8) PEF: default PEF value for Lincoln, Nebraska (Climatic Zone 5).

(9) ET: Assumed to be 3 hours per day based on professional judgment

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.8.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADULT RECREATIONAL USER - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Surface Water
**Exposure Medium:** Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | |
| Incidental | Future | Adult | Surface Water | IRsw | Surface water incidental ingestion rate | 0.0125 | L/day | BPJ (1) | CDI (mg/kg-day) = |
| Ingestion | Recreational | > 16 years | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | EPCs x IRsw[Madj] x ED x EF x CFw |
| | User | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | BW x AT |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Future | Adult | Surface Water | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | > 16 years | | SA | Skin Surface Area | 4,835 | $cm^2$ | EPA 2011 (7) | EPCsw x Kp x SA x EF x ED[Madj] x ET x EV x CFw x CFv |
| | User | | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | For Organics: |
| | | | | ET | Exposure Time | 3 | hours/event | PBJ (8) | CDI (mg/kg-day) = |
| | | | | EV | Events per day | 1 | events/day | PBJ (9) | EPCsw x FA x Kp x SA x EF x ED[Madj] x DAevent x EV x CFw x CFv |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | BW x AT |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | If ET < or = t*, then: |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | If ET > t*, then: |
| | | | | | through the corneum relative to its permeability | -- | -- | | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRsw: Assumes an incidental ingestion rate of 0.05 L/day (about 1 ounce) (EPA 2016) on one-fourth of the total days (0.05 L/day × 0.25)

(2) EF: The adult recreational user is assumed to visit the Site 1 day/week for 7 months (30 weeks) from mid-October to mid-May (30 total days), and 2 days/week for 5 months (22 weeks) from mid-May through mid-October (44 total days).

(3) ED: Default exposure duration for child 0 to 6 years old.

(4) BW: Default adult body weight.

(5) ATnc: 365 days/year x 20 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 4,835 $cm^2$ represents the average surface area of hands, feet, and lower legs of adults (EPA 2011).

(8) ET: Assumed to be 3 hours per day based on professional judgment

(9) EV: Assumed 1 event occurs per day.

| | |
|---|---|
| $\mu g/m^3$ | Microgram per cubic meter |
| mg/µg | milligrams per microgram |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016



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**TABLE 4.8.3.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**FUTURE ADULT RECREATIONAL USER - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Future
**Medium:** Sediment
**Exposure Medium:** Sediment, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Future | Adult | Sediment | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | Recreational | > 16 years | | Irsed | Sediment Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCsed x RBA x IRsed x ED x EF x CFs |
| | User | | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (4) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adult | Sediment | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | Recreational | > 16 years | | SA | Skin Surface Area | 2,275 | $cm^2$ | EPA, 2011 (6) | EPCsed x ABSd x SA x AF x EF x ED x CFs |
| | User | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2016 (7) | BW x AT |
| | | | | EF | Exposure Frequency | 74 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | |
| | | | | CFs | Conversion Factor - Sediment | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (4) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.

(2) EF: The adult recreational user is assumed to visit the Site 1 day/week for 7 months (30 weeks) from mid-October to mid-May (30 total days), and 2 days/week for 5 months (22 weeks) from mid-May through mid-October (44 total days).

(3) ED: Default exposure duration for adults residents.

(4) BW: Default adult body weight.

(5) ATnc: 365 days/year x 26 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(6) SA: Skin surface area of 2,275 $cm^2$ represents the average surface area of hands and feet for adults (EPA 2011).

(8) AF: Soil-to-skin adherence factor for reed gatherer (EPA 2004).

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. RAGS, Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Superfund Remediation and Technology Innovation. Washington, DC. OSWER Directive 9285.7-02. EPA/540/R/99/005. July.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.9.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADOLESCENT TRESPASSER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current and Future
**Medium:** Surface (Current), Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Soil, Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Current/Future | Adolescent | Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | On-Site | Age 6-16 | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x ED[Madj] x EF x CFs |
| | Trespasser | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Current/Future | Adolescent | Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | Age 6-16 | | SA | Skin Surface Area | 4,520 | $cm^2$ | EPA, 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | Trespasser | | | AF | Soil-to-Skin Adherence Factor | 0.07 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | Table 3 Series | |
| Inhalation | Current/Future | Adolescent | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See Table 5.3 | $CDE_{NC}$ ($mg/m^3$) = |
| | On-Site | Age 6-16 | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | Trespasser | | and Vapors | EF | Exposure Frequency | 65 | days/year | BPJ (2) | ATnc |
| | | | from Soil | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | $CDE_C$ (µg/m3) = |
| | | | | ET | Exposure Time | 2 | hours/day | BPJ (10) | EPCs x (1/PEF + 1/VF) x EF x ED[Madj] x ET x CFt |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | CFa x ATc |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.

(2) EF: assumes an adolescent trespasser will visit the Site 2 days per week during the summer (13 weeks) and 1 day per week during the remainder of the year (39 weeks).

(3) ED: Default exposure duration for child 6 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 6 to 16 [(3x10)=30].

(5) BW: Adolescent body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 4,520 $cm^2$ represents the average surface area of children 6 to 16 years (EPA 2011).

(8) AF: Default soil-to-skin adherence factor for adults.

(9) PEF: default PEF value for Lincoln, Nebraska (Climatic Zone 5).

(10) ET: Assumed to be 2 hours per day based on professional judgment

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.9.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADOLESCENT TRESPASSER - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current and Future
**Medium:** Surface Water
**Exposure Medium:** Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | |
| Incidental | Current/Future | Adult | Surface Water | IRsw | Surface water incidental ingestion rate | 0.0125 | L/day | BPJ (1) | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | EPCs x IRsw x ED[Madj] x EF x CFw |
| | Trespasser | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | BW x AT |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Current/Future | Adult | Surface Water | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 3,093 | $cm^2$ | EPA 2011 (7) | EPCsw x Kp x SA x EF x ED[Madj] x ET x EV x CFw x CFv |
| | Trespasser | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | For Organics: |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | CDI (mg/kg-day) = |
| | | | | ET | Exposure Time | 2 | hours/event | PBJ (8) | EPCsw x FA x Kp x SA x EF x ED[Madj] x DAevent x EV x CFw x CFv |
| | | | | EV | Events per day | 1 | events/day | PBJ (9) | BW x AT |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | If ET < or = t*, then: |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | If ET > t*, then: |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | through the corneum relative to its permeability | -- | -- | | |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRsw: Assumes an incidental ingestion rate of 0.05 L/day (about 1 ounce) (EPA 2016) on one-fourth of the total days (0.05 L/day × 0.25)

(2) EF: assumes an adolescent trespasser will visit the Site 2 days per week during the summer (13 weeks) and 1 day per week during the remainder of the year (39 weeks).

(3) ED: Exposure duration for child 7 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 6 to 16 [(3x10)=30].

(5) BW: Adolescent body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: The SA of 3,093 $cm^2$ represents the average surface area of hands, feet, and lower legs for adolescents 6 to 16 years (EPA 2011)

(8) ET: Assumed to be 3 hours per day based on professional judgment

(9) EV: Assumed 1 event occurs per day.

| | |
|---|---|
| -- | Not applicabale or No value |
| BPJ | Best Professional Judgment |
| cm/hour | Centimeters per hour |
| cm2 | Square centimeters |
| kg | Kilogram |
| L/cm3 | Liter/cubic centimeter |
| L/day | Liter per day |
| mg/ug | Milligrams per microgram |
| ug/L | Micrograms per liter |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016


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cm/hour

cm2

kg

L/cm3

L/day

mg/ug

ug/L

**TABLE 4.9.3.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADOLESCENT TRESPASSER - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current and Future
**Medium:** Sediment
**Exposure Medium:** Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Current/Future | Adolescent | Sediment | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| Ingestion | On-Site | Age 6-16 | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCs x RBA x IRS x ED[Madj] x EF x CFs |
| | Trespasser | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Future | Adolescent | Sediment | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | Age 6-16 | | SA | Skin Surface Area | 1,505 | $cm^2$ | EPA 2011 (7) | EPCs x ABSd x SA x AF x EF x ED[Mad]j x CFs |
| | Trespasser | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2016 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 65 | days/year | BPJ (2) | |
| | | | | ED | Exposure Duration | 10 | years | EPA, 2016 (3) | |
| | | | | EDMadj | Exposure Duration - Mutagenic age-adjusted | 30 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 45 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 3,650 | days | EPA, 1989 and 2016 (6) | |
| | | | | ATc | Averaging Time - Noncarcinogens | 25,550 | days | EPA, 1989 and 2016 (6) | |

**Notes:**

(1) IRS: Default soil ingestion rate for adults.

(2) EF: assumes an adolescent trespasser will visit the Site 2 days per week during the summer (13 weeks) and 1 day per week during the remainder of the year (39 weeks).

(3) ED: Exposure duration for child 7 to 16 years old.

(4) EDMadj: To account for potential mutagenic effects an age-dependent adjustment factor (ADAF) of 3 is applied to the ED for ages 7 to 16 [(3x10)=30].

(5) BW: Adolescent body weight.

(6) ATnc: 365 days/year x 10 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 1,505 $cm^2$ represents the average surface area of hands and feet for children 7 to 16 years (EPA 2011).

(8) AF: Soil-to-skin adherence factor for reed gatherer (EPA 2004).

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3$/kg | Cubic meter per kilogram |
| mg/$cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**


U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. RAGS, Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Superfund Remediation and Technology Innovation. Washington, DC. OSWER Directive 9285.7-02. EPA/540/R/99/005. July.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.10.1.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADULT TRESPASSER - SOIL**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current/Future
**Medium:** Surface (Current), Surface and Subsurface Soil (All Soil)
**Exposure Medium:** Surface and Subsurface Soil , Particulates/Vapors

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Current/Future | Adult | Soil | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See TABLE 5 & 6 Series | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | IRS | Soil Ingestion Rate | 100 | mg/day | EPA, 2014 (1) | EPCs x RBA x IRS x FI x EF x ED x CFs |
| | Trespasser | | | FI | Fractional Intake | 1.0 | unitless | BPJ (2) | BW x AT |
| | | | | EF | Exposure Frequency | 144 | days/year | BPJ (3) | |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2014 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Current/Future | Adult | Soil | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See TABLE 5 & 6 Series | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 6,365 | $cm^2$ | EPA, 2014 (7) | EPCs x ABSd x SA x AF x EF x ED x CFs |
| | Trespasser | | | AF | Soil-to-Skin Adherence Factor | 0.07 | $mg/cm^2$ | EPA, 2014 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 144 | days/year | BPJ (3) | |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2014 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2014 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 (6) | |
| | | | | EPCs | Exposure Point Concentration - Soil | chemical-specific | mg/kg | See Table 3 Series | |
| Inhalation | Current/Future | Adult | Outdoor Air | VF | Volatilization Factor | chemical-specific | $m^3/kg$ | See TABLE 5 & 6 Series | $CDE_C$ ($\mu g/m^3$) = |
| | On-Site | | Particulates | PEF | Particulate Emission Factor | 3.11E+10 | $m^3/kg$ | EPA, 2016 (9) | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | Trespasser | | and Vapors | EF | Exposure Frequency | 144 | days/year | BPJ (3) | CFa x ATc |
| | | | from Soil | ED | Exposure Duration | 20 | years | EPA, 2014 (4) | |
| | | | | ET | Exposure Time | 6 | hours/day | BPJ (10) | $CDE_{NC}$ ($mg/m^3$) = |
| | | | | CFa | Conversion Factor - Air | 1.0E-03 | mg/µg | -- | EPCs x (1/PEF + 1/VF) x EF x ED x ET x CFt |
| | | | | CFt | Conversion Factor - Time (1/24) | 0.042 | day/hours | -- | ATnc |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 (6) | |

**Notes:**

(1) IRS: Recommended soil ingestion rate for adult residents.

(2) FI: Assumes all of soil/sediment exposure occurs on Site.
(3) EF: 144 days per year is based on best professional judgment for the transient population and assumes an adult trespasser will visit the Site 4 days per week during May through September (20 weeks) and 2 days per week during October through April (32 weeks) [(4x20)+(2x32)=144].

(4) ED: Default exposure duration for residents; although the adult trespasser is transient, he/she is assumed present long-term in the area.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 year lifetime; ATnc: 365 days/year x 20 year ED.

(7) SA: Default skin surface area for adult residents.

(8) AF: Default soil-to-skin adherence factor for adult residents.

(9) PEF: All exposure areas are assumed to be approximately 0.5 acre in size. MDEQ default PEF values were used.

(10) ET: Assumes a 6 hour Site visit.

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3/kg$ | Cubic meter per kilogram |
| $mg/cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.10.2.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADULT TRESPASSER - SURFACE WATER**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current and Future
**Medium:** Surface Water
**Exposure Medium:** Water

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/ Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | |
| Incidental | Current/Future | Adult | Surface Water | IRsw | Surface water incidental ingestion rate | 0.0125 | L/day | BPJ (1) | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | EF | Exposure Frequency | 144 | days/year | BPJ (2) | EPCs x IRsw x ED x EF x CFw |
| | Trespasser | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | BW x AT |
| | | | | BW | Body Weight | 80 | kg | EPA, 2014 (4) | |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |
| | | | | EPCsw | Exposure Point Concentration - Surface Water | medium-specific | ug/L | See Table 3 Series | For Inorganics: |
| Dermal | Current/Future | Adult | Surface Water | Kp | Dermal Permeability Constant | chemical-specific | cm/hour | See Table 5.3 | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 4,835 | $cm^2$ | EPA 2011 (6) | EPCsw x Kp x SA x EF x ED x ET x EV x CFw x CFv |
| | Trespasser | | | EF | Exposure Frequency | 144 | days/year | BPJ (2) | BW x AT |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (3) | For Organics: |
| | | | | ET | Exposure Time | 3 | hours/event | PBJ (7) | CDI (mg/kg-day) = |
| | | | | EV | Events per day | 1 | events/day | PBJ (8) | EPCsw x FA x Kp x SA x EF x ED x DAevent x EV x CFw x CFv |
| | | | | CFw | Conversion Factor - Water | 1.0E-03 | mg/ug | -- | BW x AT |
| | | | | CFv | Conversion Factor - Volume | 1.0E-03 | $L/cm^3$ | -- | If ET < or = t*, then: |
| | | | | FA | Fraction Absorbed - Water | chemical-specific | unitless | See Table 5.3 | $DAevent = 2 \times \sqrt{(6 \times \tau_{event} \times ET)/\pi}$ |
| | | | | t* | Time to Reach Steady-State | chemical-specific | hours/event | See Table 5.3 | |
| | | | | $\tau_{event}$ | Lag Time | chemical-specific | hours/event | See Table 5.3 | If ET > t*, then: |
| | | | | B | Ratio of permeability coefficient of a compound | chemical-specific | unitless | See Table 5.3 | $DAevent = ET/(1+B) + \{2 \times \tau_{event} \times ([1+3B+3B^2]/[1+B]^2)\}$ |
| | | | | | through the corneum relative to its permeability | -- | -- | | |
| | | | | | coefficient across the viable epidermis | -- | -- | | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2014 (4) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 and 2016 (5) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 and 2016 (5) | |

**Notes:**

(1) IRsw: Assumes an incidental ingestion rate of 0.05 L/day (about 1 ounce) (EPA 2016) on one-fourth of the total days (0.05 L/day × 0.25)
(3) EF: 144 days per year is based on best professional judgment for the transient population and assumes an adult trespasser will visit the Site 4 days per week during May through September (20 weeks) and 2 days per week during October through April (32 weeks) [(4x20)+(2x32)=144].

(4) ED: Default exposure duration for residents; although the adult trespasser is transient, he/she is assumed present long-term in the area.

(5) BW: Default adult body weight.

(6) ATnc: 365 days/year x 20 year ED; ATc: Assumes 365 days per year over a 70-year lifetime.

(7) SA: Skin surface area of 4,835 $cm^2$ represents the average surface area of hands, feet, and lower legs of adults (EPA 2011).

(8) ET: Assumed to be 3 hours per day based on professional judgment

(9) EV: Assumed 1 event occurs per day.

| | |
|---|---|
| $\mu g/m^3$ | Microgram per cubic meter |
| mg/µg | milligrams per microgram |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2011. Exposure Factors Handbook: 2011 edition. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. Available from the National Technical Information Service, Springfield, VA, and at http://www.epa.gov/ncea/efh

EPA. 2014. Region 4 Human Health Risk Assessment Supplemental Guidance. January. Available on-line at: http://www.epa.gov/region04/superfund/programs/riskassess/riskassess.html

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

**TABLE 4.10.3.RME**
**VALUES USED FOR DAILY INTAKE CALCULATIONS**
**REASONABLE MAXIMUM EXPOSURE**
**CURRENT AND FUTURE ADULT TRESPASSER - SEDIMENT**
**DES MOINES TCE SITE, DES MOINES, IOWA**

**Timeframe:** Current/Future
**Medium:** Sediment
**Exposure Medium:** Sediment

| Exposure Route | Receptor Population | Receptor Age | Exposure Point | Parameter Code | Parameter Definition | Value | Units | Rationale/ Reference | Chronic Daily Intake (CDI)/Chronic Daily Exposure (CDE) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Incidental | Current/Future | Adult | Sediment | RBA | Relative Bioavailability Factor | chemical-specific | unitless | See TABLE 5 & 6 Series | CDI (mg/kg-day) = |
| Ingestion | On-Site | | | IRsed | Sediment Ingestion Rate | 100 | mg/day | EPA, 2016 (1) | EPCsed x RBA x IRsed x EF x ED x CFs |
| | Trespasser | | | EF | Exposure Frequency | 144 | days/year | BPJ (3) | BW x AT |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 (6) | |
| | | | | EPCsed | Exposure Point Concentration - Sediment | medium-specific | mg/kg | See Table 3 Series | |
| Dermal | Current/Future | Adult | Sediment | $ABS_d$ | Dermal Absorption Factor | chemical-specific | unitless | See TABLE 5 & 6 Series | CDI (mg/kg-day) = |
| | On-Site | | | SA | Skin Surface Area | 2,275 | $cm^2$ | EPA, 2011 (7) | EPCsed x ABSd x SA x AF x EF x ED x CFs |
| | Trespasser | | | AF | Soil-to-Skin Adherence Factor | 0.3 | $mg/cm^2$ | EPA, 2004 (8) | BW x AT |
| | | | | EF | Exposure Frequency | 144 | days/year | BPJ (3) | |
| | | | | ED | Exposure Duration | 20 | years | EPA, 2016 (4) | |
| | | | | CFs | Conversion Factor - Soil | 1.0E-06 | kg/mg | -- | |
| | | | | BW | Body Weight | 80 | kg | EPA, 2016 (5) | |
| | | | | ATnc | Averaging Time - Noncarcinogens | 7,300 | days | EPA, 1989 (6) | |
| | | | | ATc | Averaging Time - Carcinogens | 25,550 | days | EPA, 1989 (6) | |

**Notes:**

(1) IRS: Recommended soil ingestion rate for adult residents.

(2) FI: Assumes one-half of soil/sediment exposure occurs on Site.
(3) EF: 144 days per year is based on best professional judgment for the transient population and assumes an adult trespasser will visit the Site 4 days per week during May through September (20 weeks) and 2 days per week during October through April (32 weeks) [(4x20)+(2x32)=144].

(4) ED: Default exposure duration for residents; although the adult trespasser is transient, he/she is assumed present long-term in the area.

(5) BW: Default adult body weight.

(6) ATc: 365 days/year x 70 year lifetime; ATnc: 365 days/year x 20 year ED.

(7) SA: Represents the average surface area of hands and feet for adults (EPA 2011).

(8) AF: Soil-to-skin adherence factor for reed gatherer (EPA 2004).

| | |
|---|---|
| BPJ | Best Professional Judgment |
| $cm^2$ | Square centimeter |
| kg | Kilogram |
| kg/mg | Kilogram per milogram |
| $m^3/kg$ | Cubic meter per kilogram |
| $mg/cm^2$ | Milligrams per square centimeter |
| mg/kg | Milligrams per kilogram |
| mg/kg-day | Milligrams per kilogram per day |

**Sources:**

U.S. Environmental Protection Agency (EPA). 1989. "Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response (OSWER). EPA/540/1-89/002a. December.

EPA. 2004. RAGS, Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. Office of Superfund Remediation and Technology Innovation. Washington, DC. OSWER Directive 9285.7-02. EPA/540/R/99/005. July.

EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

## TABLE 5.1: EPA RAGS PART D TABLE, NON-CANCER TOXICITY DATA - ORAL/DERMAL
## DES MOINES TCE SITE, DES MOINES, IOWA

| Chemical of Potential Concern | CAS Number | Oral RfD | | Oral Absorption Efficiency for Dermal | Absorbed RfD for Dermal | | Primary Target Organ(s) | Combined Uncertainty/ Modifying Factors | Oral Reference Dose | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | | Source | Date |
| 1,2-Dichloroethane | 107-06-2 | 6.0E-03 | mg/kg-day | 1 | 6.0E-03 | mg/kg-day | Urinary, Hepatic | 10000 | PPRTV-Appendix | 5/2016 |
| 1,2-Dichloroethylene (total) | 540-59-0 | 2.0E-03 | mg/kg-day | 1 | 2.0E-03 | mg/kg-day | Urinary, Whole Body, Hematologic | 3000 | IRIS | 5/2016 |
| 2,3,7,8-TCDD Equivalent | 1746-01-6 | 7.0E-10 | mg/kg-day | 1 | 7.0E-10 | mg/kg-day | Reproductive | 30 | IRIS | 5/2016 |
| Aldrin | 309-00-2 | 3.0E-05 | mg/kg-day | 1 | 3.0E-05 | mg/kg-day | Hepatic | 1000 | IRIS | 5/2016 |
| alpha-Chlordane | 5103-71-9 | 5.0E-04 | mg/kg-day | 1 | 5.0E-04 | mg/kg-day | Hepatic | 300 | IRIS | 5/2016 |
| Chloroform | 67-66-3 | 1.0E-02 | mg/kg-day | 1 | 1.0E-02 | mg/kg-day | Hepatic | 100 | IRIS | 5/2016 |
| cis-1,2-Dichloroethylene | 156-59-2 | 2.0E-03 | mg/kg-day | 1 | 0.002 | mg/kg-day | Urinary, Whole Body | 3000 | IRIS | 5/2016 |
| Dieldrin | 60-57-1 | 5.0E-05 | mg/kg-day | 1 | 5.0E-05 | mg/kg-day | Hepatic | 100 | IRIS | 5/2016 |
| gamma-Chlordane | 12789-03-6 | 5.0E-04 | mg/kg-day | 1 | 5.0E-04 | mg/kg-day | Hepatic | 300 | IRIS | 5/2016 |
| p,p'-DDT | 50-29-3 | 5.0E-04 | mg/kg-day | 1 | 5.0E-04 | mg/kg-day | Hepatic | 100 | IRIS | 5/2016 |
| Trichloroethene | 79-01-6 | 5.0E-04 | mg/kg-day | 1 | 5.0E-04 | mg/kg-day | Developmental, Cardiovascular, Immune | 10 | IRIS | 5/2016 |
| Vinyl Chloride | 75-01-4 | 3.0E-03 | mg/kg-day | 1 | 3.0E-03 | mg/kg-day | Hepatic | 30 | IRIS | 5/2016 |

**Notes:** All toxicity values were obtained from EPA 2016.

**Surrogates:**
Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane
cis-1,2-dichloroethylene was used as a surrogate for 1,2-Dichloroethylene (total cis + trans)

**Abbreviations:**

| | |
|---|---|
| mg/kg-day | Milligram per kilogram per day |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| IRIS | Integrated Risk Information System |
| PPRTV | Provisional Peer Reviewed Toxicity Value |
| RAGS | Risk Assessment Guidance for Superfund |
| RfD | Reference Dose |

**Reference:**
EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

## TABLE 5.2: EPA RAGS PART D TABLE, NON-CANCER TOXICITY DATA - INHALATION
## DES MOINES TCE SITE, DES MOINES, IOWA

| Chemical of Potential Concern | CAS Number | Inhalation RfC | | Primary Target Organ(s) | Combined Uncertainty/ Modifying Factors | Inhalation Reference Concentration | |
|---|---|---|---|---|---|---|---|
| | | Value | Units | | | Source | Date |
| 1,2-Dichloroethane | 107-06-2 | 7.0E-03 | mg/m3 | Nervous | 3000 | PPRTV | 05/2016 |
| 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | -- | 05/2016 |
| 2,3,7,8-TCDD Equivalent | 1746-01-6 | 4.0E-08 | mg/m3 | Hepatic, Reproductive, Endocrine, Respiratory, Hematologic, Developmental | 100 | Cal/EPA | 05/2016 |
| Aldrin | 309-00-2 | -- | -- | -- | -- | -- | 05/2016 |
| alpha-Chlordane | 5103-71-9 | 7.0E-04 | mg/m3 | Hepatic | 1000 | IRIS | 05/2016 |
| Chloroform | 67-66-3 | 9.8E-02 | mg/m3 | Hepatic | 100 | ATSDR | 05/2016 |
| cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | -- | 05/2016 |
| Dieldrin | 60-57-1 | -- | -- | -- | -- | -- | 05/2016 |
| gamma-Chlordane | 12789-03-6 | 7.0E-04 | mg/m3 | Hepatic | 1000 | IRIS | 05/2016 |
| p,p'-DDT | 50-29-3 | -- | -- | -- | -- | -- | 05/2016 |
| Trichloroethene | 79-01-6 | 2.0E-03 | mg/m3 | Developmental, Cardiovascular, Immune | 100 | IRIS | 05/2016 |
| Vinyl Chloride | 75-01-4 | 1.0E-01 | mg/m3 | Hepatic | 30 | IRIS | 05/2016 |

**Notes:** All toxicity values were obtained from EPA 2016.

**Surrogates:**

Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane

**Abbreviations:**

| | |
|---|---|
| mg/m3 | Milligram per cubic meter |
| ATSDR | Agency for Toxic Substances and Disease Registry |
| Cal/EPA | California Environmental Protection Agency |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| IRIS | Integrated Risk Information System |
| PPRTV | Provisional Peer Reviewed Toxicity Value |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference Concentration |

**Reference:**

EPA. 2016. “Regional Screening Level User's Guide.” May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

## TABLE 5.3: EPA RAGS PART D, CHEMICAL-SPECIFIC FACTORS AND MUTAGENIC IDENTIFICATION
## DES MOINES TCE SITE, DES MOINES, IOWA

| Chemical of Potential Concern | CAS Number | Bioavailability Factor | Organic/ Inorganic | Mutagen | VF ($m^3$/kg) | ABS (unitless) | t* (hours/event) | FA (unitless) | Kp (cm/hour) | $t_{event}$ (hours/event) | B (unitless) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane | 107-06-2 | 1 | O | | 4.6E+03 | -- | 9.0E-01 | 1 | 4.20E-03 | 3.8E-01 | 1.6E-02 |
| 1,2-Dichloroethylene (total) | 540-59-0 | 1 | O | | 2.5E+03 | -- | 8.8E-01 | 1 | 1.10E-02 | 3.7E-01 | 4.2E-02 |
| 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1 | O | | 2.0E+06 | 0.03 | 2.9E+01 | 0.5 | 8.08E-01 | 6.7E+00 | 5.6E+00 |
| Aldrin | 309-00-2 | 1 | O | | 1.7E+06 | -- | 4.8E+01 | 1 | 2.93E-01 | 1.2E+01 | 2.2E+00 |
| alpha-Chlordane | 5103-71-9 | 1 | O | | 1.5E+06 | 0.040 | 8.0E+01 | 0.7 | 1.07E-01 | 2.1E+01 | 8.3E-01 |
| Chloroform | 67-66-3 | 1 | O | | 2.6E+03 | -- | 1.2E+00 | 1 | 6.83E-03 | 4.9E-01 | 2.9E-02 |
| cis-1,2-Dichloroethylene | 156-59-2 | 1 | O | | 2.5E+03 | -- | 8.8E-01 | 1 | 1.1E-02 | 3.7E-01 | 4.2E-02 |
| Dieldrin | 60-57-1 | 1 | O | | -- | 0.1 | 3.4E+01 | 0.8 | 3.3E-02 | 1.4E+01 | 2.4E-01 |
| gamma-Chlordane | 12789-03-6 | 1 | O | | 1.5E+06 | 0.04 | 8.0E+01 | 0.7 | 1.1E-01 | 2.1E+01 | 8.3E-01 |
| p,p'-DDT | 50-29-3 | 1 | O | | -- | 0.03 | 4.4E+01 | 0.7 | 6.3E-01 | 1.0E+01 | 4.5E+00 |
| Trichloroethene | 79-01-6 | 1 | O | TCE | 2.2E+03 | -- | 1.4E+00 | 1 | 1.2E-02 | 5.7E-01 | 5.1E-02 |
| Vinyl Chloride | 75-01-4 | 1 | O | VC | 9.6E+02 | -- | 5.7E-01 | 1 | 8.4E-03 | 2.4E-01 | 2.5E-02 |

**Notes:** All chemical specific factors from EPA 2016.

**Surrogates:**
Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane

**Abbreviations:**

| | |
|---|---|
| -- | Not available; not applicable |
| ABS | Dermal Absorption Factor from soil |
| B | Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis |
| cm/hour | centimeters per hour |
| DW | Dry weight |
| FA | Fraction absorbed from water |
| I | Inorganic |
| Kp | Dermal Permeability Coefficient |
| $m^3$/kg | cubic meters per kilogram |
| mg/kg | milligrams per kilogram |
| O | Organic |
| t* | Time to reach steady state |
| VF | Volatility factor |

**Reference:**
EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

## TABLE 6.1: EPA RAGS PART D TABLE, CANCER TOXICITY DATA - ORAL/DERMAL
## DES MOINES TCE SITE, DES MOINES, IOWA

| Chemical of Potential Concern | CAS Number | Oral Cancer Slope Factor | | Oral Absorption Efficiency for Dermal | Absorbed Cancer Slope Factor for Dermal | | EPA Weight of Evidence/ Cancer Guideline Description | Oral Cancer Slope Factor | |
|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | Source | Date |
| 1,2-Dichloroethane | 107-06-2 | 9.1E-02 | (mg/kg-day)-1 | 1 | 9.1E-02 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | 1 | -- | -- | -- | -- | 5/2016 |
| 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.3E+05 | (mg/kg-day)-1 | 1 | 1.3E+05 | (mg/kg-day)-1 | Probable Carcinogen | Cal/EPA | 5/2016 |
| Aldrin | 309-00-2 | 1.7E+01 | (mg/kg-day)-1 | 1 | 1.7E+01 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| alpha-Chlordane | 5103-71-9 | 3.5E-01 | (mg/kg-day)-1 | 1 | 3.5E-01 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| Chloroform | 67-66-3 | 3.1E-02 | (mg/kg-day)-1 | 1 | 3.1E-02 | (mg/kg-day)-1 | Probable Carcinogen | Cal/EPA | 5/2016 |
| cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | 1 | -- | -- | -- | -- | 5/2016 |
| Dieldrin | 60-57-1 | 1.6E+01 | (mg/kg-day)-1 | 1 | 1.6E+01 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| gamma-Chlordane | 12789-03-6 | 3.5E-01 | (mg/kg-day)-1 | 1 | 3.5E-01 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| p,p'-DDT | 50-29-3 | 3.4E-01 | (mg/kg-day)-1 | 1 | 3.4E-01 | (mg/kg-day)-1 | Probable Carcinogen | IRIS | 5/2016 |
| Trichloroethene | 79-01-6 | 4.6E-02 | (mg/kg-day)-1 | 1 | 4.6E-02 | (mg/kg-day)-1 | Carcinogen | IRIS | 5/2016 |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | (mg/kg-day)-1 | 1 | 7.2E-01 | (mg/kg-day)-1 | Carcinogen | IRIS | 5/2016 |

**Notes:** All toxicity values were obtained from EPA 2016.

**Surrogates:**
Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane

**Abbreviations:**

| | |
|---|---|
| (mg/kg-day)-1 | 1/milligrams per kilogram per day |
| Cal/EPA | California Environmental Protection Agency |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| IRIS | Integrated Risk Information System |
| RAGS | Risk Assessment Guidance for Superfund |

**Reference:**
EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

## TABLE 6.2: EPA RAGS PART D TABLE, CANCER TOXICITY DATA - INHALATION
## DES MOINES TCE SITE, DES MOINES, IOWA

| Chemical of Potential Concern | CAS Number | Inhalation Unit Risk | | EPA Weight of Evidence/ Cancer Guideline Description | Unit Risk | |
|---|---|---|---|---|---|---|
| | | Value | Units | | Source | Date |
| 1,2-Dichloroethane | 107-06-2 | 2.6E-05 | (ug/m3)-1 | Probable Carcinogen | IRIS | 5/2016 |
| 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | 5/2016 |
| 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.8E+01 | (ug/m3)-1 | Probable Carcinogen | Cal/EPA | 5/2016 |
| Aldrin | 309-00-2 | 4.9E-03 | (ug/m3)-1 | Probable Carcinogen | IRIS | 5/2016 |
| alpha-Chlordane | 5103-71-9 | 1.0E-04 | (ug/m3)-1 | Likely Carcinogen | IRIS | 5/2016 |
| Chloroform | 67-66-3 | 2.3E-05 | -- | Probable Carcinogen | IRIS | 5/2016 |
| cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | 5/2016 |
| Dieldrin | 60-57-1 | 4.6E-03 | (ug/m3)-1 | Probable Carcinogen | IRIS | 5/2016 |
| gamma-Chlordane | 12789-03-6 | 1.0E-04 | (ug/m3)-1 | Likely Carcinogen | IRIS | 5/2016 |
| p,p'-DDT | 50-29-3 | 9.7E-05 | (ug/m3)-1 | Probable Carcinogen | IRIS | 5/2016 |
| Trichloroethene | 79-01-6 | 4.1E-06 | (ug/m3)-1 | Carcinogen | IRIS | 5/2016 |
| Vinyl Chloride | 75-01-4 | 4.4E-06 | (ug/m3)-1 | Carcinogen | IRIS | 5/2016 |

**Notes:** All toxicity values were obtained from EPA 2015.

**Surrogates:**
Chlordane was used as a surrogate for alpha-Chlordane and gamma-Chlordane

**Abbreviations:**

| | |
|---|---|
| (ug/m3)-1 | 1/micrograms per cubic meter |
| Cal/EPA | California Environmental Protection Agency |
| CAS | Chemical Abstract Service |
| EPA | U.S. Environmental Protection Agency |
| IRIS | Integrated Risk Information System |
| RAGS | Risk Assessment Guidance for Superfund |

**Reference:**
EPA. 2016. "Regional Screening Level User's Guide." May. Available on-line at:
https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-may-2016

| | | | Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide) | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| | Contaminant | | Information | | | | |
| COPC | Analyte | CAS No. | SFO $(mg/kg\text{-}day)^{-1}$ | ey | IUR $(ug/m^3)^{-1}$ | ey | $RfD_o$ (mg/kg-day) |
| X | Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 |
| X | alpha-Chlordane | 5103-71-9 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 |
| X | gamma-Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 |
| X | Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 |
| X | DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 |
| X | Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 6.0E-03 |
| X | Dichloroethylene, 1,2- | 540-59-0 | | | | | 2.0E-03 |
| X | Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 2.0E-03 |
| X | Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 |
| X | ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 7.0E-10 |
| X | Trichloroethene | 79-01-6 | 4.6E-02 | I | 4.1E-06 | I | 5.0E-04 |
| X | Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 |
| | | | | | | | |
| | Zirconium | 74[illegible] | | | | | 8.0[illegible] |

< 100X c SL; ** = where n SL < 10X c SL; SSL values are
entration may exceed ceiling limit (See User Guide); s =
on may exceed Csat (See User Guide)

| 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|
| and Chemical-specific Information | | | | | | | | | |
| ey | RfC$_i$ (mg/m$^3$) | key | vol | muta-gen | GIABS | ABS | C$_{sat}$ (mg/kg) | VF (m$^3$/kg) | FA |
| I | | | V | | 1 | | | 1.7E+06 | 1 |
| I | 7.0E-04 | I | V | | 1 | 0.04 | | 1.5E+06 | 0.7 |
| I | 7.0E-04 | I | V | | 1 | 0.04 | | 1.5E+06 | 0.7 |
| I | 9.8E-02 | A | V | | 1 | | 2.5E+03 | 2.6E+03 | 1 |
| I | | | | | 1 | 0.03 | | | 0.7 |
| X | 7.0E-03 | P | V | | 1 | | 3.0E+03 | 4.6E+03 | 1 |
| I | | | V | | 1 | | | 2.5E+03 | 1 |
| I | | | V | | 1 | | 2.4E+03 | 2.5E+03 | 1 |
| I | | | | | 1 | 0.1 | | | 0.8 |
| I | 4.0E-08 | C | V | | 1 | 0.03 | | 2.0E+06 | 0.5 |
| I | 2.0E-03 | I | V | TCE | 1 | | 6.9E+02 | 2.2E+03 | 1 |
| I | 1.0E-01 | I | V | VC | 1 | | 3.9E+03 | 9.6E+02 | 1 |
| | | | | | | | | | |
| X | | | | | 1 | | | | |

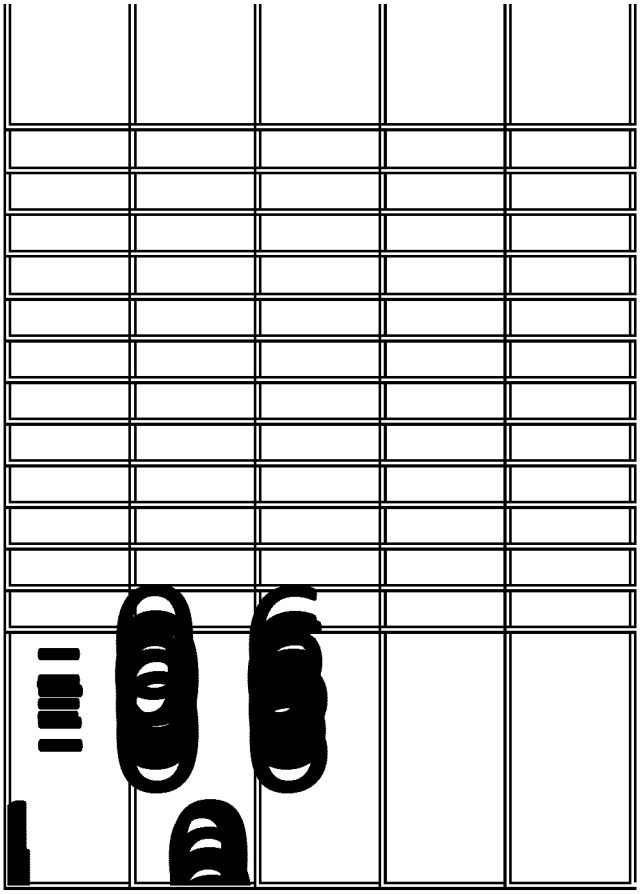

**TABLE 7.1.RME: EPA RAGS TABLE 7 - FUTURE RESIDENT CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Future |
| Receptor Population: | Aggregate and Child Resident |
| Receptor Age: | 0-26 |

| | | | | | | | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | EPC | | Intake/Exposure Concentration | | CSF / Unit Risk | | | Intake/Exposure Concentration | | RfD / RfC | | |
| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | Value | Units | Value | Units | Value | Units | Cancer Risk | Value | Units | Value | Units | Hazard Quotient |
| Surface Soil | Surface Soil, Particulates/Vapors | Surface Soil | Ingestion | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 2.8E-11 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.6E-06 | 2.5E-10 | mg/kg-day | 7.0E-10 | mg/kg-day | 3.5E-01 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 3.3E-06 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.1E-06 | 2.9E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.8E-02 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.1E-06 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 3.3E-08 | 9.5E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 9.5E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 7.9E-05 | mg/kg-day | -- | -- | -- | 1.5E-04 | mg/kg-day | 2.0E-03 | mg/kg-day | 7.7E-02 |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 1.1E-05 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 5.0E-07 | 5.6E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-01 |
| | | | Exposure Route Total | | | | | | | | | 5.2E-06 | | | | | 6.0E-01 |
| | | | Dermal | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 2.6E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.4E-07 | 1.7E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.5E-02 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 3.1E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.0E-07 | 2.1E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.1E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 4.4E-07 | | | | | 2.9E-02 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 3.5E-09 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 1.3E-07 | 9.5E-12 | mg/m3 | 4.0E-08 | mg/m3 | 2.4E-04 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 2.6E-08 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 2.5E-12 | 7.0E-11 | mg/m3 | -- | -- | -- |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.0E-01 | ug/m3 | 2.3E-05 | -- | 2.3E-06 | 2.7E-04 | mg/m3 | 9.8E-02 | mg/m3 | 2.8E-03 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 4.8E+00 | ug/m3 | -- | -- | -- | 4.7E-03 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 1.0E+00 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 4.2E-06 | 1.9E-03 | mg/m3 | 2.0E-03 | mg/m3 | 9.6E-01 |
| | | | Exposure Route Total | | | | | | | | | 6.7E-06 | | | | | 9.7E-01 |
| | | Exposure Point Total | | | | | | | | | | 1.2E-05 | | | | | 1.6E+00 |
| | Exposure Medium Total | | | | | | | | | | | 1.2E-05 | | | | | 1.6E+00 |
| Medium Total | | | | | | | | | | | | 1.2E-05 | | | | | 1.6E+00 |
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 2.8E-11 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.6E-06 | 2.5E-10 | mg/kg-day | 7.0E-10 | mg/kg-day | 3.5E-01 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 8.3E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.8E-07 | 7.4E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.5E-02 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.1E-06 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 3.3E-08 | 9.5E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 9.5E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 3.4E-05 | mg/kg-day | -- | -- | -- | 6.6E-05 | mg/kg-day | 2.0E-03 | mg/kg-day | 3.3E-02 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 5.4E-06 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 2.5E-07 | 2.8E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.6E-02 |
| | | | Exposure Route Total | | | | | | | | | 4.1E-06 | | | | | 4.5E-01 |
| | | | Dermal | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 2.6E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.4E-07 | 1.7E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.5E-02 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 7.8E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.7E-08 | 5.2E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.0E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 3.7E-07 | | | | | 2.6E-02 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 3.5E-09 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 1.3E-07 | 9.5E-12 | mg/m3 | 4.0E-08 | mg/m3 | 2.4E-04 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 6.6E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 6.4E-13 | 1.8E-11 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.0E-01 | ug/m3 | 2.3E-05 | -- | 2.3E-06 | 2.7E-04 | mg/m3 | 9.8E-02 | mg/m3 | 2.8E-03 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 2.0E+00 | ug/m3 | -- | -- | -- | 2.0E-03 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 5.1E-01 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 2.1E-06 | 9.5E-04 | mg/m3 | 2.0E-03 | mg/m3 | 4.8E-01 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Exposure Route Total | | | | | | | | | 4.5E-06 | | | | | 4.8E-01 |
| | | Exposure Point Total | | | | | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| | Exposure Medium Total | | | | | | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| Medium Total | | | | | | | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| Groundwater | Groundwater | Groundwater | Ingestion | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 7.7E-06 | mg/kg-day | 9.1E-02 | (mg/kg-day)-1 | 7.0E-07 | 3.0E-05 | mg/kg-day | 6.0E-03 | mg/kg-day | 5.0E-03 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 7.1E+01 | ug/L | 2.8E-03 | mg/kg-day | -- | -- | -- | 3.5E-03 | mg/kg-day | 2.0E-03 | mg/kg-day | 1.8E+00 |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 8.8E-03 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 4.1E-04 | 2.4E-02 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.8E+01 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 2.20E-04 | mg/kg-day | 7.2E-01 | (mg/kg-day)-1 | 1.6E-04 | 1.7E-04 | mg/kg-day | 3.0E-03 | mg/kg-day | 5.7E-02 |
| | | | Exposure Route Total | | | | | | | | | 5.7E-04 | | | | | 5.0E+01 |
| | | | Dermal | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 3.6E-07 | mg/kg-day | 9.1E-02 | (mg/kg-day)-1 | 3.3E-08 | 1.3E-06 | mg/kg-day | 6.0E-03 | mg/kg-day | 2.1E-04 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 7.1E+01 | ug/L | 3.4E-04 | mg/kg-day | -- | -- | -- | 3.9E-04 | mg/kg-day | 2.0E-03 | mg/kg-day | 2.0E-01 |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 1.4E-03 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 6.4E-05 | 3.5E-03 | mg/kg-day | 5.0E-04 | mg/kg-day | 7.0E+00 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 1.7E-05 | mg/kg-day | 7.2E-01 | (mg/kg-day)-1 | 1.2E-05 | 1.1E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 3.8E-03 |
| | | | Exposure Route Total | | | | | | | | | 7.7E-05 | | | | | 7.2E+00 |
| | Exposure Medium Total | | | | | | | | | | | 6.4E-04 | | | | | 5.7E+01 |
| | Vapors | Indoor Air (Domestic Use) | Inhalation | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 1.1E-01 | ug/m3 | 2.6E-05 | (ug/m3)-1 | 2.8E-06 | 2.9E-04 | mg/m3 | 7.0E-03 | mg/m3 | 4.1E-02 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 7.1E+01 | ug/L | 1.3E+01 | ug/m3 | -- | -- | -- | 3.4E-02 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 1.2E+02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 5.1E-04 | 2.3E-01 | mg/m3 | 2.0E-03 | mg/m3 | 1.2E+02 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 2.3E+00 | ug/m3 | 4.4E-06 | (ug/m3)-1 | 1.0E-05 | 1.6E-03 | mg/m3 | 1.0E-01 | mg/m3 | 1.6E-02 |
| | | | Exposure Route Total | | | | | | | | | 5.2E-04 | | | | | 1.2E+02 |
| | | Indoor Air (Vapor Intrusion) | Inhalation | 1,2-Dichloroethane | 107-06-2 | 1.4E-02 | ug/m3 | 5.0E-03 | ug/m3 | 2.6E-05 | (ug/m3)-1 | 1.3E-07 | 1.3E-05 | mg/m3 | 7.0E-03 | mg/m3 | 1.9E-03 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 6.1E+00 | ug/m3 | 2.2E+00 | ug/m3 | -- | -- | -- | 5.9E-03 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 9.3E+01 | ug/m3 | 4.8E+01 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 2.0E-04 | 9.0E-02 | mg/m3 | 2.0E-03 | mg/m3 | 4.5E+01 |
| | | | | Vinyl Chloride | 75-01-4 | 2.5E+00 | ug/m3 | 3.4E+00 | ug/m3 | 4.4E-06 | (ug/m3)-1 | 1.5E-05 | 2.4E-03 | mg/m3 | 1.0E-01 | mg/m3 | 2.4E-02 |
| | | | Exposure Route Total | | | | | | | | | 2.1E-04 | | | | | 4.5E+01 |
| | | Exposure Point Total | | | | | | | | | | 7.3E-04 | | | | | 1.6E+02 |
| | Exposure Medium Total | | | | | | | | | | | 7.3E-04 | | | | | 1.6E+02 |
| Medium Total | | | | | | | | | | | | 1.4E-03 | | | | | 2.2E+02 |
| Receptor Total: Groundwater + Surface Soil | | | | | | | | | | | | 1E-03 | | | | | 2E+02 |
| Receptor Total: Groundwater + All Soil | | | | | | | | | | | | 1E-03 | | | | | 2E+02 |

**Notes:**

Risk and noncancer hazard derivation for indoor air is in Attachment D-4.

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |

| | |
|---|---|
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 9.1.RME: EPA RAGS TABLE 9 - FUTURE RESIDENT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs- RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Aggregate and Child Resident
Receptor Age: 0-26

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| SurfaceSoil | SurfaceSoil, | Surface Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.6E-06 | 3.4E-07 | 1.3E-07 | 4.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 3.5E-01 | 2.5E-02 | 2.4E-04 | 3.8E-01 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 1.1E-06 | 1.0E-07 | 2.5E-12 | 1.2E-06 | Hepatic | 5.8E-02 | 4.1E-03 | -- | 6.2E-02 |
| | | | Chloroform | 67-66-3 | 3.3E-08 | -- | 2.3E-06 | 2.4E-06 | Hepatic | 9.5E-04 | -- | 2.8E-03 | 3.7E-03 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 7.7E-02 | -- | -- | 7.7E-02 |
| | | | Trichloroethene | 79-01-6 | 5.0E-07 | -- | 4.2E-06 | 4.7E-06 | Developmental, Cardiovascular, Immune | 1.1E-01 | -- | 9.6E-01 | 1.1E+00 |
| | | | Chemical Total | | 5.2E-06 | 4.4E-07 | 6.7E-06 | 1.2E-05 | | 6.0E-01 | 2.9E-02 | 9.7E-01 | 1.6E+00 |
| | | Exposure Point Total | | | | | | 1.2E-05 | | | | | 1.6E+00 |
| | Exposure Medium Total | | | | | | | 1.2E-05 | | | | | 1.6E+00 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface Soil Total | | | | | | | | 1.2E-05 | | | | | 1.6E+00 |
| All Soil | All Soil, | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.6E-06 | 3.4E-07 | 1.3E-07 | 4.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 3.5E-01 | 2.5E-02 | 2.4E-04 | 3.8E-01 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 2.8E-07 | 2.7E-08 | 6.4E-13 | 3.1E-07 | Hepatic | 1.5E-02 | 1.0E-03 | -- | 1.6E-02 |
| | | | Chloroform | 67-66-3 | 3.3E-08 | -- | 2.3E-06 | 2.4E-06 | Hepatic | 9.5E-04 | -- | 2.8E-03 | 3.7E-03 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 3.3E-02 | -- | -- | 3.3E-02 |
| | | | Trichloroethene | 79-01-6 | 2.5E-07 | -- | 2.1E-06 | 2.3E-06 | Developmental, Cardiovascular, Immune | 5.6E-02 | -- | 4.8E-01 | 5.3E-01 |
| | | | Chemical Total | | 4.1E-06 | 3.7E-07 | 4.5E-06 | 9.0E-06 | | 4.5E-01 | 2.6E-02 | 4.8E-01 | 9.6E-01 |
| | | Exposure Point Total | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| | All Soil Total | | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| All Soil Total | | | | | | | | 9.0E-06 | | | | | 9.6E-01 |
| Groundwater | Groundwater | Groundwater | 1,2-Dichloroethane | 107-06-2 | 7.0E-07 | 3.3E-08 | 2.8E-06 | 3.5E-06 | Urinary, Hepatic, Nervous | 5.0E-03 | 2.1E-04 | 4.1E-02 | 4.7E-02 |
| | | Vapors | 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | Hematologic | 1.8E+00 | 2.0E-01 | -- | 2.0E+00 |
| | | (Domestic Use) | Trichloroethene | 79-01-6 | 4.1E-04 | 6.4E-05 | 5.1E-04 | 9.8E-04 | Developmental, Cardiovascular, Immune | 4.8E+01 | 7.0E+00 | 1.2E+02 | 1.7E+02 |
| | | | Vinyl Chloride | 75-01-4 | 1.6E-04 | 1.2E-05 | 1.0E-05 | 1.8E-04 | Hepatic | 5.7E-02 | 3.8E-03 | 1.6E-02 | 7.7E-02 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chemical Total | | 5.7E-04 | 7.7E-05 | 5.2E-04 | 1.2E-03 | | 5.0E+01 | 7.2E+00 | 1.2E+02 | 1.7E+02 |
| | | Exposure Point Total | | | | | | 1.2E-03 | | | | | 1.7E+02 |
| | Domestic Use of Groundwater Total | | | | | | | 1.2E-03 | | | | | 1.7E+02 |
| | Vapors | Indoor Air | 1,2-Dichloroethane | 107-06-2 | -- | -- | 1.3E-07 | 1.3E-07 | Nervous | -- | -- | 1.9E-03 | 1.9E-03 |
| | | (Vapor Intrusion) | 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Trichloroethene | 79-01-6 | -- | -- | 2.0E-04 | 2.0E-04 | Developmental, Cardiovascular, Immune | -- | -- | 4.5E+01 | 4.5E+01 |
| | | | Vinyl Chloride | 75-01-4 | -- | -- | 1.5E-05 | 1.5E-05 | Hepatic | -- | -- | 2.4E-02 | 2.4E-02 |
| | | | Chemical Total | | -- | -- | 2.1E-04 | 2.1E-04 | | -- | -- | 4.5E+01 | 4.5E+01 |
| | | Exposure Point Total | | | | | | 2.1E-04 | | | | | 4.5E+01 |
| | Vapor Intrusion from Groundwater Total | | | | | | | 2.1E-04 | | | | | 4.5E+01 |
| Groundwater Total | | | | | | | | 1.4E-03 | | | | | 2.2E+02 |
| Receptor Total: Surface Soil + Groundwater | | | | | | | | 1E-03 | | | | | 2E+02 |
| Receptor Total: All Soil + Groundwater | | | | | | | | 1E-03 | | | | | 2E+02 |

**TABLE 10.1.RME: EPA RAGS TABLE 10 - FUTURE RESIDENT RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Aggregate and Child Resident
Receptor Age: 0-26

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| SurfaceSoil | SurfaceSoil, Particulates / Vapors | Surface Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.6E-06 | 3.4E-07 | 1.3E-07 | 4.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 3.5E-01 | 2.5E-02 | 2.4E-04 | 3.8E-01 |
| | | | p,p'-DDT | 50-29-3 | 1.1E-06 | 1.0E-07 | 2.5E-12 | 1.2E-06 | Hepatic | 5.8E-02 | 4.1E-03 | -- | 6.2E-02 |
| | | | Chloroform | 67-66-3 | 3.3E-08 | -- | 2.3E-06 | 2.4E-06 | Hepatic | 9.5E-04 | -- | 2.8E-03 | 3.7E-03 |
| | | | Trichloroethene | 79-01-6 | 5.0E-07 | -- | 4.2E-06 | 4.7E-06 | Developmental, Cardiovascular, Immune | 1.1E-01 | -- | 9.6E-01 | 1.1E+00 |
| | | | Chemical Total | | 5.2E-06 | 4.4E-07 | 6.7E-06 | 1.2E-05 | | 5.2E-01 | 2.9E-02 | 9.7E-01 | 1.5E+00 |
| | | Exposure Point Total | | | | | | 1.2E-05 | | | | | 1.5E+00 |
| | Exposure Medium Total | | | | | | | 1.2E-05 | | | | | 1.5E+00 |
| Surface Soil Total | | | | | | | | 1.2E-05 | | | | | 1.5E+00 |
| All Soil | All Soil, Particulates / Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.6E-06 | 3.4E-07 | 1.3E-07 | 4.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 3.5E-01 | 2.5E-02 | 2.4E-04 | 3.8E-01 |
| | | | Chloroform | 67-66-3 | 3.3E-08 | -- | 2.3E-06 | 2.4E-06 | Hepatic | 9.5E-04 | -- | 2.8E-03 | 3.7E-03 |
| | | | Trichloroethene | 79-01-6 | 2.5E-07 | -- | 2.1E-06 | 2.3E-06 | Developmental, Cardiovascular, Immune | 5.6E-02 | -- | 4.8E-01 | 5.3E-01 |
| | | | Chemical Total | | 3.9E-06 | 3.4E-07 | 4.5E-06 | 8.7E-06 | | 4.1E-01 | 2.5E-02 | 4.8E-01 | 9.1E-01 |
| | | Exposure Point Total | | | | | | 8.7E-06 | | | | | 9.1E-01 |
| | All Soil Total | | | | | | | 8.7E-06 | | | | | 9.1E-01 |
| All Soil Total | | | | | | | | 8.7E-06 | | | | | 9.1E-01 |
| Groundwater | Groundwater | Groundwater Vapors (Domestic Use) | 1,2-Dichloroethane | 107-06-2 | 7.0E-07 | 3.3E-08 | 2.8E-06 | 3.5E-06 | Urinary, Hepatic, Nervous | 5.0E-03 | 2.1E-04 | 4.1E-02 | 4.7E-02 |
| | | | Trichloroethene | 79-01-6 | 4.1E-04 | 6.4E-05 | 5.1E-04 | 9.8E-04 | Developmental, Cardiovascular, Immune | 4.8E+01 | 7.0E+00 | 1.2E+02 | 1.7E+02 |
| | | | Vinyl Chloride | 75-01-4 | 1.6E-04 | 1.2E-05 | 1.0E-05 | 1.8E-04 | Hepatic | 5.7E-02 | 3.8E-03 | 1.6E-02 | 7.7E-02 |
| | | | Chemical Total | | 5.7E-04 | 7.7E-05 | 5.2E-04 | 1.2E-03 | | 4.8E+01 | 7.0E+00 | 1.2E+02 | 1.7E+02 |
| | | Exposure Point Total | | | | | | 1.2E-03 | | | | | 1.7E+02 |
| | Domestic Use of Groundwater Total | | | | | | | 1.2E-03 | | | | | 1.7E+02 |
| | Vapors | Indoor Air (Vapor Intrusion) | Trichloroethene | 79-01-6 | -- | -- | 2.0E-04 | 2.0E-04 | Developmental, Cardiovascular, Immune | -- | -- | 4.5E+01 | 4.5E+01 |
| | | | Vinyl Chloride | 75-01-4 | -- | -- | 1.5E-05 | 1.5E-05 | Hepatic | -- | -- | 2.4E-02 | 2.4E-02 |
| | | | Chemical Total | | -- | -- | 2.1E-04 | 2.1E-04 | | -- | -- | 4.5E+01 | 4.5E+01 |
| | | Exposure Point Total | | | | | | 2.1E-04 | | | | | 4.5E+01 |

| | | | |
|---|---|---|---|
| Vapor Intrusion from Groundwater Total | 2.1E-04 | | 4.5E+01 |
| Groundwater Total | 1.4E-03 | | 2.2E+02 |
| Receptor Total: Surface Soil + Groundwater | 1E-03 | | 2E+02 |
| Receptor Total: All Soil + Groundwater | 1E-03 | | 2E+02 |

**TABLE 7.2.RME: EPA RAGS TABLE 7 - FUTURE COMMERCIAL/INDUSTRIAL WORKER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

| | | | | | | | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | EPC | | Intake/Exposure Concentration | | CSF / Unit Risk | | | Intake/Exposure Concentration | | RfD / RfC | | |
| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | Value | Units | Value | Units | Value | Units | Cancer Risk | Value | Units | Value | Units | Hazard Quotient |
| Surface Soil | Surface Soil, Particulates/Vapors | Surface Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.9E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.8E-07 | 8.2E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.2E-02 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 3.5E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.2E-07 | 9.7E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.9E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.1E-07 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 3.5E-09 | 3.2E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 3.2E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 1.8E-06 | mg/kg-day | -- | -- | -- | 5.2E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 2.6E-03 |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 6.7E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 3.1E-08 | 1.9E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.8E-03 |
| | | | Exposure Route Total | | | | | | | | | 5.3E-07 | | | | | 2.0E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 7.4E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 9.7E-08 | 2.1E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 3.0E-03 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 8.8E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 3.0E-08 | 2.5E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.9E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 1.3E-07 | | | | | 3.5E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 8.0E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 3.1E-08 | 2.3E-15 | mg/m3 | 4.0E-08 | mg/m3 | 5.6E-08 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 6.0E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 5.8E-13 | 1.7E-14 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.3E-02 | ug/m3 | 2.3E-05 | -- | 5.3E-07 | 6.5E-08 | mg/m3 | 9.8E-02 | mg/m3 | 6.6E-07 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 4.0E-01 | ug/m3 | -- | -- | -- | 1.1E-06 | mg/m3 | -- | -- | -- |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 1.6E-01 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 6.7E-07 | 4.6E-07 | mg/m3 | 2.0E-03 | mg/m3 | 2.3E-04 |
| | | | Exposure Route Total | | | | | | | | | 1.2E-06 | | | | | 2.3E-04 |
| | | Exposure Point Total | | | | | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| | Exposure Medium Total | | | | | | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| Medium Total | | | | | | | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.9E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 3.8E-07 | 8.2E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.2E-02 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 8.8E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 3.0E-08 | 2.5E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.9E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.1E-07 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 3.5E-09 | 3.2E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 3.2E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 7.9E-07 | mg/kg-day | -- | -- | -- | 2.2E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 1.1E-03 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 3.3E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 1.5E-08 | 9.3E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.9E-03 |
| | | | Exposure Route Total | | | | | | | | | 4.3E-07 | | | | | 1.5E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 7.4E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 9.7E-08 | 2.1E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 3.0E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 2.2E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 7.6E-09 | 6.3E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-04 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 1.0E-07 | | | | | 3.1E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 8.0E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 3.1E-08 | 2.3E-12 | mg/m3 | 4.0E-08 | mg/m3 | 5.6E-05 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.5E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 1.5E-13 | 4.3E-12 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.3E-02 | ug/m3 | 2.3E-05 | -- | 5.3E-07 | 6.5E-05 | mg/m3 | 9.8E-02 | mg/m3 | 6.6E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.7E-01 | ug/m3 | -- | -- | -- | 4.7E-04 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 8.1E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 3.3E-07 | 2.3E-04 | mg/m3 | 2.0E-03 | mg/m3 | 1.1E-01 |
| | | | Exposure Route Total | | | | | | | | | 8.9E-07 | | | | | 1.1E-01 |
| | | Exposure Point Total | | | | | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| | Exposure Medium Total | | | | | | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| Medium Total | | | | | | | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| Groundwater | Groundwater | Groundwater | Ingestion | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 2.3E-06 | mg/kg-day | 9.1E-02 | (mg/kg-day)-1 | 2.1E-07 | 6.4E-06 | mg/kg-day | 6.0E-03 | mg/kg-day | 1.1E-03 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 7.1E+01 | ug/L | 2.7E-04 | mg/kg-day | -- | -- | -- | 7.6E-04 | mg/kg-day | 2.0E-03 | mg/kg-day | 3.8E-01 |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 1.8E-03 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 8.4E-05 | 5.1E-03 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.0E+01 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 1.30E-05 | mg/kg-day | 7.2E-01 | (mg/kg-day)-1 | 9.4E-06 | 3.6E-05 | mg/kg-day | 3.0E-03 | mg/kg-day | 1.2E-02 |
| | | | Exposure Route Total | | | | | | | | | 9.4E-05 | | | | | 1.1E+01 |
| | Exposure Medium Total | | | | | | | | | | | 9.4E-05 | | | | | 1.1E+01 |
| | Vapors | Indoor Air (Domestic Use) | Inhalation | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 2.5E-02 | ug/m3 | 2.6E-05 | (ug/m3)-1 | 6.4E-07 | 6.9E-05 | mg/m3 | 7.0E-03 | mg/m3 | 9.9E-03 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 7.1E+01 | ug/L | 2.9E+00 | ug/m3 | -- | -- | -- | 8.2E-03 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 2.0E+01 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 8.1E-05 | 5.5E-02 | mg/m3 | 2.0E-03 | mg/m3 | 2.8E+01 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 1.4E-01 | ug/m3 | 4.4E-06 | (ug/m3)-1 | 6.1E-07 | 3.9E-04 | mg/m3 | 1.0E-01 | mg/m3 | 3.9E-03 |
| | | | Exposure Route Total | | | | | | | | | 8.2E-05 | | | | | 2.8E+01 |
| | | Indoor Air (Vapor Intrusion) | Inhalation | 1,2-Dichloroethane | 107-06-2 | 1.4E-02 | ug/m3 | 1.1E-03 | ug/m3 | 2.6E-05 | (ug/m3)-1 | 3.0E-08 | 3.2E-06 | mg/m3 | 7.0E-03 | mg/m3 | 4.6E-04 |
| | | | | 1,2-Dichloroethylene (tot | 540-59-0 | 6.1E+00 | ug/m3 | 5.1E-01 | ug/m3 | -- | -- | -- | 1.4E-03 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 9.3E+01 | ug/m3 | 7.6E+00 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 3.1E-05 | 2.1E-02 | mg/m3 | 2.0E-03 | mg/m3 | 1.1E+01 |
| | | | | Vinyl Chloride | 75-01-4 | 2.5E+00 | ug/m3 | 2.1E-01 | ug/m3 | 4.4E-06 | (ug/m3)-1 | 9.1E-07 | 5.8E-04 | mg/m3 | 1.0E-01 | mg/m3 | 5.8E-03 |
| | | | Exposure Route Total | | | | | | | | | 3.2E-05 | | | | | 1.1E+01 |
| | | Exposure Point Total | | | | | | | | | | 1.1E-04 | | | | | 3.8E+01 |
| | Exposure Medium Total | | | | | | | | | | | 1.1E-04 | | | | | 3.8E+01 |
| Medium Total | | | | | | | | | | | | 2.1E-04 | | | | | 4.9E+01 |

| | | | |
|---|---|---|---|
| Receptor Total: Groundwater + Surface Soil | 2E-04 | | 5E+01 |
| Receptor Total: Groundwater + All Soil | 2E-04 | | 5E+01 |

**Notes:**

| | | | |
|---|---|---|---|
| -- | Not available or not applicable | (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| bgs | Below ground surface | mg/L | Milligram per liter |
| CSF | Cancer slope factor | mg/m3 | Milligram per cubic meter |
| EPA | U.S. Environmental Protection Agency | RAGS | Risk Assessment Guidance for Superfund |
| EPC | Exposure point concentration | RfC | Reference concentration |
| mg/kg | Milligram per kilogram | RfD | Reference dose |
| mg/kg-day | Milligram per kilogram per day | (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 9.2.RME: EPA RAGS TABLE 9 - FUTURE COMMERCIAL/INDUSTRIAL WORKER SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs- RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Receptor Population: | Commercial/Industrial Worker |
| Receptor Age: | Adult |

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| SurfaceSoil | SurfaceSoil, | Surface Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.8E-07 | 9.7E-08 | 3.1E-08 | 5.1E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.2E-02 | 3.0E-03 | 5.6E-08 | 1.5E-02 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 1.2E-07 | 3.0E-08 | 5.8E-13 | 1.5E-07 | Hepatic | 1.9E-03 | 4.9E-04 | -- | 2.4E-03 |
| | | | Chloroform | 67-66-3 | 3.5E-09 | -- | 5.3E-07 | 5.4E-07 | Hepatic | 3.2E-05 | -- | 6.6E-07 | 3.2E-05 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 2.6E-03 | -- | -- | 2.6E-03 |
| | | | Trichloroethene | 79-01-6 | 3.1E-08 | -- | 6.7E-07 | 7.0E-07 | Developmental, Cardiovascular, Immune | 3.8E-03 | -- | 2.3E-04 | 4.0E-03 |
| | | | Chemical Total | | 5.3E-07 | 1.3E-07 | 1.2E-06 | 1.9E-06 | | 2.0E-02 | 3.5E-03 | 2.3E-04 | 2.4E-02 |
| | | Exposure Point Total | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| | Exposure Medium Total | | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| Surface Soil Total | | | | | | | | 1.9E-06 | | | | | 2.4E-02 |
| All Soil | All Soil, | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 3.8E-07 | 9.7E-08 | 3.1E-08 | 5.1E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.2E-02 | 3.0E-03 | 5.6E-05 | 1.5E-02 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 3.0E-08 | 7.6E-09 | 1.5E-13 | 3.7E-08 | Hepatic | 4.9E-04 | 1.3E-04 | -- | 6.2E-04 |
| | | | Chloroform | 67-66-3 | 3.5E-09 | -- | 5.3E-07 | 5.4E-07 | Hepatic | 3.2E-05 | -- | 6.6E-04 | 6.9E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 1.1E-03 | -- | -- | 1.1E-03 |
| | | | Trichloroethene | 79-01-6 | 1.5E-08 | -- | 3.3E-07 | 3.5E-07 | Developmental, Cardiovascular, Immune | 1.9E-03 | -- | 1.1E-01 | 1.2E-01 |
| | | | Chemical Total | | 4.3E-07 | 1.0E-07 | 8.9E-07 | 1.4E-06 | | 1.5E-02 | 3.1E-03 | 1.1E-01 | 1.3E-01 |
| | | Exposure Point Total | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| | All Soil Total | | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| All Soil Total | | | | | | | | 1.4E-06 | | | | | 1.3E-01 |
| Groundwater | Groundwater | Groundwater | 1,2-Dichloroethane | 107-06-2 | 2.1E-07 | -- | 6.4E-07 | 8.5E-07 | Urinary, Hepatic, Nervous | 1.1E-03 | -- | 9.9E-03 | 1.1E-02 |
| | | Vapors | 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | Hematologic | 3.8E-01 | -- | -- | 3.8E-01 |
| | | (Domestic Use) | Trichloroethene | 79-01-6 | 8.4E-05 | -- | 8.1E-05 | 1.7E-04 | Developmental, Cardiovascular, Immune | 1.0E+01 | -- | 2.8E+01 | 3.8E+01 |
| | | | Vinyl Chloride | 75-01-4 | 9.4E-06 | -- | 6.1E-07 | 1.0E-07 | Hepatic | 1.2E-02 | -- | 3.9E-03 | 1.6E-02 |
| | | | Chemical Total | | 9.4E-05 | -- | 8.2E-05 | 1.8E-04 | | 1.1E+01 | -- | 2.8E+01 | 3.8E+01 |
| | | Exposure Point Total | | | | | | 1.8E-04 | | | | | 3.8E+01 |
| | Domestic Use of Groundwater Total | | | | | | | 1.8E-04 | | | | | 3.8E+01 |
| | Vapors | Indoor Air | 1,2-Dichloroethane | 107-06-2 | -- | -- | 3.0E-08 | 3.0E-08 | Nervous | -- | -- | 4.6E-04 | 4.6E-04 |
| | | (Vapor Intrusion) | 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Trichloroethene | 79-01-6 | -- | -- | 3.1E-05 | 3.1E-05 | Developmental, Cardiovascular, Immune | -- | -- | 1.1E+01 | 1.1E+01 |
| | | | Vinyl Chloride | 75-01-4 | -- | -- | 9.1E-07 | 9.1E-07 | Hepatic | -- | -- | 5.8E-03 | 5.8E-03 |
| | | | Chemical Total | | -- | -- | 3.2E-05 | 3.2E-05 | | -- | -- | 1.1E+01 | 1.1E+01 |
| | | Exposure Point Total | | | | | | 3.2E-05 | | | | | 1.1E+01 |
| | Vapor Intrusion from Groundwater Total | | | | | | | 3.2E-05 | | | | | 1.1E+01 |
| Groundwater Total | | | | | | | | 2.1E-04 | | | | | 4.9E+01 |
| Receptor Total: Surface Soil + Groundwater | | | | | | | | 2E-04 | | | | | 5E+01 |
| Receptor Total: All Soil + Groundwater | | | | | | | | 2E-04 | | | | | 5E+01 |

**TABLE 10.2.RME: EPA RAGS TABLE 10 - FUTURE COMMERICAL/INDUSTRIAL WORKER RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Receptor Population: | Commercial/Industrial Worker |
| Receptor Age: | Adult |

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| SurfaceSoil | SurfaceSoil, Particulates / Vapors | Surface Soil | Trichloroethene | 79-01-6 | 3.1E-08 | -- | 6.7E-07 | 7.0E-07 | Developmental, Cardiovascular, Immune | 3.8E-03 | -- | 2.3E-04 | 4.0E-03 |
| | | | Chemical Total | | 3.1E-08 | -- | 6.7E-07 | 7.0E-07 | | 3.8E-03 | -- | 2.3E-04 | 4.0E-03 |
| | | Exposure Point Total | | | | | | 7.0E-07 | | | | | 4.0E-03 |
| | Exposure Medium Total | | | | | | | 7.0E-07 | | | | | 4.0E-03 |
| Surface Soil Total | | | | | | | | 7.0E-07 | | | | | 4.0E-03 |
| All Soil | All Soil, Particulates / Vapors | All Soil | Trichloroethene | 79-01-6 | 1.5E-08 | -- | 3.3E-07 | 3.5E-07 | Developmental, Cardiovascular, Immune | 1.9E-03 | -- | 1.1E-01 | 1.2E-01 |
| | | | Chemical Total | | 1.5E-08 | -- | 3.3E-07 | 3.5E-07 | | 1.9E-03 | -- | 1.1E-01 | 1.2E-01 |
| | | Exposure Point Total | | | | | | 3.5E-07 | | | | | 1.2E-01 |
| | All Soil Total | | | | | | | 3.5E-07 | | | | | 1.2E-01 |
| All Soil Total | | | | | | | | 3.5E-07 | | | | | 1.2E-01 |
| Groundwater | Groundwater | Groundwater Vapors (Domestic Use) | Trichloroethene | 79-01-6 | 8.4E-05 | -- | 8.1E-05 | 1.7E-04 | Developmental, Cardiovascular, Immune | 1.0E+01 | -- | 2.8E+01 | 3.8E+01 |
| | | | Vinyl Chloride | 75-01-4 | 9.4E-06 | -- | 6.1E-07 | 1.0E-07 | Hepatic | 1.2E-02 | -- | 3.9E-03 | 1.6E-02 |
| | | | Chemical Total | | 9.4E-05 | -- | 8.1E-05 | 1.8E-04 | | 1.0E+01 | -- | 2.8E+01 | 3.8E+01 |
| | | Exposure Point Total | | | | | | 1.8E-04 | | | | | 3.8E+01 |
| | Domestic Use of Groundwater Total | | | | | | | 1.8E-04 | | | | | 3.8E+01 |
| | Vapors | Indoor Air (Vapor Intrusion) | Trichloroethene | 79-01-6 | -- | -- | 3.1E-05 | 3.1E-05 | Developmental, Cardiovascular, Immune | -- | -- | 1.1E+01 | 1.1E+01 |
| | | | Chemical Total | | -- | -- | 3.1E-05 | 3.1E-05 | | -- | -- | 1.1E+01 | 1.1E+01 |
| | | Exposure Point Total | | | | | | 3.1E-05 | | | | | 1.1E+01 |
| | Vapor Intrusion from Groundwater Total | | | | | | | 3.1E-05 | | | | | 1.1E+01 |
| Groundwater Total | | | | | | | | 2.1E-04 | | | | | 4.9E+01 |
| Receptor Total: Surface Soil + Groundwater | | | | | | | | 2E-04 | | | | | 5E+01 |
| Receptor Total: All Soil + Groundwater | | | | | | | | 2E-04 | | | | | 5E+01 |

**TABLE 7.3.RME: EPA RAGS TABLE 7 - FUTURE OUTDOOR WORKER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Outdoor Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | EPC Value | EPC Units | Cancer Risk Calculations: Intake/Exposure Concentration Value | Intake/Exposure Concentration Units | CSF / Unit Risk Value | CSF / Unit Risk Units | Cancer Risk | Noncancer Hazard Quotient: Intake/Exposure Concentration Value | Intake/Exposure Concentration Units | RfD / RfC Value | RfD / RfC Units | Hazard Quotient |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface Soil | Surface Soil Particulates and Vapors | Surface Soil | Ingestion | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 5.3E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 6.9E-07 | 1.5E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.1E-02 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 6.2E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.1E-07 | 1.7E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.5E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.0E-07 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 6.3E-09 | 5.7E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 5.7E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 3.3E-06 | mg/kg-day | -- | -- | -- | 9.3E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 4.6E-03 |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 1.2E-06 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 5.6E-08 | 3.4E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.8E-03 |
| | | | Exposure Route Total | | | | | | | | | 9.6E-07 | | | | | 3.6E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 6.7E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 8.7E-08 | 1.9E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.7E-03 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 7.9E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.7E-08 | 2.2E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.4E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 1.1E-07 | | | | | 3.1E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 7.2E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 2.8E-08 | 2.0E-12 | mg/m3 | 4.0E-08 | mg/m3 | 5.1E-05 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 5.4E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 5.2E-13 | 1.5E-11 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.1E-02 | ug/m3 | 2.3E-05 | -- | 4.8E-07 | 5.8E-05 | mg/m3 | 9.8E-02 | mg/m3 | 5.9E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 3.6E-01 | ug/m3 | -- | -- | -- | 1.0E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 1.5E-01 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 6.1E-07 | 4.1E-04 | mg/m3 | 2.0E-03 | mg/m3 | 2.1E-01 |
| | | | Exposure Route Total | | | | | | | | | 1.1E-06 | | | | | 2.1E-01 |

| | | | | | |
|---|---|---|---|---|---|
| | | Exposure Point Total | 2.2E-06 | | 2.5E-01 |
| | Exposure Medium Total | | 2.2E-06 | | 2.5E-01 |
| Medium Total | Medium Total | | 2.2E-06 | | 2.5E-01 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All Soil | All Soil | All Soil | All Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 5.3E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 6.9E-07 | 1.5E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.1E-02 |
| | | Particulates | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.6E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 5.4E-08 | 4.4E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 8.9E-04 |
| | | and Vapors | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.0E-07 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 6.3E-09 | 5.7E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 5.7E-05 |
| | | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.4E-06 | mg/kg-day | -- | -- | -- | 4.0E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 2.0E-03 |
| | | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 6.0E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 2.8E-08 | 1.7E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.4E-03 |
| | | | | Exposure Route Total | | | | | | | | | 7.7E-07 | | | | | 2.7E-02 |
| | | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 6.7E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 8.7E-08 | 1.9E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.7E-03 |
| | | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 2.0E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 6.8E-09 | 5.6E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-04 |
| | | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | | Exposure Route Total | | | | | | | | | 9.4E-08 | | | | | 2.8E-03 |
| | | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 7.2E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 2.8E-08 | 2.0E-12 | mg/m3 | 4.0E-08 | mg/m3 | 5.1E-05 |
| | | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.4E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 1.3E-13 | 3.8E-12 | mg/m3 | -- | -- | -- |
| | | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 2.1E-02 | ug/m3 | 2.3E-05 | -- | 4.8E-07 | 5.8E-05 | mg/m3 | 9.8E-02 | mg/m3 | 5.9E-04 |
| | | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.5E-01 | ug/m3 | -- | -- | -- | 4.3E-04 | mg/m3 | -- | -- | -- |
| | | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 7.3E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 3.0E-07 | 2.0E-04 | mg/m3 | 2.0E-03 | mg/m3 | 1.0E-01 |
| | | | | Exposure Route Total | | | | | | | | | 8.1E-07 | | | | | 1.0E-01 |
| | | | Exposure Point Total | | | | | | | | | | 1.7E-06 | | | | | 1.3E-01 |
| | | Exposure Medium Total | | | | | | | | | | | 1.7E-06 | | | | | 1.3E-01 |
| Medium Total | Medium Total | | | | | | | | | | | | 1.7E-06 | | | | | 1.3E-01 |
| Receptor Total: Surface Soil | Receptor Total: Surface Soil | | | | | | | | | | | Total of Receptor Risks Across All Media | 2E-06 | Total of Receptor Hazards Across All Media | | | | 2E-01 |
| Receptor Total: All Soil | Receptor Total: All Soil | | | | | | | | | | | Total of Receptor Risks Across All Media | 2E-06 | Total of Receptor Hazards Across All Media | | | | 1E-01 |

| Notes: | Notes: | | | |
|---|---|---|---|---|
| -- | -- | Not available or not applicable | RAGS | Risk Assessment Guidance for Superfund |
| bgs | bgs | Below ground surface | RfC | Reference concentration |
| CAS | CAS | Chemical Abstract Service | RfD | Reference dose |
| CSF | CSF | Cancer slope factor | (ug/m3)-1 | 1/Microgram per cubic meter |
| EPA | EPA | U.S. Environmental Protection Agency | (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| EPC | EPC | Exposure point concentration | mg/m3 | Milligram per cubic meter |
| mg/kg | mg/kg | Milligram per kilogram | RAGS | Risk Assessment Guidance for Superfund |
| mg/kg-day | mg/kg-day | Milligram per kilogram per day | RfC | Reference concentration |
| (mg/kg-day)-1 | (mg/kg-day)-1 | 1/(Milligram per kilogram per day) | RfD | Reference dose |
| mg/m3 | mg/m3 | Milligram per cubic meter | (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 7.3.RME: EPA RAGS TABLE 7 - FUTURE OUTDOOR WORKER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| |
|---|
| Scenario Timeframe: |
| Receptor Population: |
| Receptor Age: |

| Medium |
|---|
| Surface Soil |

Medium Total

| |
|---|
| All Soil |
| Medium Total |
| Receptor Total: Surface Soil |
| Receptor Total: All Soil |

**Notes:**

--

bgs

CAS

CSF

EPA

EPC

mg/kg

mg/kg-day

(mg/kg-day)-1

mg/m3

**TABLE 9.3.RME: EPA RAGS TABLE 9 - FUTURE OUTDOOR WORKER SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Outdoor Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, | Surface Soil | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 6.9E-07 | 8.7E-08 | 2.8E-08 | 8.0E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 2.1E-02 | 2.7E-03 | 5.1E-05 | 2.4E-02 |
| | Particulates/Vapors | Particulates/Vapors | p,p'-DDT | 50-29-3 | 2.1E-07 | 2.7E-08 | 5.2E-13 | 2.4E-07 | Hepatic | 3.5E-03 | 4.4E-04 | -- | 3.9E-03 |
| | | | Chloroform | 67-66-3 | 6.3E-09 | -- | 4.8E-07 | 4.9E-07 | Hepatic | 5.7E-05 | -- | 5.9E-04 | 6.5E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 4.6E-03 | -- | -- | 4.6E-03 |
| | | | Trichloroethene | 79-01-6 | 5.6E-08 | -- | 6.1E-07 | 6.6E-07 | Developmental, Cardiovascular, Immune | 6.8E-03 | -- | 2.1E-01 | 2.1E-01 |
| | | | Chemical Total | | 9.6E-07 | 1.1E-07 | 1.1E-06 | 2.2E-06 | | 3.6E-02 | 3.1E-03 | 2.1E-01 | 2.5E-01 |
| | | Exposure Point Total | | | | | | 2.2E-06 | | | | | 2.5E-01 |
| | Surface Soil | | | | | | | 2.2E-06 | | | | | 2.5E-01 |
| All Soil | All Soil | All Soil | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 6.9E-07 | 8.7E-08 | 2.8E-08 | 8.0E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 2.1E-02 | 2.7E-03 | 5.1E-05 | 2.4E-02 |
| | Particulates/Vapors | Particulates/Vapors | p,p'-DDT | 50-29-3 | 5.4E-08 | 6.8E-09 | 1.3E-13 | 6.1E-08 | Hepatic | 8.9E-04 | 1.1E-04 | -- | 1.0E-05 |
| | | | Chloroform | 67-66-3 | 6.3E-09 | -- | 4.8E-07 | 4.9E-07 | Hepatic | 5.7E-05 | -- | 5.9E-04 | 6.5E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 2.0E-03 | -- | -- | 2.0E-03 |
| | | | Trichloroethene | 79-01-6 | 2.8E-08 | -- | 3.0E-07 | 3.3E-07 | Developmental, Cardiovascular, Immune | 3.4E-03 | -- | 1.0E-01 | 1.1E-01 |
| | | Exposure Point Total | | | 7.7E-07 | 9.4E-08 | 8.1E-07 | 1.7E-06 | | 2.7E-02 | 2.8E-03 | 1.0E-01 | 1.3E-01 |
| | All Soil | | | | | | | 1.7E-06 | | | | | 1.3E-01 |
| Receptor Total: Surface Soil | | | | | | | | 2E-06 | | | | | 2E-01 |
| Receptor Total: All Soil | | | | | | | | 2E-06 | | | | | 1E-01 |

**TABLE 10.3.RME: EPA RAGS TABLE 10 - FUTURE OUTDOOR WORKER RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Future |
| Receptor Population: | Outdoor Worker |
| Receptor Age: | Adult |

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, Particulates/Vapors | Surface Soil Particulates/Vapors | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | Surface Soil | | | | | | | -- | | | | | -- |
| All Soil | All Soil Particulates/Vapors | All Soil Particulates/Vapors | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | Exposure Point Total | | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | All Soil | | | | | | | -- | | | | | -- |
| Receptor Total: Surface Soil | | | | | | | | -- | | | | | -- |
| Receptor Total: All Soil | | | | | | | | -- | | | | | -- |

**TABLE 7.4.RME: EPA RAGS TABLE 7 - CURRENT/FUTURE CONSTRUCTION/UTILITY WORKER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

| | | | | | | | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | EPC | | Intake/Exposure Concentration | | CSF / Unit Risk | | | Intake/Exposure Concentration | | RfD / RfC | | |
| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | Value | Units | Value | Units | Value | Units | Cancer Risk | Value | Units | Value | Units | Hazard Quotient |
| All Soil | All Soil | All Soil | Ingestion | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 4.0E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 5.2E-08 | 5.7E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 8.1E-02 |
| | Particulates | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.2E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 4.1E-09 | 1.7E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.4E-03 |
| | and Vapors | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.6E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 4.8E-10 | 2.2E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 2.2E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.1E-07 | mg/kg-day | -- | -- | -- | 1.5E-05 | mg/kg-day | 2.0E-03 | mg/kg-day | 7.6E-03 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 4.6E-08 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 2.1E-09 | 6.4E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-02 |
| | | | Exposure Route Total | | | | | | | | | 5.9E-08 | | | | | 1.0E-01 |
| | | | Dermal | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 3.9E-14 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 5.0E-09 | 5.4E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 7.8E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.2E-09 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 3.9E-10 | 1.6E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.3E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Exposure Route Total | | | | | | | | | | | 5.4E-09 | | | | | 8.1E-03 |
| | Inhalation | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 1.7E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 6.4E-10 | 2.3E-12 | mg/m3 | 4.0E-08 | mg/m3 | 5.9E-05 |
| | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 3.2E-11 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 3.1E-15 | 4.4E-12 | mg/m3 | -- | -- | -- |
| | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 4.8E-04 | ug/m3 | 2.3E-05 | -- | 1.1E-08 | 6.8E-05 | mg/m3 | 9.8E-02 | mg/m3 | 6.9E-04 |
| | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 3.5E-03 | ug/m3 | -- | -- | -- | 4.9E-04 | mg/m3 | -- | -- | -- |
| | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 1.7E-03 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 6.9E-09 | 2.4E-04 | mg/m3 | 2.0E-03 | mg/m3 | 1.2E-01 |
| Exposure Route Total | | | | | | | | | | 1.9E-08 | | | | | 1.2E-01 |
| Exposure Point Total | | | | | | | | | | 8.3E-08 | | | | | 2.3E-01 |
| Exposure Medium Total | | | | | | | | | | 8.3E-08 | | | | | 2.3E-01 |
| Medium Total | | | | | | | | | | 8.3E-08 | | | | | 2.3E-01 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Groundwater | Groundwater | Groundwater | Dermal | 1,2-Dichloroethane | 107-06-2 | 6.0E-01 | ug/L | 1.7E-09 | mg/kg-day | 9.1E-02 | (mg/kg-day)-1 | 1.6E-10 | 2.4E-07 | mg/kg-day | 6.0E-03 | mg/kg-day | 4.0E-05 |
| | | | | 1,2-Dichloroethylene (total) | 540-59-0 | 7.1E+01 | ug/L | 5.2E-07 | mg/kg-day | -- | -- | -- | 7.3E-05 | mg/kg-day | 2.0E-03 | mg/kg-day | 3.7E-02 |
| | | | | Trichloroethene | 79-01-6 | 4.8E+02 | ug/L | 4.0E-06 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 1.9E-07 | 5.7E-04 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E+00 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+00 | ug/L | 1.8E-08 | mg/kg-day | 7.2E-01 | (mg/kg-day)-1 | 1.3E-08 | 2.5E-06 | mg/kg-day | 3.0E-03 | mg/kg-day | 8.5E-04 |
| | | | Exposure Route Total | | | | | | | | | 2.0E-07 | | | | | 1.2E+00 |
| | | Exposure Point Total | | | | | | | | | | 2.0E-07 | | | | | 1.2E+00 |
| | Exposure Medium Total | | | | | | | | | | | 2.0E-07 | | | | | 1.2E+00 |
| Groundwater | Vapors (in trenches) | Trench Air | Inhalation | 1,2-Dichloroethane | 107-06-2 | 4.6E+00 | ug/m$^3$ | 3.9E-03 | ug/m3 | 2.6E-05 | (ug/m3)-1 | 1.0E-07 | 5.5E-04 | mg/m3 | 7.0E-03 | mg/m3 | 7.9E-02 |
| | | | | 1,2-Dichloroethylene (total) | 540-59-0 | 5.7E+02 | ug/m$^3$ | 4.8E-01 | ug/m3 | -- | -- | -- | 6.8E-02 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 3.3E+03 | ug/m$^3$ | 2.8E+00 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 1.2E-05 | 4.0E-01 | mg/m3 | 2.0E-03 | mg/m3 | 2.0E+02 |
| | | | | Vinyl Chloride | 75-01-4 | 3.4E+01 | ug/m$^3$ | 2.9E-02 | ug/m3 | 4.4E-06 | (ug/m3)-1 | 1.3E-07 | 4.1E-03 | mg/m3 | 1.0E-01 | mg/m3 | 4.1E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| | | Exposure Point Total | | | | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| | Exposure Medium Total | | | | | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| Medium Total | | | | | | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| Receptor Total: Soil + Groundwater | | | | | | | | | | | Total of Receptor Risks Across All Media | 1E-05 | Total of Receptor Hazards Across All Media | | | | 2E+02 |

**Notes:**

| | | | |
|---|---|---|---|
| -- | Not available or not applicable | (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| bgs | Below ground surface | mg/L | Milligram per liter |
| CAS | Chemical Abstract Service | mg/m3 | Milligram per cubic meter |
| CSF | Cancer slope factor | RAGS | Risk Assessment Guidance for Superfund |
| EPA | U.S. Environmental Protection Agency | RfC | Reference concentration |
| EPC | Exposure point concentration | RfD | Reference dose |
| mg/kg | Milligram per kilogram | ug/m3 | Microgram per cubic meter |
| mg/kg-day | Milligram per kilogram per day | (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 9.4.RME: EPA RAGS TABLE 9 - CURRENT/FUTURE CONSTRUCTION WORKER SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs- RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates/Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 5.2E-08 | 5.0E-09 | 6.4E-10 | 5.8E-08 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 8.1E-02 | 7.8E-03 | 5.9E-05 | 8.9E-02 |
| | | | p,p'-DDT | 50-29-3 | 4.1E-09 | 3.9E-10 | 3.1E-15 | 4.5E-09 | Hepatic | 3.4E-03 | 3.3E-04 | -- | 3.7E-03 |
| | | | Chloroform | 67-66-3 | 4.8E-10 | -- | 1.1E-08 | 1.2E-08 | Hepatic | 2.2E-04 | -- | 6.9E-04 | 9.1E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 7.6E-03 | -- | -- | 7.6E-03 |
| | | | Trichloroethene | 79-01-6 | 2.1E-09 | -- | 6.9E-09 | 9.0E-09 | Developmental, Cardiovascular, Immune | 1.3E-02 | -- | 1.2E-01 | 1.3E-01 |
| | | | Chemical Total | | 5.9E-08 | 5.4E-09 | 1.9E-08 | 8.3E-08 | | 1.0E-01 | 8.1E-03 | 1.2E-01 | 2.3E-01 |
| | | Exposure Point Total | | | | | | 8.3E-08 | | | | | 2.3E-01 |
| | All Soil Total | | | | | | | 8.3E-08 | | | | | 2.3E-01 |
| Groundwater | Groundwater and Vapors | Groundwater and Trench Air | 1,2-Dichloroethane | 107-06-2 | -- | 1.6E-10 | 1.0E-07 | 1.0E-07 | Urinary, Hepatic, Nervous | -- | 4.0E-05 | 7.9E-02 | 7.9E-02 |
| | | | 1,2-Dichloroethylene (total) | 540-59-0 | -- | -- | -- | -- | Hematologic | -- | 3.7E-02 | -- | 3.7E-02 |
| | | | Trichloroethene | 79-01-6 | -- | 1.9E-07 | 1.2E-05 | 1.2E-05 | Developmental, Cardiovascular, Immune | -- | 1.1E+00 | 2.0E+02 | 2.0E+02 |
| | | | Vinyl Chloride | 75-01-4 | -- | 1.3E-08 | 1.3E-07 | 1.4E-07 | Hepatic | -- | 8.5E-04 | 4.1E-02 | 4.2E-02 |
| | | | Chemical Total | | -- | 2.0E-07 | 1.2E-05 | 1.2E-05 | | -- | 1.2E+00 | 2.0E+02 | 2.0E+02 |
| | | Exposure Point Total | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| | Groundwater Total | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| Receptor Total: Soil + Groundwater | | | | | | | | 1E-05 | | | | | 2E+02 |

**TABLE 10.4.RME: EPA RAGS TABLE 10 - CURRENT/FUTURE CONSTRUCTION WORKER RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

| | |
|---|---|
| Scenario Timeframe: | Current/Future |
| Receptor Population: | Construction/Utility Worker |
| Receptor Age: | Adult |

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | Primary Target Organ(s) | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates/Vapors | All Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | All Soil Total | | | | | | | -- | | | | | -- |
| Groundwater | Groundwater and Vapors | Groundwater and Trench Air | Trichloroethene | 79-01-6 | -- | 1.9E-07 | 1.2E-05 | 1.2E-05 | Developmental, Cardiovascular, Immune | -- | 1.1E+00 | 2.0E+02 | 2.0E+02 |
| | | | Vinyl Chloride | 75-01-4 | -- | 1.3E-08 | 1.3E-07 | 1.4E-07 | Hepatic | -- | 8.5E-04 | 4.1E-02 | 4.2E-02 |
| | | | Chemical Total | | -- | 2.0E-07 | 1.2E-05 | 1.2E-05 | | -- | 1.1E+00 | 2.0E+02 | 2.0E+02 |
| | | Exposure Point Total | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| | Groundwater Total | | | | | | | 1.2E-05 | | | | | 2.0E+02 |
| Receptor Total: Soil + Groundwater | | | | | | | | 1E-05 | | | | | 2E+02 |

**TABLE 7.5.RME: EPA RAGS TABLE 7-FUTURE CHILD RECREATIONALIST CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Child Recreationalist
Receptor Age: 0-6

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potentical Concern | CAS No. | EPC | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Intake/Exposure Concentration | | CSF / Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD / RfC | | Hazard Quotient |
| | | | | | | Value | Units | Value | Units | Value | Units | | Value | Units | Value | Units | |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 8.0E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.0E-06 | 9.4E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.3E-01 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 2.4E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 8.2E-08 | 2.8E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.6E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 3.1E-07 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 9.6E-09 | 3.6E-06 | mg/kg-day | 1.0E-02 | mg/kg-day | 3.6E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.1E-05 | mg/kg-day | -- | -- | -- | 2.5E-05 | mg/kg-day | 2.0E-03 | mg/kg-day | 1.3E-02 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 4.9E-06 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 2.2E-07 | 1.1E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.1E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.4E-06 | | | | | 1.7E-01 |
| | | | Dermal | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 5.7E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 7.4E-08 | 6.7E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 9.5E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.7E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 5.8E-09 | 2.0E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.0E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 8.0E-08 | | | | | 9.9E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.9E-05 | mg/kg | 3.9E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 1.5E-09 | 4.5E-13 | mg/m3 | 4.0E-08 | mg/m3 | 1.1E-05 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 7.3E-11 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 7.1E-15 | 8.5E-13 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.1E-03 | ug/m3 | 2.3E-05 | -- | 2.6E-08 | 1.3E-05 | mg/m3 | 9.8E-02 | mg/m3 | 1.3E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 4.3E-02 | ug/m3 | -- | -- | -- | 9.5E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 2.1E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 8.5E-08 | 4.6E-05 | mg/m3 | 2.0E-03 | mg/m3 | 2.3E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.1E-07 | | | | | 2.3E-02 |
| | | Exposure Point Total | | | | | | | | | | 1.6E-06 | | | | | 2.1E-01 |
| | Exposure Medium Total | | | | | | | | | | | 1.6E-06 | | | | | 2.1E-01 |
| Medium Total | | | | | | | | | | | | 1.6E-06 | | | | | 2.1E-01 |
| Surface Water | Surface Water | Surface Water | Ingestion | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 2.9E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.0E-09 | 3.4E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.7E-05 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 6.8E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 1.1E-07 | 8.0E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.6E-03 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 2.6E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 9.0E-10 | 3.0E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.0E-05 |
| | | | Exposure Route Total | | | | | | | | | 1.1E-07 | | | | | 1.7E-03 |
| | | | Dermal | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 5.1E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.8E-07 | 5.9E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.2E-02 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 3.5E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 5.6E-06 | 4.1E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 8.1E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 4.5E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.6E-07 | 5.3E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-02 |
| | | | Exposure Route Total | | | | | | | | | 5.9E-06 | | | | | 1.0E-01 |
| | Exposure Medium Total | | | | | | | | | | | 6.0E-06 | | | | | 1.1E-01 |
| Medium Total | | | | | | | | | | | | 6.0E-06 | | | | | 1.1E-01 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sediment | Sediment | Sediment | Ingestion | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | 3.8E-06 | mg/kg-day | 1.7E+01 | (mg/kg-day)-1 | 6.4E-05 | 4.4E-05 | mg/kg-day | 3.0E-05 | mg/kg-day | 1.5E+00 |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 5.6E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.0E-07 | 6.5E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-02 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 2.6E-06 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 4.1E-05 | 3.0E-05 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.0E-01 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 6.3E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.2E-07 | 7.4E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.5E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.1E-04 | | | | | 2.1E+00 |
| | | | Dermal | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | -- | -- | 1.7E+01 | (mg/kg-day)-1 | -- | -- | -- | 3.0E-05 | mg/kg-day | -- |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 2.4E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 8.5E-09 | 2.8E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.7E-04 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 2.8E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 4.4E-06 | 3.2E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.5E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 2.7E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 9.6E-09 | 3.2E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.4E-04 |
| | | | Exposure Route Total | | | | | | | | | 4.4E-06 | | | | | 6.6E-02 |
| | Exposure Medium Total | | | | | | | | | | | 1.1E-04 | | | | | 2.2E+00 |
| Medium Total | | | | | | | | | | | | 1.1E-04 | | | | | 2.2E+00 |
| Receptor Total; All Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 1E-04 | Total of Receptor Hazards Across All Media | | | | 2E+00 |

**Notes:**

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

## TABLE 9.5.RME: EPA RAGS TABLE 9 - FUTURE CHILD RECREATIONALIST SUMMARY OF RECEPTOR RISKS AND HAZARDS - RME
### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Future
Receptor Population: Child Recreationalist
Receptor Age: 0-6

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.0E-06 | 7.4E-08 | 1.5E-09 | 1.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.3E-01 | 9.5E-03 | 1.1E-05 | 1.4E-01 |
| | | | p,p'-DDT | 50-29-3 | 8.2E-08 | 5.8E-09 | 7.1E-15 | 8.8E-08 | Hepatic | 5.6E-03 | 4.0E-04 | -- | 6.0E-03 |
| | | | Chloroform | 67-66-3 | 9.6E-09 | -- | 2.6E-08 | 3.5E-08 | Hepatic | 3.6E-04 | -- | 1.3E-04 | 5.0E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 1.3E-02 | -- | -- | |
| | | | Trichloroethene | 79-01-6 | 2.2E-07 | -- | 8.5E-08 | 3.1E-07 | Developmental, Cardiovascular, Immune | 2.1E-02 | -- | 2.3E-02 | 4.4E-02 |
| | | | Chemical Total | | 1.4E-06 | 8.0E-08 | 1.1E-07 | 1.6E-06 | | 1.7E-01 | 9.9E-03 | 2.3E-02 | 1.9E-01 |
| | | Exposure Point Total | | | | | | 1.6E-06 | | | | | 1.9E-01 |
| | All Soil Total | | | | | | | 1.6E-06 | | | | | 1.9E-01 |
| Surface Water | Surface Water | Surface Water | alpha-Chlordane | 5103-71-9 | 1.0E-09 | 1.8E-07 | -- | 1.8E-07 | Hepatic | 6.7E-05 | 1.2E-02 | -- | 1.2E-02 |
| | | | Dieldrin | 60-57-1 | 1.1E-07 | 5.6E-06 | -- | 5.7E-06 | Hepatic | 1.6E-03 | 8.1E-02 | -- | 8.3E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 9.0E-10 | 1.6E-07 | -- | 1.6E-07 | Hepatic | 6.0E-05 | 1.1E-02 | -- | 1.1E-02 |
| | | | Chemical Total | | 1.1E-07 | 5.9E-06 | -- | 6.0E-06 | | 1.7E-03 | 1.0E-01 | -- | 1.1E-01 |
| | | Exposure Point Total | | | | | | 6.0E-06 | | | | | 1.1E-01 |
| | Surface Water Total | | | | | | | 6.0E-06 | | | | | 1.1E-01 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 6.4E-05 | -- | -- | 6.4E-05 | Hepatic | 1.5E+00 | -- | -- | 1.5E+00 |
| | | | alpha-Chlordane | 5103-71-9 | 2.0E-07 | 8.5E-09 | -- | 2.0E-07 | Hepatic | 1.3E-02 | 5.7E-04 | -- | 1.4E-02 |
| | | | Dieldrin | 60-57-1 | 4.1E-05 | 4.4E-06 | -- | 4.5E-05 | Hepatic | 6.0E-01 | 6.5E-02 | -- | 6.6E-01 |
| | | | gamma-Chlordane | 12789-03-6 | 2.2E-07 | 9.6E-09 | -- | 2.3E-07 | Hepatic | 1.5E-02 | 6.4E-04 | -- | 1.5E-02 |
| | | | Chemical Total | | 1.1E-04 | 4.4E-06 | -- | 1.1E-04 | | 2.1E+00 | 6.6E-02 | -- | 2.2E+00 |
| | | Exposure Point Total | | | | | | 1.1E-04 | | | | | 2.2E+00 |
| | Sediment | | | | | | | 1.1E-04 | | | | | 2.2E+00 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 1E-04 | | | | | 2E+00 |

## TABLE 10.5.RME: EPA RAGS TABLE 10 - FUTURE CHILD RECREATIONALIST RISKS AND HAZARDS SUMMARY - RME
### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Future
Receptor Population: Child Recreationalist
Receptor Age: 0-6

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.0E-06 | 7.4E-08 | 1.5E-09 | 1.1E-06 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.3E-01 | 9.5E-03 | 1.1E-05 | 1.4E-01 |
| | | | Chemical Total | | 1.0E-06 | 7.4E-08 | 1.5E-09 | 1.1E-06 | | 1.3E-01 | 9.5E-03 | 1.1E-05 | 1.4E-01 |
| | | Exposure Point Total | | | | | | 1.1E-06 | | | | | 1.4E-01 |
| | All Soil Total | | | | | | | 1.1E-06 | | | | | 1.4E-01 |
| Surface Water | Surface Water | Surface Water | Dieldrin | 60-57-1 | 1.1E-07 | 5.6E-06 | -- | 5.7E-06 | Hepatic | 1.6E-03 | 8.1E-02 | -- | 8.3E-02 |
| | | | Chemical Total | | 1.1E-07 | 5.6E-06 | -- | 5.7E-06 | | 1.6E-03 | 8.1E-02 | -- | 8.3E-02 |
| | | Exposure Point Total | | | | | | 5.7E-06 | | | | | 8.3E-02 |
| | Surface Water Total | | | | | | | 5.7E-06 | | | | | 8.3E-02 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 6.4E-05 | -- | -- | 6.4E-05 | Hepatic | 1.5E+00 | -- | -- | 1.5E+00 |
| | | | Dieldrin | 60-57-1 | 4.1E-05 | 4.4E-06 | -- | 4.5E-05 | Hepatic | 6.0E-01 | 6.5E-02 | -- | 6.6E-01 |
| | | | Chemical Total | | 1.1E-04 | 4.4E-06 | -- | 1.1E-04 | | 2.1E+00 | 6.5E-02 | -- | 2.1E+00 |
| | | Exposure Point Total | | | | | | 1.1E-04 | | | | | 2.1E+00 |
| | Sediment | | | | | | | 1.1E-04 | | | | | 2.1E+00 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 1E-04 | | | | | 2E+00 |

**TABLE 7.6.RME: EPA RAGS TABLE 7 - FUTURE ADOLESCENT RECREATIONALIST CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Adolescent Recreationalist
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | EPC | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Intake/Exposure Concentration | | CSF / Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD / RfC | | Hazard Quotient |
| | | | | | | Value | Units | Value | Units | Value | Units | | Value | Units | Value | Units | |
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.2E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 2.9E-07 | 1.6E-11 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.2E-02 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 6.7E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.3E-08 | 4.7E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 9.4E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 8.6E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 2.7E-09 | 6.0E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 6.0E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 1.8E-06 | mg/kg-day | -- | -- | -- | 4.2E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 2.1E-03 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 7.6E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 3.5E-08 | 1.8E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.6E-03 |
| | | | Exposure Route Total | | | | | | | | | 3.5E-07 | | | | | 2.9E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.1E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 2.8E-08 | 1.5E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 2.1E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 6.4E-09 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 2.2E-09 | 4.5E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 8.9E-05 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 3.0E-08 | | | | | 2.2E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 6.5E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 2.5E-09 | 4.5E-13 | mg/m3 | 4.0E-08 | mg/m3 | 1.1E-05 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.2E-10 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 1.2E-14 | 8.5E-13 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 1.9E-03 | ug/m3 | 2.3E-05 | -- | 4.3E-08 | 1.3E-05 | mg/m3 | 9.8E-02 | mg/m3 | 1.3E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 4.1E-02 | ug/m3 | -- | -- | -- | 9.5E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 2.0E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 8.0E-08 | 4.6E-05 | mg/m3 | 2.0E-03 | mg/m3 | 2.3E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.3E-07 | | | | | 2.3E-02 |
| | | Exposure Point Total | | | | | | | | | | 5.1E-07 | | | | | 5.4E-02 |
| | Exposure Medium Total | | | | | | | | | | | 5.1E-07 | | | | | 5.4E-02 |
| Medium Total | | | | | | | | | | | | 5.1E-07 | | | | | 5.4E-02 |
| Surface Water | Surface Water | Surface Water | Ingestion | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 1.6E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 5.6E-10 | 1.1E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.2E-05 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 3.8E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 6.1E-08 | 2.7E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 5.3E-04 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 1.4E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 5.0E-10 | 1.0E-19 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.0E-05 |
| | | | Exposure Route Total | | | | | | | | | 6.2E-08 | | | | | 5.7E-04 |
| | | | Dermal | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 6.5E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.3E-07 | 4.5E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 9.1E-03 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 4.4E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 7.1E-06 | 3.1E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.2E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 5.8E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.0E-07 | 4.0E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 8.1E-03 |
| | | | Exposure Route Total | | | | | | | | | 7.5E-06 | | | | | 7.9E-02 |
| | Exposure Medium Total | | | | | | | | | | | 7.6E-06 | | | | | 8.0E-02 |
| Medium Total | | | | | | | | | | | | 7.6E-06 | | | | | 8.0E-02 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sediment | Sediment | Sediment | Ingestion | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | 1.1E-06 | mg/kg-day | 1.7E+01 | (mg/kg-day)-1 | 1.8E-05 | 7.4E-06 | mg/kg-day | 3.0E-05 | mg/kg-day | 2.5E-01 |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 1.6E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 5.4E-08 | 1.1E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.2E-03 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 7.1E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 1.1E-05 | 5.0E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 9.9E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 1.8E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 6.1E-08 | 1.2E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.5E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.9E-05 | | | | | 3.5E-01 |
| | | | Dermal | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | -- | -- | 1.7E+01 | (mg/kg-day)-1 | -- | -- | -- | 3.0E-05 | mg/kg-day | -- |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 2.8E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 9.8E-09 | 2.0E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.9E-04 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 3.2E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 5.1E-06 | 2.2E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.5E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 3.2E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.1E-08 | 2.2E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.4E-04 |
| | | | Exposure Route Total | | | | | | | | | 5.1E-06 | | | | | 4.6E-02 |
| | Exposure Medium Total | | | | | | | | | | | 3.5E-05 | | | | | 4.0E-01 |
| Medium Total | | | | | | | | | | | | 3.5E-05 | | | | | 4.0E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 4E-05 | Total of Receptor Hazards Across All Media | | | | 5E-01 |

**Notes:**

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

## TABLE 9.6.RME: EPA RAGS TABLE 9 - FUTURE ADOLESCENT RECREATIONALIST SUMMARY OF RECEPTOR RISKS AND HAZARDS - RME
### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Future
Receptor Population: Adolescent Recreationalist
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 2.9E-07 | 2.8E-08 | 2.5E-09 | 3.2E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 2.2E-02 | 2.1E-03 | 1.1E-05 | 2.4E-02 |
| | | | p,p'-DDT | 50-29-3 | 2.3E-08 | 2.2E-09 | 1.2E-14 | 2.5E-08 | Hepatic | 9.4E-04 | 8.9E-05 | -- | 1.0E-03 |
| | | | Chloroform | 67-66-3 | 2.7E-09 | -- | 4.3E-08 | 4.5E-08 | Hepatic | 6.0E-05 | -- | 1.3E-04 | 1.9E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 2.1E-03 | -- | -- | |
| | | | Trichloroethene | 79-01-6 | 3.5E-08 | -- | 8.0E-08 | 1.2E-07 | Developmental, Cardiovascular, Immune | 3.6E-03 | -- | 2.3E-02 | 2.6E-02 |
| | | | Chemical Total | | 3.5E-07 | 3.0E-08 | 1.3E-07 | 5.1E-07 | | 2.9E-02 | 2.2E-03 | 2.3E-02 | 5.2E-02 |
| | | Exposure Point Total | | | | | | 5.1E-07 | | | | | 5.2E-02 |
| | All Soil Total | | | | | | | 5.1E-07 | | | | | 5.2E-02 |
| Surface Water | Surface Water | Surface Water | alpha-Chlordane | 5103-71-9 | 5.6E-10 | 2.3E-07 | -- | 2.3E-07 | Hepatic | 2.2E-05 | 9.1E-03 | -- | 9.1E-03 |
| | | | Dieldrin | 60-57-1 | 6.1E-08 | 7.1E-06 | -- | 7.1E-06 | Hepatic | 5.3E-04 | 6.2E-02 | -- | 6.2E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 5.0E-10 | 2.0E-07 | -- | 2.0E-07 | Hepatic | 2.0E-05 | 8.1E-03 | -- | 8.1E-03 |
| | | | Chemical Total | | 6.2E-08 | 7.5E-06 | -- | 7.6E-06 | | 5.7E-04 | 7.9E-02 | -- | 8.0E-02 |
| | | Exposure Point Total | | | | | | 7.6E-06 | | | | | 8.0E-02 |
| | Surface Water Total | | | | | | | 7.6E-06 | | | | | 8.0E-02 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 1.8E-05 | -- | -- | 1.8E-05 | Hepatic | 2.5E-01 | -- | -- | 2.5E-01 |
| | | | alpha-Chlordane | 5103-71-9 | 5.4E-08 | 9.8E-09 | -- | 6.4E-08 | Hepatic | 2.2E-03 | 3.9E-04 | -- | 2.6E-03 |
| | | | Dieldrin | 60-57-1 | 1.1E-05 | 5.1E-06 | -- | 1.6E-05 | Hepatic | 9.9E-02 | 4.5E-02 | -- | 1.4E-01 |
| | | | gamma-Chlordane | 12789-03-6 | 6.1E-08 | 1.1E-08 | -- | 7.3E-08 | Hepatic | 2.5E-03 | 4.4E-04 | -- | 2.9E-03 |
| | | | Chemical Total | | 2.9E-05 | 5.1E-06 | -- | 3.5E-05 | | 3.5E-01 | 4.6E-02 | -- | 4.0E-01 |
| | | Exposure Point Total | | | | | | 3.5E-05 | | | | | 4.0E-01 |
| | Sediment | | | | | | | 3.5E-05 | | | | | 4.0E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 4E-05 | | | | | 5E-01 |

## TABLE 10.6.RME: EPA RAGS TABLE 10 - FUTURE ADOLESCENT RECREATIONALIST RISKS AND HAZARDS SUMMARY- RME
### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Future
Receptor Population: Adolescent Recreationalist
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | All Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| Surface Water | Surface Water | Surface Water | Dieldrin | 60-57-1 | 6.1E-08 | 7.1E-06 | -- | 7.1E-06 | Hepatic | 5.3E-04 | 6.2E-02 | -- | 6.2E-02 |
| | | | Chemical Total | | 6.1E-08 | 7.1E-06 | -- | 7.1E-06 | | 5.3E-04 | 6.2E-02 | -- | 6.2E-02 |
| | | Exposure Point Total | | | | | | 7.1E-06 | | | | | 6.2E-02 |
| | Surface Water Total | | | | | | | 7.1E-06 | | | | | 6.2E-02 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 1.8E-05 | -- | -- | 1.8E-05 | Hepatic | 2.5E-01 | -- | -- | 2.5E-01 |
| | | | Dieldrin | 60-57-1 | 1.1E-05 | 5.1E-06 | -- | 1.6E-05 | Hepatic | 9.9E-02 | 4.5E-02 | -- | 1.4E-01 |
| | | | Chemical Total | | 2.9E-05 | 5.1E-06 | -- | 3.4E-05 | | 3.5E-01 | 4.5E-02 | -- | 3.9E-01 |
| | | Exposure Point Total | | | | | | 3.4E-05 | | | | | 3.9E-01 |
| | Sediment | | | | | | | 3.4E-05 | | | | | 3.9E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 4E-05 | | | | | 5E-01 |

**TABLE 7.7.RME: EPA RAGS TABLE 7- FUTURE ADULT RECREATIONALIST CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Adult Recreationalist
Receptor Age: >16

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | EPC | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Intake/Exposure Concentration | | CSF / Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD / RfC | | Hazard Quotient |
| | | | | | | Value | Units | Value | Units | Value | Units | | Value | Units | Value | Units | |
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.4E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.8E-07 | 4.9E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 6.9E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 4.2E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.4E-08 | 1.5E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.9E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 5.4E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 1.7E-09 | 1.9E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.9E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 3.7E-07 | mg/kg-day | -- | -- | -- | 1.3E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 6.5E-04 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 1.6E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 7.3E-09 | 5.5E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.0E-07 | | | | | 9.0E-03 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.8E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 2.3E-08 | 6.2E-13 | mg/kg-day | 7.0E-10 | mg/kg-day | 8.8E-04 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 5.3E-09 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.8E-09 | 1.8E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.7E-05 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 2.5E-08 | | | | | 9.2E-04 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.4E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 9.0E-10 | 8.3E-14 | mg/m3 | 4.0E-08 | mg/m3 | 2.1E-06 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 4.5E-11 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 4.4E-15 | 1.6E-13 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 6.8E-04 | ug/m3 | 2.3E-05 | -- | 1.6E-08 | 2.4E-06 | mg/m3 | 9.8E-02 | mg/m3 | 2.4E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 5.0E-03 | ug/m3 | -- | -- | -- | 1.7E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 2.4E-03 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 9.8E-09 | 8.4E-06 | mg/m3 | 2.0E-03 | mg/m3 | 4.2E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.6E-08 | | | | | 4.2E-03 |
| | | Exposure Point Total | | | | | | | | | | 2.5E-07 | | | | | 1.4E-02 |
| | Exposure Medium Total | | | | | | | | | | | 2.5E-07 | | | | | 1.4E-02 |
| Medium Total | | | | | | | | | | | | 2.5E-07 | | | | | 1.4E-02 |
| Surface Water | Surface Water | Surface Water | Ingestion | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 1.0E-11 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.5E-10 | 3.5E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 7.0E-06 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 2.4E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 3.8E-08 | 8.2E-09 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.6E-04 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 8.9E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.1E-10 | 3.1E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.2E-06 |
| | | | Exposure Route Total | | | | | | | | | 3.8E-08 | | | | | 1.8E-04 |
| | | | Dermal | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 6.3E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.2E-07 | 2.2E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.4E-03 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 4.3E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 6.9E-06 | 1.5E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.0E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 5.6E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.0E-07 | 2.0E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.9E-03 |
| | | | Exposure Route Total | | | | | | | | | 7.3E-06 | | | | | 3.8E-02 |
| | Exposure Medium Total | | | | | | | | | | | 7.3E-06 | | | | | 3.9E-02 |
| Medium Total | | | | | | | | | | | | 7.3E-06 | | | | | 3.9E-02 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sediment | Sediment | Sediment | Ingestion | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | 6.5E-07 | mg/kg-day | 1.7E+01 | (mg/kg-day)-1 | 1.1E-05 | 2.3E-06 | mg/kg-day | 3.0E-05 | mg/kg-day | 7.6E-02 |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 9.7E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.4E-08 | 3.4E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.8E-04 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 4.4E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 7.0E-06 | 1.5E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.1E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 1.1E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.8E-08 | 3.8E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 7.6E-04 |
| | | | Exposure Route Total | | | | | | | | | 1.8E-05 | | | | | 1.1E-01 |
| | | | Dermal | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | -- | -- | 1.7E+01 | (mg/kg-day)-1 | -- | -- | -- | 3.0E-05 | mg/kg-day | -- |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 2.6E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 9.2E-09 | 9.2E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.8E-04 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 3.0E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 4.8E-06 | 1.1E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.1E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 3.0E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.0E-08 | 1.0E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.1E-04 |
| | | | Exposure Route Total | | | | | | | | | 4.8E-06 | | | | | 2.1E-02 |
| | Exposure Medium Total | | | | | | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| Medium Total | | | | | | | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 3E-05 | Total of Receptor Hazards Across All Media | | | | 2E-01 |

**Notes:**

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

## TABLE 9.7.RME: EPA RAGS TABLE 9 - FUTURE ADULT RECREATIONALIST SUMMARY OF RECEPTOR RISKS AND HAZARDS - RME
### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Future
Receptor Population: Adult Recreationalist
Receptor Age: >16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.8E-07 | 2.3E-08 | 9.0E-10 | 2.0E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 6.9E-03 | 8.8E-04 | 2.1E-06 | 7.8E-03 |
| | | | p,p'-DDT | 50-29-3 | 1.4E-08 | 1.8E-09 | 4.4E-15 | 1.6E-08 | Hepatic | 2.9E-04 | 3.7E-05 | -- | 3.3E-04 |
| | | | Chloroform | 67-66-3 | 1.7E-09 | -- | 1.6E-08 | 1.7E-08 | Hepatic | 1.9E-05 | -- | 2.4E-05 | 4.3E-05 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 6.5E-04 | -- | -- | |
| | | | Trichloroethene | 79-01-6 | 7.3E-09 | -- | 9.8E-09 | 1.7E-08 | Developmental, Cardiovascular, Immune | 1.1E-03 | -- | 4.2E-03 | 5.3E-03 |
| | | | Chemical Total | | 2.0E-07 | 2.5E-08 | 2.6E-08 | 2.5E-07 | | 9.0E-03 | 9.2E-04 | 4.2E-03 | 1.3E-02 |
| | | Exposure Point Total | | | | | | 2.5E-07 | | | | | 1.3E-02 |
| | All Soil Total | | | | | | | 2.5E-07 | | | | | 1.3E-02 |
| Surface Water | Surface Water | Surface Water | alpha-Chlordane | 5103-71-9 | 3.5E-10 | 2.2E-07 | -- | 2.2E-07 | Hepatic | 7.0E-06 | 4.4E-03 | -- | 4.4E-03 |
| | | | Dieldrin | 60-57-1 | 3.8E-08 | 6.9E-06 | -- | 6.9E-06 | Hepatic | 1.6E-04 | 3.0E-02 | -- | 3.0E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 3.1E-10 | 2.0E-07 | -- | 2.0E-07 | Hepatic | 6.2E-06 | 3.9E-03 | -- | 3.9E-03 |
| | | | Chemical Total | | 3.8E-08 | 7.3E-06 | -- | 7.3E-06 | | 1.8E-04 | 3.8E-02 | -- | 3.9E-02 |
| | | Exposure Point Total | | | | | | 7.3E-06 | | | | | 3.9E-02 |
| | Surface Water Total | | | | | | | 7.3E-06 | | | | | 3.9E-02 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 1.1E-05 | -- | -- | 1.1E-05 | Hepatic | 7.6E-02 | -- | -- | 7.6E-02 |
| | | | alpha-Chlordane | 5103-71-9 | 3.4E-08 | 9.2E-09 | -- | 4.3E-08 | Hepatic | 6.8E-04 | 1.8E-04 | -- | 8.6E-04 |
| | | | Dieldrin | 60-57-1 | 7.0E-06 | 4.8E-06 | -- | 1.2E-05 | Hepatic | 3.1E-02 | 2.1E-02 | -- | 5.2E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 3.8E-08 | 1.0E-08 | -- | 4.9E-08 | Hepatic | 7.6E-04 | 2.1E-04 | -- | 9.7E-04 |
| | | | Chemical Total | | 1.8E-05 | 4.8E-06 | -- | 2.3E-05 | | 1.1E-01 | 2.1E-02 | -- | 1.3E-01 |
| | | Exposure Point Total | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| | Sediment | | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 3E-05 | | | | | 2E-01 |

**TABLE 10.7.RME: EPA RAGS TABLE 10 - FUTURE ADULT RECREATIONALIST RISKS AND HAZARDS SUMMARY- RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Future
Receptor Population: Adult Recreationalist
Receptor Age: >16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| All Soil | All Soil, Particulates / Vapors | All Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | All Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| Surface Water | Surface Water | Surface Water | Dieldrin | 60-57-1 | 3.8E-08 | 6.9E-06 | -- | 6.9E-06 | Hepatic | 1.6E-04 | 3.0E-02 | -- | 3.0E-02 |
| | | | Chemical Total | | 3.8E-08 | 6.9E-06 | -- | 6.9E-06 | | 1.6E-04 | 3.0E-02 | -- | 3.0E-02 |
| | | Exposure Point Total | | | | | | 6.9E-06 | | | | | 3.0E-02 |
| | Surface Water Total | | | | | | | 6.9E-06 | | | | | 3.0E-02 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 1.1E-05 | -- | -- | 1.1E-05 | Hepatic | 7.6E-02 | -- | -- | 7.6E-02 |
| | | | Dieldrin | 60-57-1 | 7.0E-06 | 4.8E-06 | -- | 1.2E-05 | Hepatic | 3.1E-02 | 2.1E-02 | -- | 5.2E-02 |
| | | | Chemical Total | | 1.8E-05 | 4.8E-06 | -- | 2.3E-05 | | 1.1E-01 | 2.1E-02 | -- | 1.3E-01 |
| | | Exposure Point Total | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| | Sediment | | | | | | | 2.3E-05 | | | | | 1.3E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 3E-05 | | | | | 2E-01 |

## TABLE 7.8.RME: EPA RAGS TABLE 7 - CURRENT/FUTURE YOUTH TRESSPASSER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME

### DES MOINES TCE SITE, DES MOINES, IOWA

Scenario Timeframe: Current/Future
Receptor Population: Adolscent Tresspasser
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potentical Concern | CAS No. | EPC | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Intake/Exposure Concentration | | CSF / Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD / RfC | | Hazard Quotient |
| | | | | | | Value | Units | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Surface Soil | Surface Soil, Particulates/Vapors | Surface Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.1E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.4E-07 | 7.6E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.1E-02 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 1.3E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 4.3E-08 | 9.0E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.8E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 4.2E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 1.3E-09 | 2.9E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 2.9E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 2.0E-06 | mg/kg-day | -- | -- | -- | 4.8E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 2.4E-03 |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 7.5E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 3.4E-08 | 1.7E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.5E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.2E-07 | | | | | 1.9E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.0E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.3E-08 | 7.2E-13 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.0E-03 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 1.2E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 4.1E-09 | 8.5E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.7E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 1.8E-08 | | | | | 1.2E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.0E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 4.0E-10 | 7.3E-14 | mg/m3 | 4.0E-08 | mg/m3 | 1.8E-06 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 7.8E-11 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 7.5E-15 | 5.4E-13 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 3.0E-04 | ug/m3 | 2.3E-05 | -- | 6.9E-09 | 2.1E-06 | mg/m3 | 9.8E-02 | mg/m3 | 2.1E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 1.5E-02 | ug/m3 | -- | -- | -- | 3.6E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 6.4E-03 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 2.6E-08 | 1.5E-05 | mg/m3 | 2.0E-03 | mg/m3 | 7.5E-03 |
| | | | Exposure Route Total | | | | | | | | | 3.4E-08 | | | | | 7.5E-03 |
| | | Exposure Point Total | | | | | | | | | | 2.7E-07 | | | | | 2.7E-02 |
| | Exposure Medium Total | | | | | | | | | | | 2.7E-07 | | | | | 2.7E-02 |
| Medium Total | | | | | | | | | | | | 2.7E-07 | | | | | 2.7E-02 |
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.1E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.4E-07 | 7.6E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.1E-02 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 3.3E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.1E-08 | 2.3E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.6E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 4.2E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 1.3E-09 | 2.9E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 2.9E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 8.7E-07 | mg/kg-day | -- | -- | -- | 2.0E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 1.0E-03 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 3.7E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 1.7E-08 | 8.6E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.7E-03 |
| | | | Exposure Route Total | | | | | | | | | 1.7E-07 | | | | | 1.4E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.0E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.3E-08 | 7.2E-13 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.0E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 3.1E-09 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.0E-09 | 2.2E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 4.3E-05 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 1.4E-08 | | | | | 1.1E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.0E-11 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 4.0E-10 | 7.3E-14 | mg/m3 | 4.0E-08 | mg/m3 | 1.8E-06 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 2.0E-11 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 1.9E-15 | 1.4E-13 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 3.0E-04 | ug/m3 | 2.3E-05 | -- | 6.9E-09 | 2.1E-06 | mg/m3 | 9.8E-02 | mg/m3 | 2.1E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 6.6E-03 | ug/m3 | -- | -- | -- | 1.5E-05 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 3.2E-03 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 1.3E-08 | 7.4E-06 | mg/m3 | 2.0E-03 | mg/m3 | 3.7E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.0E-08 | | | | | 3.7E-03 |
| | | Exposure Point Total | | | | | | | | | | 2.0E-07 | | | | | 1.9E-02 |
| | Exposure Medium Total | | | | | | | | | | | 2.0E-07 | | | | | 1.9E-02 |
| Medium Total | | | | | | | | | | | | 2.0E-07 | | | | | 1.9E-02 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface Water | Surface Water | Surface Water | Ingestion | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 7.8E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.7E-10 | 5.4E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-05 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 1.8E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 2.9E-08 | 1.3E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 2.6E-04 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 6.9E-10 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.4E-10 | 4.8E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 9.7E-06 |
| | | | Exposure Route Total | | | | | | | | | 3.0E-08 | | | | | 2.8E-04 |
| | | | Dermal | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 3.1E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 1.1E-07 | 1.4E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.7E-02 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 2.1E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 3.4E-06 | 9.3E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.9E-01 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 2.8E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 9.8E-08 | 1.2E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.4E-02 |
| | | | Exposure Route Total | | | | | | | | | 3.6E-06 | | | | | 2.4E-01 |
| | Exposure Medium Total | | | | | | | | | | | 3.7E-06 | | | | | 2.4E-01 |
| Medium Total | | | | | | | | | | | | 3.7E-06 | | | | | 2.4E-01 |
| Sediment | Sediment | Sediment | Ingestion | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | 5.1E-07 | mg/kg-day | 1.7E+01 | (mg/kg-day)-1 | 8.7E-06 | 3.6E-06 | mg/kg-day | 3.0E-05 | mg/kg-day | 1.2E-01 |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 7.5E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 2.6E-08 | 5.3E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 3.4E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 5.5E-06 | 2.4E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.8E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 8.51E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.0E-08 | 6.0E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.2E-03 |
| | | | Exposure Route Total | | | | | | | | | 1.4E-05 | | | | | 1.7E-01 |
| | | | Dermal | Aldrin | 309-00-2 | 9.0E+00 | mg/kg | -- | -- | 1.7E+01 | (mg/kg-day)-1 | -- | -- | -- | 3.0E-05 | mg/kg-day | -- |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | mg/kg | 9.5E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.3E-09 | 6.7E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-04 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | mg/kg | 1.1E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 1.7E-06 | 7.6E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 1.5E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | mg/kg | 1.1E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.8E-09 | 7.5E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.5E-04 |
| | | | Exposure Route Total | | | | | | | | | 1.7E-06 | | | | | 1.6E-02 |
| | Exposure Medium Total | | | | | | | | | | | 1.6E-05 | | | | | 1.9E-01 |
| Medium Total | | | | | | | | | | | | 1.6E-05 | | | | | 1.9E-01 |
| Receptor Total:Surface Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 2E-05 | Total of Receptor Hazards Across All Media | | | | 4E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 2E-05 | Total of Receptor Hazards Across All Media | | | | 4E-01 |

**Notes:**

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 9.8.RME: EPA RAGS TABLE 9 - CURRENT AND FUTURE ADOLESCENT TRESSPASSER SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Adolscent Tresspasser
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, Particulates / Vapors | Surface Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.4E-07 | 1.3E-08 | 4.0E-10 | 1.5E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.1E-02 | 1.0E-03 | 1.8E-06 | 1.2E-02 |
| | | | p,p'-DDT | 50-29-3 | 4.3E-08 | 4.1E-09 | 7.5E-15 | 4.8E-08 | Hepatic | 1.8E-03 | 1.7E-04 | -- | 2.0E-03 |
| | | | Chloroform | 67-66-3 | 1.3E-09 | -- | 6.9E-09 | 8.2E-09 | Hepatic | 2.9E-05 | -- | 2.1E-05 | 5.1E-05 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 2.4E-03 | -- | -- | 2.4E-03 |
| | | | Trichloroethene | 79-01-6 | 3.4E-08 | -- | 2.6E-08 | 6.1E-08 | Developmental, Cardiovascular, Immune | 3.5E-03 | -- | 7.5E-03 | 1.1E-02 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Chemical Total | | 2.2E-07 | 1.8E-08 | 3.4E-08 | 2.7E-07 | | 1.9E-02 | 1.2E-03 | 7.5E-03 | 2.7E-02 |
| | | Exposure Point Total | | | | | | 2.7E-07 | | | | | 2.7E-02 |
| | Surface Soil Total | | | | | | | 2.7E-07 | | | | | 2.7E-02 |
| All Soil | All Soil | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.4E-07 | 1.3E-08 | 4.0E-10 | 1.5E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 1.1E-02 | 1.0E-03 | 1.8E-06 | 1.2E-02 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 1.1E-08 | 1.0E-09 | 1.9E-15 | 1.2E-08 | Hepatic | 4.6E-04 | 4.3E-05 | -- | 5.0E-04 |
| | | | Chloroform | 67-66-3 | 1.3E-09 | -- | 6.9E-09 | 8.2E-09 | Hepatic | 2.9E-05 | -- | 2.1E-05 | 5.1E-05 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 1.0E-03 | -- | -- | |
| | | | Trichloroethene | 79-01-6 | 1.7E-08 | -- | 1.3E-08 | 3.0E-08 | Developmental, Cardiovascular, Immune | 1.7E-03 | -- | 3.7E-03 | 5.4E-03 |
| | | | Chemical Total | | 1.7E-07 | 1.4E-08 | 2.0E-08 | 2.0E-07 | | 1.4E-02 | 1.1E-03 | 3.7E-03 | 1.8E-02 |
| | | Exposure Point Total | | | | | | 2.0E-07 | | | | | 1.8E-02 |
| | All Soil Total | | | | | | | 2.0E-07 | | | | | 1.8E-02 |
| Surface Water | Surface Water | Surface Water | alpha-Chlordane | 5103-71-9 | 2.7E-10 | 1.1E-07 | -- | 1.1E-07 | Hepatic | 1.1E-05 | 2.7E-02 | -- | 2.7E-02 |
| | | | Dieldrin | 60-57-1 | 2.9E-08 | 3.4E-06 | -- | 3.5E-06 | Hepatic | 2.6E-04 | 1.9E-01 | -- | 1.9E-01 |
| | | | gamma-Chlordane | 12789-03-6 | 2.4E-10 | 9.8E-08 | -- | 9.8E-08 | Hepatic | 9.7E-06 | 2.4E-02 | -- | 2.4E-02 |
| | | | Chemical Total | | 3.0E-08 | 3.6E-06 | -- | 3.7E-06 | | 2.8E-04 | 2.4E-01 | -- | 2.4E-01 |
| | | Exposure Point Total | | | | | | 3.7E-06 | | | | | 2.4E-01 |
| | Surface Water Total | | | | | | | 3.7E-06 | | | | | 2.4E-01 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 8.7E-06 | -- | -- | 8.7E-06 | Hepatic | 1.2E-01 | -- | -- | 1.2E-01 |
| | | | alpha-Chlordane | 5103-71-9 | 2.6E-08 | 3.3E-09 | -- | 3.0E-08 | Hepatic | 1.1E-03 | 1.3E-04 | -- | 1.2E-03 |
| | | | Dieldrin | 60-57-1 | 5.5E-06 | 1.7E-06 | -- | 7.2E-06 | Hepatic | 4.8E-02 | 1.5E-02 | -- | 6.3E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 3.0E-08 | 3.8E-09 | -- | 3.4E-08 | Hepatic | 1.2E-03 | 1.5E-04 | -- | 1.3E-03 |
| | | | Chemical Total | | 1.4E-05 | 1.7E-06 | -- | 1.6E-05 | | 1.7E-01 | 1.6E-02 | -- | 1.9E-01 |
| | | Exposure Point Total | | | | | | 1.6E-05 | | | | | 1.9E-01 |
| | Sediment | | | | | | | 1.6E-05 | | | | | 1.9E-01 |
| Receptor Total: Surface Soil + Surface Water + Sediment | | | | | | | | 2E-05 | | | | | 4E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 2E-05 | | | | | 4E-01 |

**TABLE 10.8.RME: EPA RAGS TABLE 10 - CURRENT AND FUTURE TRESSPASSER RECREATIONALIST RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Adolscent Tresspasser
Receptor Age: 7-16

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, Particulates / Vapors | Surface Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | Surface Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| All Soil | Subsurface Soil, Particulates / Vapors | Subsurface Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | All Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| Surface Water | Surface Water | Surface Water | Dieldrin | 60-57-1 | 2.9E-08 | 3.4E-06 | -- | 3.5E-06 | Hepatic | 2.6E-04 | 1.9E-01 | -- | 1.9E-01 |
| | | | Chemical Total | | 2.9E-08 | 3.4E-06 | -- | 3.5E-06 | | 2.6E-04 | 1.9E-01 | -- | 1.9E-01 |
| | | Exposure Point Total | | | | | | 3.5E-06 | | | | | 1.9E-01 |
| | Surface Water Total | | | | | | | 3.5E-06 | | | | | 1.9E-01 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 8.7E-06 | -- | -- | 8.7E-06 | Hepatic | 1.2E-01 | -- | -- | 1.2E-01 |
| | | | Dieldrin | 60-57-1 | 5.5E-06 | 1.7E-06 | -- | 7.2E-06 | Hepatic | 4.8E-02 | 1.5E-02 | -- | 6.3E-02 |
| | | | Chemical Total | | 1.4E-05 | 1.7E-06 | -- | 1.6E-05 | | 1.7E-01 | 1.5E-02 | -- | 1.8E-01 |
| | | Exposure Point Total | | | | | | 1.6E-05 | | | | | 1.8E-01 |
| | Sediment | | | | | | | 1.6E-05 | | | | | 1.8E-01 |
| Receptor Total: Surface Soil + Surface Water + Sediment | | | | | | | | 2E-05 | | | | | 4E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 2E-05 | | | | | 4E-01 |

**TABLE 7.9.RME: EPA RAGS TABLE 7 - CURRENT/FUTURE ADULT TRESSPASSER CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Adult Tresspasser
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Exposure Route | Chemical of Potential Concern | CAS No. | EPC | | Cancer Risk Calculations | | | | | Noncancer Hazard Quotient | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Intake/Exposure Concentration | | CSF / Unit Risk | | Cancer Risk | Intake/Exposure Concentration | | RfD / RfC | | Hazard Quotient |
| | | | | | | Value | Units | Value | Units | Value | Units | | Value | Units | Value | Units | |
| Surface Soil | Surface Soil, Particulates/Vapors | Surface Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.4E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.8E-07 | 4.7E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 6.8E-03 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 1.6E-07 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 5.4E-08 | 5.6E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-03 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 5.2E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 1.6E-09 | 1.8E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.8E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 8.5E-07 | mg/kg-day | -- | -- | -- | 3.0E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 1.5E-03 |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 3.1E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 1.4E-08 | 1.1E-06 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.2E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.5E-07 | | | | | 1.2E-02 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 3.6E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 4.7E-08 | 1.3E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.8E-03 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 4.3E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.4E-08 | 1.5E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 3.0E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 6.1E-08 | | | | | 2.1E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.8E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 1.1E-08 | 9.7E-13 | mg/m3 | 4.0E-08 | mg/m3 | 2.4E-05 |
| | | | | p,p'-DDT | 50-29-3 | 2.3E+00 | mg/kg | 2.1E-09 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 2.0E-13 | 7.2E-12 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 8.0E-03 | ug/m3 | 2.3E-05 | -- | 1.8E-07 | 2.8E-05 | mg/m3 | 9.8E-02 | mg/m3 | 2.9E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 1.2E+01 | mg/kg | 1.4E-01 | ug/m3 | -- | -- | -- | 4.8E-04 | mg/m3 | -- | -- | -- |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Trichloroethene | 79-01-6 | 4.4E+00 | mg/kg | 5.7E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 2.3E-07 | 2.0E-04 | mg/m3 | 2.0E-03 | mg/m3 | 9.9E-02 |
| | | | Exposure Route Total | | | | | | | | | 4.3E-07 | | | | | 1.0E-03 |
| | | Exposure Point Total | | | | | | | | | | 7.3E-07 | | | | | 1.1E-01 |
| | Exposure Medium Total | | | | | | | | | | | 7.3E-07 | | | | | 1.1E-01 |
| Medium Total | | | | | | | | | | | | 7.3E-07 | | | | | 1.1E-01 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All Soil | All Soil, Particulates/Vapors | Soil | Ingestion | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 1.4E-12 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 1.8E-07 | 4.7E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 6.8E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 4.1E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 1.4E-08 | 1.4E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 2.8E-04 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 5.2E-08 | mg/kg-day | 3.1E-02 | (mg/kg-day)-1 | 1.6E-09 | 1.8E-07 | mg/kg-day | 1.0E-02 | mg/kg-day | 1.8E-05 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 3.6E-07 | mg/kg-day | -- | -- | -- | 1.3E-06 | mg/kg-day | 2.0E-03 | mg/kg-day | 6.3E-04 |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 1.5E-07 | mg/kg-day | 4.6E-02 | (mg/kg-day)-1 | 7.1E-09 | 5.4E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.1E-03 |
| | | | Exposure Route Total | | | | | | | | | 2.0E-07 | | | | | 8.8E-03 |
| | | | Dermal | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 3.6E-13 | mg/kg-day | 1.3E+05 | (mg/kg-day)-1 | 4.7E-08 | 1.3E-12 | mg/kg-day | 7.0E-10 | mg/kg-day | 1.8E-03 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 1.1E-08 | mg/kg-day | 3.4E-01 | (mg/kg-day)-1 | 3.7E-09 | 3.8E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 7.6E-05 |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | -- | -- | 3.1E-02 | (mg/kg-day)-1 | -- | -- | -- | 1.0E-02 | mg/kg-day | -- |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | -- | -- | -- | -- | -- | -- | -- | 2.0E-03 | mg/kg-day | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | -- | -- | 4.6E-02 | (mg/kg-day)-1 | -- | -- | -- | 5.0E-04 | mg/kg-day | -- |
| | | | Exposure Route Total | | | | | | | | | 5.1E-08 | | | | | 1.9E-03 |
| | | | Inhalation | 2,3,7,8-TCDD Equivalen | 1746-01-6 | 1.9E-05 | mg/kg | 2.8E-10 | ug/m3 | 3.8E+01 | (ug/m3)-1 | 1.1E-08 | 9.7E-13 | mg/m3 | 4.0E-08 | mg/m3 | 2.4E-05 |
| | | | | p,p'-DDT | 50-29-3 | 5.8E-01 | mg/kg | 5.2E-10 | ug/m3 | 9.7E-05 | (ug/m3)-1 | 5.1E-14 | 1.8E-12 | mg/m3 | -- | -- | -- |
| | | | | Chloroform | 67-66-3 | 7.4E-01 | mg/kg | 8.0E-03 | ug/m3 | 2.3E-05 | -- | 1.8E-07 | 2.8E-05 | mg/m3 | 9.8E-02 | mg/m3 | 2.9E-04 |
| | | | | cis-1,2-Dichloroethylene | 156-59-2 | 5.1E+00 | mg/kg | 5.8E-02 | ug/m3 | -- | -- | -- | 2.0E-04 | mg/m3 | -- | -- | -- |
| | | | | Trichloroethene | 79-01-6 | 2.2E+00 | mg/kg | 2.8E-02 | ug/m3 | 4.1E-06 | (ug/m3)-1 | 1.1E-07 | 9.8E-05 | mg/m3 | 2.0E-03 | mg/m3 | 4.9E-02 |
| | | | Exposure Route Total | | | | | | | | | 3.1E-07 | | | | | 4.9E-02 |
| | | Exposure Point Total | | | | | | | | | | 5.6E-07 | | | | | 6.0E-02 |
| | Exposure Medium Total | | | | | | | | | | | 5.6E-07 | | | | | 6.0E-02 |
| Medium Total | | | | | | | | | | | | 5.6E-07 | | | | | 6.0E-02 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface Water | Surface Water | Surface Water | Ingestion | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 1.9E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 6.8E-10 | 6.8E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.4E-05 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 4.6E-09 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 7.3E-08 | 1.6E-08 | mg/kg-day | 5.0E-05 | mg/kg-day | 3.2E-04 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 1.7E-09 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 6.0E-10 | 6.0E-09 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.2E-05 |
| | | | Exposure Route Total | | | | | | | | | 7.5E-08 | | | | | 3.5E-04 |
| | | | Dermal | alpha-Chlordane | 5103-71-9 | 1.1E-01 | ug/L | 1.2E-06 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 4.3E-07 | 3.0E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 6.0E-02 |
| | | | | Dieldrin | 60-57-1 | 2.6E-01 | ug/L | 8.4E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 1.3E-05 | 2.1E-05 | mg/kg-day | 5.0E-05 | mg/kg-day | 4.1E-01 |
| | | | | gamma-Chlordane | 12789-03-6 | 9.8E-02 | ug/L | 1.1E-06 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 3.8E-07 | 2.7E-05 | mg/kg-day | 5.0E-04 | mg/kg-day | 5.4E-02 |
| | | | Exposure Route Total | | | | | | | | | 1.4E-05 | | | | | 5.2E-01 |
| | Exposure Medium Total | | | | | | | | | | | 1.4E-05 | | | | | 5.2E-01 |
| Medium Total | | | | | | | | | | | | 1.4E-05 | | | | | 5.2E-01 |
| Sediment | Sediment | Sediment | Ingestion | Aldrin | 309-00-2 | 9.0E+00 | ug/L | 1.3E-06 | mg/kg-day | 1.7E+01 | (mg/kg-day)-1 | 2.2E-05 | 4.5E-06 | mg/kg-day | 3.0E-05 | mg/kg-day | 1.5E-01 |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | ug/L | 1.9E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 6.6E-08 | 6.6E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.3E-03 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | ug/L | 8.6E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 1.4E-05 | 3.0E-06 | mg/kg-day | 5.0E-05 | mg/kg-day | 6.0E-02 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | ug/L | 2.12E-07 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 7.4E-08 | 7.4E-07 | mg/kg-day | 5.0E-04 | mg/kg-day | 1.5E-03 |
| | | | Exposure Route Total | | | | | | | | | 3.6E-05 | | | | | 2.1E-01 |
| | | | Dermal | Aldrin | 309-00-2 | 9.0E+00 | ug/L | -- | -- | 1.7E+01 | (mg/kg-day)-1 | -- | -- | -- | 3.0E-05 | mg/kg-day | -- |
| | | | | alpha-Chlordane | 5103-71-9 | 1.3E+00 | ug/L | 1.2E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 4.2E-09 | 4.2E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 8.4E-05 |
| | | | | Dieldrin | 60-57-1 | 6.1E+00 | ug/L | 1.4E-07 | mg/kg-day | 1.6E+01 | (mg/kg-day)-1 | 2.2E-06 | 4.8E-07 | mg/kg-day | 5.0E-05 | mg/kg-day | 9.6E-03 |
| | | | | gamma-Chlordane | 12789-03-6 | 1.5E+00 | ug/L | 1.4E-08 | mg/kg-day | 3.5E-01 | (mg/kg-day)-1 | 4.7E-09 | 4.7E-08 | mg/kg-day | 5.0E-04 | mg/kg-day | 9.5E-05 |
| | | | Exposure Route Total | | | | | | | | | 2.2E-06 | | | | | 9.7E-03 |
| | Exposure Medium Total | | | | | | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| Medium Total | | | | | | | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| Receptor Total:Surface Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 5E-05 | Total of Receptor Hazards Across All Media | | | | 9E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | | | | Total of Receptor Risks Across All Media | 5E-05 | Total of Receptor Hazards Across All Media | | | | 8E-01 |

**Notes:**

| | |
|---|---|
| -- | Not available or not applicable |
| bgs | Below ground surface |
| CSF | Cancer slope factor |
| EPA | U.S. Environmental Protection Agency |
| EPC | Exposure point concentration |
| mg/kg | Milligram per kilogram |
| mg/kg-day | Milligram per kilogram per day |
| (mg/kg-day)-1 | 1/(Milligram per kilogram per day) |
| mg/L | Milligram per liter |
| mg/m3 | Milligram per cubic meter |
| RAGS | Risk Assessment Guidance for Superfund |
| RfC | Reference concentration |
| RfD | Reference dose |
| (ug/m3)-1 | 1/Microgram per cubic meter |

**TABLE 9.9.RME: EPA RAGS TABLE 9 - CURRENT AND FUTURE ADULT TRESSPASSER SUMMARY OF RECEPTOR RISKS AND HAZARDS - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Adult Tresspasser
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, Particulates / Vapors | Surface Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.8E-07 | 4.7E-08 | 1.1E-08 | 2.3E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 6.8E-03 | 1.8E-03 | 2.4E-05 | 8.6E-03 |
| | | | p,p'-DDT | 50-29-3 | 5.4E-08 | 1.4E-08 | 2.0E-13 | 6.9E-08 | Hepatic | 1.1E-03 | 3.0E-04 | -- | 1.4E-03 |
| | | | Chloroform | 67-66-3 | 1.6E-09 | -- | 1.8E-07 | 1.9E-07 | Hepatic | 1.8E-05 | -- | 2.9E-04 | 3.0E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 1.5E-03 | -- | -- | 1.5E-03 |
| | | | Trichloroethene | 79-01-6 | 1.4E-08 | -- | 2.3E-07 | 2.5E-07 | Developmental, Cardiovascular, Immune | 2.2E-03 | -- | 9.9E-02 | 1.0E-01 |
| | | | Chemical Total | | 2.5E-07 | 6.1E-08 | 4.3E-07 | 7.3E-07 | | 1.2E-02 | 2.1E-03 | 1.0E-03 | 1.1E-01 |
| | | Exposure Point Total | | | | | | 7.3E-07 | | | | | 1.1E-01 |
| | Surface Soil Total | | | | | | | 7.3E-07 | | | | | 1.1E-01 |
| All Soil | All Soil | All Soil | 2,3,7,8-TCDD Equivalent | 1746-01-6 | 1.8E-07 | 4.7E-08 | 1.1E-08 | 2.3E-07 | Reproductive, Hepatic, Endocrine, Respiratory, Hematologic, Developmental | 6.8E-03 | 1.8E-03 | 2.4E-05 | 8.6E-03 |
| | Particulates / Vapors | | p,p'-DDT | 50-29-3 | 1.4E-08 | 3.7E-09 | 5.1E-14 | 1.7E-08 | Hepatic | 2.8E-04 | 7.6E-05 | -- | 3.6E-04 |
| | | | Chloroform | 67-66-3 | 1.6E-09 | -- | 1.8E-07 | 1.9E-07 | Hepatic | 1.8E-05 | -- | 2.9E-04 | 3.0E-04 |
| | | | cis-1,2-Dichloroethylene | 156-59-2 | -- | -- | -- | -- | Urinary, Whole Body | 6.3E-04 | -- | -- | |
| | | | Trichloroethene | 79-01-6 | 7.1E-09 | -- | 1.1E-07 | 1.2E-07 | Developmental, Cardiovascular, Immune | 1.1E-03 | -- | 4.9E-02 | 5.0E-02 |
| | | | Chemical Total | | 2.0E-07 | 5.1E-08 | 3.1E-07 | 5.6E-07 | | 8.8E-03 | 1.9E-03 | 4.9E-02 | 5.9E-02 |
| | | Exposure Point Total | | | | | | 5.6E-07 | | | | | 5.9E-02 |
| | All Soil Total | | | | | | | 5.6E-07 | | | | | 5.9E-02 |
| Surface Water | Surface Water | Surface Water | alpha-Chlordane | 5103-71-9 | 6.8E-10 | 4.3E-07 | -- | 4.3E-07 | Hepatic | 1.4E-05 | 6.0E-02 | -- | 6.0E-02 |
| | | | Dieldrin | 60-57-1 | 7.3E-08 | 1.3E-05 | -- | 1.3E-05 | Hepatic | 3.2E-04 | 4.1E-01 | -- | 4.1E-01 |
| | | | gamma-Chlordane | 12789-03-6 | 6.0E-10 | 3.8E-07 | -- | 3.8E-07 | Hepatic | 1.2E-05 | 5.4E-02 | -- | 5.4E-02 |
| | | | Chemical Total | | 7.5E-08 | 1.4E-05 | -- | 1.4E-05 | | 3.5E-04 | 5.2E-01 | -- | 5.2E-01 |
| | | Exposure Point Total | | | | | | 1.4E-05 | | | | | 5.2E-01 |
| | Surface Water Total | | | | | | | 1.4E-05 | | | | | 5.2E-01 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 2.2E-05 | -- | -- | 2.2E-05 | Hepatic | 1.5E-01 | -- | -- | 1.5E-01 |
| | | | alpha-Chlordane | 5103-71-9 | 6.6E-08 | 4.2E-09 | -- | 7.0E-08 | Hepatic | 1.3E-03 | 8.4E-05 | -- | 1.4E-03 |
| | | | Dieldrin | 60-57-1 | 1.4E-05 | 2.2E-06 | -- | 1.6E-05 | Hepatic | 6.0E-02 | 9.6E-03 | -- | 7.0E-02 |
| | | | gamma-Chlordane | 12789-03-6 | 7.4E-08 | 4.7E-09 | -- | 7.9E-08 | Hepatic | 1.5E-03 | 9.5E-05 | -- | 1.6E-03 |
| | | | Chemical Total | | 3.6E-05 | 2.2E-06 | -- | 3.8E-05 | | 2.1E-01 | 9.7E-03 | -- | 2.2E-01 |
| | | Exposure Point Total | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| | Sediment | | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| Receptor Total: Surface Soil + Surface Water + Sediment | | | | | | | | 5E-05 | | | | | 9E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 5E-05 | | | | | 8E-01 |

**TABLE 10.9.RME:EPA RAGS TABLE 10 - CURRENT AND FUTURE ADULT TRESSPASSER RISK AND HAZARD SUMMARY - RME**
**DES MOINES TCE SITE, DES MOINES, IOWA**

Scenario Timeframe: Current/Future
Receptor Population: Adult Tresspasser
Receptor Age: Adult

| Medium | Exposure Medium | Exposure Point | Chemical of Potential Concern | CAS No. | Carcinogenic Risk | | | | Primary Target Organ(s) | Non-Carcinogenic Hazard Quotient | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Ingestion | Dermal | Inhalation | Exposure Routes Total | | Ingestion | Dermal | Inhalation | Exposure Routes Total |
| Surface Soil | Surface Soil, Particulates / Vapors | Surface Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | Surface Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| All Soil | Subsurface Soil, Particulates / Vapors | Subsurface Soil | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | Chemical Total | | -- | -- | -- | -- | | -- | -- | -- | -- |
| | | Exposure Point Total | | | | | | -- | | | | | -- |
| | All Soil Total | | | | | | | 0.0E+00 | | | | | 0.0E+00 |
| Surface Water | Surface Water | Surface Water | Dieldrin | 60-57-1 | 7.3E-08 | 1.3E-05 | -- | 1.3E-05 | Hepatic | 3.2E-04 | 4.1E-01 | -- | 4.1E-01 |
| | | | Chemical Total | | 7.3E-08 | 1.3E-05 | -- | 1.3E-05 | | 3.2E-04 | 4.1E-01 | -- | 4.1E-01 |
| | | Exposure Point Total | | | | | | 1.3E-05 | | | | | 4.1E-01 |
| | Surface Water Total | | | | | | | 1.3E-05 | | | | | 4.1E-01 |
| Sediment | Sediment | Sediment | Aldrin | 309-00-2 | 2.2E-05 | -- | -- | 2.2E-05 | Hepatic | 1.5E-01 | -- | -- | 1.5E-01 |
| | | | Dieldrin | 60-57-1 | 1.4E-05 | 2.2E-06 | -- | 1.6E-05 | Hepatic | 6.0E-02 | 9.6E-03 | -- | 7.0E-02 |
| | | | Chemical Total | | 3.5E-05 | 2.2E-06 | -- | 3.8E-05 | | 2.1E-01 | 9.6E-03 | -- | 2.2E-01 |
| | | Exposure Point Total | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| | Sediment | | | | | | | 3.8E-05 | | | | | 2.2E-01 |
| Receptor Total: Surface Soil + Surface Water + Sediment | | | | | | | | 5E-05 | | | | | 6E-01 |
| Receptor Total: All Soil + Surface Water + Sediment | | | | | | | | 5E-05 | | | | | 6E-01 |

| | | 1 | Csat (See User Guide) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | Toxicity and Chemical-specific Information | | | | | |
| | | Analyte | $(mg/kg\text{-}day)^{-1}$ | y | $(ug/m^3)^{-1}$ | y | (mg/kg-day) | y |
| -- | | Acephate | 8.7E-03 | I | | | 4.0E-03 | I |
| -- | | Acetaldehyde | | | 2.2E-06 | I | | |
| -- | | Acetochlor | | | | | 2.0E-02 | I |
| -- | X | Acetone | | | | | 9.0E-01 | I |
| -- | | Acetone Cyanohydrin | | | | | | |
| -- | | Acetonitrile | | | | | | |
| -- | X | Acetophenone | | | | | 1.0E-01 | I |
| -- | | Acetylaminofluorene, 2- | 3.8E+00 | C | 1.3E-03 | C | | |
| -- | | Acrolein | | | | | 5.0E-04 | I |
| -- | | Acrylamide | 5.0E-01 | I | 1.0E-04 | I | 2.0E-03 | I |
| -- | | Acrylic Acid | | | | | 5.0E-01 | I |
| -- | | Acrylonitrile | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A |
| -- | | Adiponitrile | | | | | | |
| -- | | Alachlor | 5.6E-02 | C | | | 1.0E-02 | I |
| -- | | Aldicarb | | | | | 1.0E-03 | I |
| -- | | Aldicarb Sulfone | | | | | 1.0E-03 | I |
| -- | | Aldicarb sulfoxide | | | | | | |
| -- | | Aldrin | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I |
| -- | | Allyl Alcohol | | | | | 5.0E-03 | I |
| -- | | Allyl Chloride | 2.1E-02 | C | 6.0E-06 | C | | |
| -- | X | Aluminum | | | | | 1.0E+00 | P |
| -- | | Aluminum Phosphide | | | | | 4.0E-04 | I |
| -- | | Ametryn | | | | | 9.0E-03 | I |
| -- | | Aminobiphenyl, 4- | 2.1E+01 | C | 6.0E-03 | C | | |
| -- | | Aminophenol, m- | | | | | 8.0E-02 | P |
| -- | | Aminophenol, p- | | | | | 2.0E-02 | P |
| -- | | Amitraz | | | | | 2.5E-03 | I |
| -- | | Ammonia | | | | | | |
| -- | | Ammonium Sulfamate | | | | | 2.0E-01 | I |
| -- | | Amyl Alcohol, tert- | | | | | | |
| -- | | Aniline | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P |
| -- | | Anthraquinone, 9,10- | 4.0E-02 | P | | | 2.0E-03 | X |
| -- | X | Antimony | | | | | 4.0E-04 | I |
| -- | | Antimony Pentoxide | | | | | 5.0E-04 | H |
| -- | | Antimony Tetroxide | | | | | 4.0E-04 | H |
| -- | | Antimony Trioxide | | | | | | |
| -- | X | Arsenic | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I |
| -- | | Arsine | | | | | 3.5E-06 | C |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Asulam | | | | | 5.0E-02 | I |
| -- | | Atrazine | 2.3E-01 | C | | | 3.5E-02 | I |
| -- | | Auramine | 8.8E-01 | C | 2.5E-04 | C | | |
| -- | | Avermectin B1 | | | | | 4.0E-04 | I |
| -- | | Azinphos-methyl | | | | | 3.0E-03 | A |
| -- | | Azobenzene | 1.1E-01 | I | 3.1E-05 | I | | |
| -- | | Azodicarbonamide | | | | | 1.0E+00 | P |
| -- | X | Barium | | | | | 2.0E-01 | I |
| -- | | Barium Chromate | 5.0E-01 | C | 1.5E-01 | C | 2.0E-02 | C |
| -- | | Benfluralin | | | | | 3.0E-01 | I |
| -- | | Benomyl | | | | | 5.0E-02 | I |
| -- | | Bensulfuron-methyl | | | | | 2.0E-01 | I |
| -- | | Bentazon | | | | | 3.0E-02 | I |
| -- | X | Benzaldehyde | 4.0E-03 | P | | | 1.0E-01 | I |
| -- | X | Benzene | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I |
| -- | | Benzenediamine-2-methyl sulfat | 1.0E-01 | X | | | 3.0E-04 | X |
| -- | | Benzenethiol | | | | | 1.0E-03 | P |
| -- | | Benzidine | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I |
| -- | | Benzoic Acid | | | | | 4.0E+00 | I |
| -- | | Benzotrichloride | 1.3E+01 | I | | | | |
| -- | X | Benzyl Alcohol | | | | | 1.0E-01 | P |
| -- | | Benzyl Chloride | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P |
| -- | X | Beryllium | | | 2.4E-03 | I | 2.0E-03 | I |
| -- | | Bifenox | | | | | 9.0E-03 | P |
| -- | | Biphenthrin | | | | | 1.5E-02 | I |
| -- | X | 1,1-Biphenyl | 8.0E-03 | I | | | 5.0E-01 | I |
| -- | | Bis(2-chloro-1-methylethyl) ethe | | | | | 4.0E-02 | I |
| -- | | Bis(2-chloroethoxy)methane | | | | | 3.0E-03 | P |
| -- | X | bis(2-Chloroethyl)ether | 1.1E+00 | I | 3.3E-04 | I | | |
| -- | | Bis(chloromethyl)ether | 2.2E+02 | I | 6.2E-02 | I | | |
| -- | | Bisphenol A | | | | | 5.0E-02 | I |
| -- | | Boron And Borates Only | | | | | 2.0E-01 | I |
| -- | | Boron Trichloride | | | | | 2.0E+00 | P |
| -- | | Boron Trifluoride | | | | | 4.0E-02 | C |
| -- | | Bromate | 7.0E-01 | I | | | 4.0E-03 | I |
| -- | | Bromo-2-chloroethane, 1- | 2.0E+00 | X | 6.0E-04 | X | | |
| -- | | Bromobenzene | | | | | 8.0E-03 | I |
| -- | | Bromochloromethane | | | | | | |
| -- | | Bromodichloromethane | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I |
| -- | | Bromoform | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I |
| -- | | Bromomethane | | | | | 1.4E-03 | I |
| -- | | Bromophos | | | | | 5.0E-03 | H |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Bromoxynil | | | | | 2.0E-02 | I |
| -- | | Bromoxynil Octanoate | | | | | 2.0E-02 | I |
| -- | | Butadiene, 1,3- | 3.4E+00 | C | 3.0E-05 | I | | |
| -- | | Butanol, N- | | | | | 1.0E-01 | I |
| -- | | Butyl alcohol, sec- | | | | | 2.0E+00 | P |
| -- | | Butylate | | | | | 5.0E-02 | I |
| -- | | Butylated hydroxyanisole | 2.0E-04 | C | 5.7E-08 | C | | |
| -- | | Butylated hydroxytoluene | 3.6E-03 | P | | | 3.0E-01 | P |
| -- | X | n-Butylbenzene | | | | | 5.0E-02 | P |
| -- | X | sec-Butylbenzene | | | | | 1.0E-01 | X |
| -- | X | tert-Butylbenzene | | | | | 1.0E-01 | X |
| -- | | Cacodylic Acid | | | | | 2.0E-02 | A |
| -- | X | Cadmium | | | 1.8E-03 | I | 1.0E-03 | I |
| -- | | Cadmium (Water) | | | 1.8E-03 | I | 5.0E-04 | I |
| -- | | Calcium Chromate | 5.0E-01 | C | 1.5E-01 | C | 2.0E-02 | C |
| -- | | Caprolactam | | | | | 5.0E-01 | I |
| -- | | Captafol | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I |
| -- | | Captan | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I |
| -- | | Carbaryl | | | | | 1.0E-01 | I |
| -- | | Carbofuran | | | | | 5.0E-03 | I |
| -- | X | Carbon Disulfide | | | | | 1.0E-01 | I |
| -- | | Carbon Tetrachloride | 7.0E-02 | I | 6.0E-06 | I | 4.0E-03 | I |
| -- | | Carbonyl Sulfide | | | | | | |
| -- | | Carbosulfan | | | | | 1.0E-02 | I |
| -- | | Carboxin | | | | | 1.0E-01 | I |
| -- | | Ceric oxide | | | | | | |
| -- | | Chloral Hydrate | | | | | 1.0E-01 | I |
| -- | | Chloramben | | | | | 1.5E-02 | I |
| -- | | Chloranil | 4.0E-01 | H | | | | |
| -- | | Chlordane | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I |
| X | | alpha-Chlordane | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I |
| X | | gamma-Chlordane | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I |
| -- | | Chlordecone (Kepone) | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I |
| -- | | Chlorfenvinphos | | | | | 7.0E-04 | A |
| -- | | Chlorimuron, Ethyl- | | | | | 2.0E-02 | I |
| -- | | Chlorine | | | | | 1.0E-01 | I |
| -- | | Chlorine Dioxide | | | | | 3.0E-02 | I |
| -- | | Chlorite (Sodium Salt) | | | | | 3.0E-02 | I |
| -- | | Chloro-1,1-difluoroethane, 1- | | | | | | |
| -- | | Chloro-1,3-butadiene, 2- | | | 3.0E-04 | I | 2.0E-02 | H |
| -- | | Chloro-2-methylaniline HCl, 4- | 4.6E-01 | H | | | | |
| -- | | Chloro-2-methylaniline, 4- | 1.0E-01 | P | 7.7E-05 | C | 3.0E-03 | X |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -- | | Chloroacetaldehyde, 2- | 2.7E-01 | X | | | | | |
| -- | | Chloroacetic Acid | | | | | | | |
| -- | | Chloroacetophenone, 2- | | | | | | | |
| -- | | Chloroaniline, p- | 2.0E-01 | P | | | 4.0E-03 | I |
| -- | | Chlorobenzene | | | | | 2.0E-02 | I |
| -- | | Chlorobenzilate | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I |
| -- | | Chlorobenzoic Acid, p- | | | | | 3.0E-02 | X |
| -- | | Chlorobenzotrifluoride, 4- | | | | | 3.0E-03 | P |
| -- | | Chlorobutane, 1- | | | | | 4.0E-02 | P |
| -- | | Chlorodifluoromethane | | | | | | |
| -- | | Chloroethanol, 2- | | | | | 2.0E-02 | P |
| -- | X | Chloroform | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I |
| -- | | Chloromethane | | | | | | |
| -- | | Chloromethyl Methyl Ether | 2.4E+00 | C | 6.9E-04 | C | | |
| -- | | Chloronitrobenzene, o- | 3.0E-01 | P | | | 3.0E-03 | P |
| -- | | Chloronitrobenzene, p- | 6.0E-02 | P | | | 7.0E-04 | P |
| -- | | Chlorophenol, 2- | | | | | 5.0E-03 | I |
| -- | | Chloropicrin | | | | | | |
| -- | | Chlorothalonil | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I |
| -- | | Chlorotoluene, o- | | | | | 2.0E-02 | I |
| -- | | Chlorotoluene, p- | | | | | 2.0E-02 | X |
| -- | | Chlorozotocin | 2.4E+02 | C | 6.9E-02 | C | | |
| -- | | Chlorpropham | | | | | 2.0E-01 | I |
| -- | | Chlorpyrifos | | | | | 1.0E-03 | A |
| -- | | Chlorpyrifos Methyl | | | | | 1.0E-02 | H |
| -- | | Chlorsulfuron | | | | | 5.0E-02 | I |
| -- | | Chlorthal-dimethyl | | | | | 1.0E-02 | I |
| -- | | Chlorthiophos | | | | | 8.0E-04 | H |
| ! | X | Chromium | | | | | 1.5E+00 | I |
| -- | X | Hexavalent chromium | 5.0E-01 | J | 8.4E-02 | S | 3.0E-03 | I |
| ! | X | Chromium | | | | | | |
| -- | | Clofentezine | | | | | 1.3E-02 | I |
| -- | X | Cobalt | | | 9.0E-03 | P | 3.0E-04 | P |
| -- | | Coke Oven Emissions | | | 6.2E-04 | I | | |
| -- | X | Copper | | | | | 4.0E-02 | H |
| -- | | Cresol, m- | | | | | 5.0E-02 | I |
| -- | | Cresol, o- | | | | | 5.0E-02 | I |
| -- | | Cresol, p- | | | | | 1.0E-01 | A |
| -- | | Cresol, p-chloro-m- | | | | | 1.0E-01 | A |
| -- | | Cresols | | | | | 1.0E-01 | A |
| -- | | Crotonaldehyde, trans- | 1.9E+00 | H | | | 1.0E-03 | P |
| ! | | Isopropylbenzene | | | | | 1.0E-01 | I |

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|---|---|---|---|---|---|---|---|---|
| -- | | Cupferron | 2.2E-01 | C | 6.3E-05 | C | | |
| -- | | Cyanazine | 8.4E-01 | H | | | 2.0E-03 | H |
| -- | | Cyanides | | | | | | |
| -- | | ~Calcium Cyanide | | | | | 1.0E-03 | I |
| -- | | ~Copper Cyanide | | | | | 5.0E-03 | I |
| -- | | ~Cyanide (CN-) | | | | | 6.0E-04 | I |
| -- | | ~Cyanogen | | | | | 1.0E-03 | I |
| -- | | ~Cyanogen Bromide | | | | | 9.0E-02 | I |
| -- | | ~Cyanogen Chloride | | | | | 5.0E-02 | I |
| -- | | ~Hydrogen Cyanide | | | | | 6.0E-04 | I |
| -- | | ~Potassium Cyanide | | | | | 2.0E-03 | I |
| -- | | ~Potassium Silver Cyanide | | | | | 5.0E-03 | I |
| -- | | ~Silver Cyanide | | | | | 1.0E-01 | I |
| -- | | ~Sodium Cyanide | | | | | 1.0E-03 | I |
| -- | | ~Thiocyanates | | | | | 2.0E-04 | P |
| -- | | ~Thiocyanic Acid | | | | | 2.0E-04 | X |
| -- | | ~Zinc Cyanide | | | | | 5.0E-02 | I |
| -- | | Cyclohexane | | | | | | |
| ! | | Methyl cyclohexane | | | | | | |
| -- | | Cyclohexane, 1,2,3,4,5-pentabro | 2.3E-02 | H | | | | |
| -- | | Cyclohexanone | | | | | 5.0E+00 | I |
| -- | | Cyclohexene | | | | | 5.0E-03 | P |
| -- | | Cyclohexylamine | | | | | 2.0E-01 | I |
| -- | | Cyfluthrin | | | | | 2.5E-02 | I |
| -- | | Cyhalothrin | | | | | 5.0E-03 | I |
| -- | | Cypermethrin | | | | | 1.0E-02 | I |
| -- | | Cyromazine | | | | | 7.5E-03 | I |
| -- | | DDD | 2.4E-01 | I | 6.9E-05 | C | | |
| -- | | DDE, p,p'- | 3.4E-01 | I | 9.7E-05 | C | | |
| -- | | DDT | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I |
| -- | | Dalapon | | | | | 3.0E-02 | I |
| -- | | Daminozide | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I |
| -- | | Decabromodiphenyl ether, 2,2',3 | 7.0E-04 | I | | | 7.0E-03 | I |
| -- | | Demeton | | | | | 4.0E-05 | I |
| -- | | Di(2-ethylhexyl)adipate | 1.2E-03 | I | | | 6.0E-01 | I |
| -- | | Diallate | 6.1E-02 | H | | | | |
| -- | | Diazinon | | | | | 7.0E-04 | A |
| -- | | Dibenzothiophene | | | | | 1.0E-02 | X |
| -- | X | 1,2-Dibromo-3-chloropropane | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P |
| -- | | Dibromobenzene, 1,3- | | | | | 4.0E-04 | X |
| -- | | Dibromobenzene, 1,4- | | | | | 1.0E-02 | I |
| -- | | Dibromochloromethane | 8.4E-02 | I | | | 2.0E-02 | I |

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|---|---|---|---|---|---|---|---|---|---|
| -- | | Dibromoethane, 1,2- | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I |
| -- | | Dibromomethane (Methylene Br | | | | | | |
| -- | | Dibutyltin Compounds | | | | | 3.0E-04 | P |
| -- | | Dicamba | | | | | 3.0E-02 | I |
| -- | | Dichloro-2-butene, 1,4- | | | 4.2E-03 | P | | |
| -- | | Dichloro-2-butene, cis-1,4- | | | 4.2E-03 | P | | |
| -- | | Dichloro-2-butene, trans-1,4- | | | 4.2E-03 | P | | |
| -- | | Dichloroacetic Acid | 5.0E-02 | I | | | 4.0E-03 | I |
| -- | | Dichlorobenzene, 1,2- | | | | | 9.0E-02 | I |
| -- | | Dichlorobenzene, 1,4- | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A |
| -- | | Dichlorobenzidine, 3,3'- | 4.5E-01 | I | 3.4E-04 | C | | |
| -- | | Dichlorobenzophenone, 4,4'- | | | | | 9.0E-03 | X |
| -- | | Dichlorodifluoromethane | | | | | 2.0E-01 | I |
| -- | X | 1,1-Dichloroethane | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P |
| -- | X | 1,2-Dichloroethane | 9.1E-02 | I | 2.6E-05 | I | 6.0E-03 | X |
| -- | | Dichloroethylene, 1,1- | | | | | 5.0E-02 | I |
| -- | X | cis-1,2-Dichloroethene | | | | | 2.0E-03 | I |
| -- | | Dichloroethylene, 1,2-trans- | | | | | 2.0E-02 | I |
| -- | | Dichlorophenol, 2,4- | | | | | 3.0E-03 | I |
| -- | | Dichlorophenoxy Acetic Acid, 2, | | | | | 1.0E-02 | I |
| -- | | Dichlorophenoxy)butyric Acid, 4- | | | | | 8.0E-03 | I |
| -- | | Dichloropropane, 1,2- | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A |
| -- | | Dichloropropane, 1,3- | | | | | 2.0E-02 | P |
| -- | | Dichloropropanol, 2,3- | | | | | 3.0E-03 | I |
| -- | | Dichloropropene, 1,3- | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I |
| -- | | Dichlorvos | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I |
| -- | | Dicrotophos | | | | | 1.0E-04 | I |
| -- | | Dicyclopentadiene | | | | | 8.0E-02 | P |
| -- | | Dieldrin | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I |
| -- | | Diesel Engine Exhaust | | | 3.0E-04 | C | | |
| -- | | Diethanolamine | | | | | 2.0E-03 | P |
| -- | | Diethylene Glycol Monobutyl Eth | | | | | 3.0E-02 | P |
| -- | | Diethylene Glycol Monoethyl Eth | | | | | 6.0E-02 | P |
| -- | | Diethylformamide | | | | | 1.0E-03 | P |
| -- | | Diethylstilbestrol | 3.5E+02 | C | 1.0E-01 | C | | |
| -- | | Difenzoquat | | | | | 8.0E-02 | I |
| -- | | Diflubenzuron | | | | | 2.0E-02 | I |
| -- | | Difluoroethane, 1,1- | | | | | | |
| -- | | Dihydrosafrole | 4.4E-02 | C | 1.3E-05 | C | | |
| -- | | Diisopropyl Ether | | | | | | |
| -- | | Diisopropyl Methylphosphonate | | | | | 8.0E-02 | I |
| -- | | Dimethipin | | | | | 2.0E-02 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Dimethoate | | | | | 2.0E-04 | I |
| -- | | Dimethoxybenzidine, 3,3'- | 1.6E+00 | P | | | | |
| -- | | Dimethyl methylphosphonate | 1.7E-03 | P | | | 6.0E-02 | P |
| -- | | Dimethylamino azobenzene [p-] | 4.6E+00 | C | 1.3E-03 | C | | |
| -- | | Dimethylaniline HCl, 2,4- | 5.8E-01 | H | | | | |
| -- | | Dimethylaniline, 2,4- | 2.0E-01 | P | | | 2.0E-03 | X |
| -- | | Dimethylaniline, N,N- | | | | | 2.0E-03 | I |
| -- | | Dimethylbenzidine, 3,3'- | 1.1E+01 | P | | | | |
| -- | | Dimethylformamide | | | | | 1.0E-01 | P |
| -- | | Dimethylhydrazine, 1,1- | | | | | 1.0E-04 | X |
| -- | | Dimethylhydrazine, 1,2- | 5.5E+02 | C | 1.6E-01 | C | | |
| -- | | Dimethylphenol, 2,4- | | | | | 2.0E-02 | I |
| -- | | Dimethylphenol, 2,6- | | | | | 6.0E-04 | I |
| -- | | Dimethylphenol, 3,4- | | | | | 1.0E-03 | I |
| -- | | Dimethylvinylchloride | 4.5E-02 | C | 1.3E-05 | C | | |
| -- | | Dinitro-o-cresol, 4,6- | | | | | 8.0E-05 | X |
| -- | | Dinitro-o-cyclohexyl Phenol, 4,6- | | | | | 2.0E-03 | I |
| -- | | Dinitrobenzene, 1,2- | | | | | 1.0E-04 | P |
| -- | | Dinitrobenzene, 1,3- | | | | | 1.0E-04 | I |
| -- | | Dinitrobenzene, 1,4- | | | | | 1.0E-04 | P |
| -- | | Dinitrophenol, 2,4- | | | | | 2.0E-03 | I |
| -- | | Dinitrotoluene Mixture, 2,4/2,6- | 6.8E-01 | I | | | | |
| -- | | Dinitrotoluene, 2,4- | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I |
| -- | X | 2,6-Dinitrotoluene | 1.5E+00 | P | | | 3.0E-04 | X |
| -- | | Dinitrotoluene, 2-Amino-4,6- | | | | | 2.0E-03 | S |
| -- | | Dinitrotoluene, 4-Amino-2,6- | | | | | 2.0E-03 | S |
| -- | | Dinitrotoluene, Technical grade | 4.5E-01 | X | | | 9.0E-04 | X |
| -- | | Dinoseb | | | | | 1.0E-03 | I |
| -- | X | 1,4-Dioxane | 1.0E-01 | I | 5.0E-06 | I | 3.0E-02 | I |
| -- | | Dioxins | | | | | | |
| -- | | ~Hexachlorodibenzo-p-dioxin, M | 6.2E+03 | I | 1.3E+00 | I | | |
| -- | | ~TCDD, 2,3,7,8- | 1.3E+05 | C | 3.8E+01 | C | 7.0E-10 | I |
| ! | X | Dioxin TEQ | 1.3E+05 | C | 3.8E+01 | C | 7.0E-10 | I |
| -- | | Diphenamid | | | | | 3.0E-02 | I |
| -- | | Diphenyl Sulfone | | | | | 8.0E-04 | X |
| -- | | Diphenylamine | | | | | 2.5E-02 | I |
| -- | | Diphenylhydrazine, 1,2- | 8.0E-01 | I | 2.2E-04 | I | | |
| -- | | Diquat | | | | | 2.2E-03 | I |
| -- | | Direct Black 38 | 7.1E+00 | C | 1.4E-01 | C | | |
| -- | | Direct Blue 6 | 7.4E+00 | C | 1.4E-01 | C | | |
| -- | | Direct Brown 95 | 6.7E+00 | C | 1.4E-01 | C | | |
| -- | | Disulfoton | | | | | 4.0E-05 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Dithiane, 1,4- | | | | | 1.0E-02 | I |
| -- | | Diuron | | | | | 2.0E-03 | I |
| -- | | Dodine | | | | | 4.0E-03 | I |
| -- | | EPTC | | | | | 2.5E-02 | I |
| -- | | Endosulfan | | | | | 6.0E-03 | I |
| X | | alpha-Endosulfan | | | | | 6.0E-03 | I |
| X | | beta-Endosulfan | | | | | 6.0E-03 | I |
| -- | | Endothall | | | | | 2.0E-02 | I |
| -- | | Endrin | | | | | 3.0E-04 | I |
| x | | Endrin Aldehyde | | | | | 3.0E-04 | I |
| x | | Endrin Ketone | | | | | 3.0E-04 | I |
| -- | | Epichlorohydrin | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P |
| -- | | Epoxybutane, 1,2- | | | | | | |
| -- | | Ethanol, 2-(2-methoxyethoxy)- | | | | | 4.0E-02 | P |
| -- | | Ethephon | | | | | 5.0E-03 | I |
| -- | | Ethion | | | | | 5.0E-04 | I |
| -- | | Ethoxyethanol Acetate, 2- | | | | | 1.0E-01 | P |
| -- | | Ethoxyethanol, 2- | | | | | 9.0E-02 | P |
| -- | | Ethyl Acetate | | | | | 9.0E-01 | I |
| -- | | Ethyl Acrylate | | | | | 5.0E-03 | P |
| -- | | Ethyl Chloride (Chloroethane) | | | | | | |
| -- | | Ethyl Ether | | | | | 2.0E-01 | I |
| -- | | Ethyl Methacrylate | | | | | | |
| -- | | Ethyl-p-nitrophenyl Phosphonate | | | | | 1.0E-05 | I |
| -- | X | Ethylbenzene | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I |
| -- | | Ethylene Cyanohydrin | | | | | 7.0E-02 | P |
| -- | | Ethylene Diamine | | | | | 9.0E-02 | P |
| -- | | Ethylene Glycol | | | | | 2.0E+00 | I |
| -- | | Ethylene Glycol Monobutyl Ethe | | | | | 1.0E-01 | I |
| -- | | Ethylene Oxide | 3.1E-01 | C | 8.8E-05 | C | | |
| -- | | Ethylene Thiourea | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I |
| -- | | Ethyleneimine | 6.5E+01 | C | 1.9E-02 | C | | |
| -- | | Ethylphthalyl Ethyl Glycolate | | | | | 3.0E+00 | I |
| -- | | Fenamiphos | | | | | 2.5E-04 | I |
| -- | | Fenpropathrin | | | | | 2.5E-02 | I |
| -- | | Fenvalerate | | | | | 2.5E-02 | I |
| -- | | Fluometuron | | | | | 1.3E-02 | I |
| -- | | Fluoride | | | | | 4.0E-02 | C |
| -- | | Fluorine (Soluble Fluoride) | | | | | 6.0E-02 | I |
| -- | | Fluridone | | | | | 8.0E-02 | I |
| -- | | Flurprimidol | | | | | 2.0E-02 | I |
| -- | | Flusilazole | | | | | 7.0E-04 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Flutolanil | | | | | 6.0E-02 | I |
| -- | | Fluvalinate | | | | | 1.0E-02 | I |
| -- | | Folpet | 3.5E-03 | I | | | 1.0E-01 | I |
| -- | | Fomesafen | 1.9E-01 | I | | | | |
| -- | | Fonofos | | | | | 2.0E-03 | I |
| -- | | Formaldehyde | | | 1.3E-05 | I | 2.0E-01 | I |
| -- | | Formic Acid | | | | | 9.0E-01 | P |
| -- | | Fosetyl-AL | | | | | 3.0E+00 | I |
| -- | | Furans | | | | | | |
| -- | X | Dibenzofuran | | | | | 1.0E-03 | X |
| -- | | ~Furan | | | | | 1.0E-03 | I |
| -- | X | Tetrahydrofuran | | | | | 9.0E-01 | I |
| -- | | Furazolidone | 3.8E+00 | H | | | | |
| -- | | Furfural | | | | | 3.0E-03 | I |
| -- | | Furium | 1.5E+00 | C | 4.3E-04 | C | | |
| -- | | Furmecyclox | 3.0E-02 | I | 8.6E-06 | C | | |
| -- | | Glufosinate, Ammonium | | | | | 4.0E-04 | I |
| -- | | Glutaraldehyde | | | | | | |
| -- | | Glycidyl | | | | | 4.0E-04 | I |
| -- | | Glyphosate | | | | | 1.0E-01 | I |
| -- | | Guanidine | | | | | 1.0E-02 | X |
| -- | | Guanidine Chloride | | | | | 2.0E-02 | P |
| -- | | Haloxyfop, Methyl | | | | | 5.0E-05 | I |
| -- | | Heptachlor | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I |
| -- | | Heptachlor Epoxide | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I |
| -- | | Hexabromobenzene | | | | | 2.0E-03 | I |
| -- | | Hexabromodiphenyl ether, 2,2',4 | | | | | 2.0E-04 | I |
| -- | X | Hexachlorobenzene | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I |
| -- | | Hexachlorobutadiene | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P |
| -- | | Hexachlorocyclohexane, Alpha- | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A |
| -- | | Hexachlorocyclohexane, Beta- | 1.8E+00 | I | 5.3E-04 | I | | |
| -- | | Hexachlorocyclohexane, Gamm | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I |
| -- | | Hexachlorocyclohexane, Techni | 1.8E+00 | I | 5.1E-04 | I | | |
| -- | | Hexachlorocyclopentadiene | | | | | 6.0E-03 | I |
| -- | | Hexachloroethane | 4.0E-02 | I | 1.1E-05 | C | 7.0E-04 | I |
| -- | | Hexachlorophene | | | | | 3.0E-04 | I |
| -- | | Hexahydro-1,3,5-trinitro-1,3,5-tri | 1.1E-01 | I | | | 3.0E-03 | I |
| -- | | Hexamethylene Diisocyanate, 1 | | | | | | |
| -- | | Hexamethylphosphoramide | | | | | 4.0E-04 | P |
| -- | | Hexane, N- | | | | | | |
| -- | | Hexanedioic Acid | | | | | 2.0E+00 | P |
| -- | | Hexanone, 2- | | | | | 5.0E-03 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Hexazinone | | | | | 3.3E-02 | I |
| -- | | Hexythiazox | | | | | 2.5E-02 | I |
| -- | | Hydramethylnon | | | | | 3.0E-04 | I |
| -- | | Hydrazine | 3.0E+00 | I | 4.9E-03 | I | | |
| -- | | Hydrazine Sulfate | 3.0E+00 | I | 4.9E-03 | I | | |
| -- | | Hydrogen Chloride | | | | | | |
| -- | | Hydrogen Fluoride | | | | | 4.0E-02 | C |
| -- | | Hydrogen Sulfide | | | | | | |
| -- | | Hydroquinone | 6.0E-02 | P | | | 4.0E-02 | P |
| -- | | Imazalil | | | | | 1.3E-02 | I |
| -- | | Imazaquin | | | | | 2.5E-01 | I |
| -- | | Imazethapyr | | | | | 2.5E-01 | I |
| -- | | Iodine | | | | | 1.0E-02 | A |
| -- | | Iprodione | | | | | 4.0E-02 | I |
| -- | X | Iron | | | | | 7.0E-01 | P |
| -- | | Isobutyl Alcohol | | | | | 3.0E-01 | I |
| -- | | Isophorone | 9.5E-04 | I | | | 2.0E-01 | I |
| -- | | Isopropalin | | | | | 1.5E-02 | I |
| -- | | Isopropanol | | | | | 2.0E+00 | P |
| -- | | Isopropyl Methyl Phosphonic Ac | | | | | 1.0E-01 | I |
| -- | | Isoxaben | | | | | 5.0E-02 | I |
| -- | | JP-7 | | | | | | |
| -- | | Lactofen | | | | | 2.0E-03 | I |
| -- | | Lead Compounds | | | | | | |
| -- | | ~Lead Chromate | 5.0E-01 | C | 1.5E-01 | C | 2.0E-02 | C |
| -- | | ~Lead Phosphate | 8.5E-03 | C | 1.2E-05 | C | | |
| -- | | ~Lead acetate | 8.5E-03 | C | 1.2E-05 | C | | |
| -- | X | Lead | | | | | | |
| -- | | ~Lead subacetate | 8.5E-03 | C | 1.2E-05 | C | | |
| -- | | ~Tetraethyl Lead | | | | | 1.0E-07 | I |
| -- | | Lewisite | | | | | 5.0E-06 | P |
| -- | | Linuron | | | | | 2.0E-03 | I |
| -- | | Lithium | | | | | 2.0E-03 | P |
| -- | | MCPA | | | | | 5.0E-04 | I |
| -- | | MCPB | | | | | 1.0E-02 | I |
| -- | | MCPP | | | | | 1.0E-03 | I |
| -- | | Malathion | | | | | 2.0E-02 | I |
| -- | | Maleic Anhydride | | | | | 1.0E-01 | I |
| -- | | Maleic Hydrazide | | | | | 5.0E-01 | I |
| -- | | Malononitrile | | | | | 1.0E-04 | P |
| -- | | Mancozeb | | | | | 3.0E-02 | H |
| -- | | Maneb | | | | | 5.0E-03 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | X | Manganese | | | | | 1.4E-01 | I |
| -- | | Manganese (Non-diet) | | | | | 2.4E-02 | S |
| -- | | Mephosfolan | | | | | 9.0E-05 | H |
| -- | | Mepiquat Chloride | | | | | 3.0E-02 | I |
| -- | | Mercury Compounds | | | | | | |
| -- | | ~Mercuric Chloride (and other M | | | | | 3.0E-04 | I |
| -- | | ~Mercury (elemental) | | | | | | |
| -- | | ~Methyl Mercury | | | | | 1.0E-04 | I |
| -- | | ~Phenylmercuric Acetate | | | | | 8.0E-05 | I |
| -- | | Merphos | | | | | 3.0E-05 | I |
| -- | | Merphos Oxide | | | | | 3.0E-05 | I |
| -- | | Metalaxyl | | | | | 6.0E-02 | I |
| -- | | Methacrylonitrile | | | | | 1.0E-04 | I |
| -- | | Methamidophos | | | | | 5.0E-05 | I |
| -- | | Methanol | | | | | 2.0E+00 | I |
| -- | | Methidathion | | | | | 1.0E-03 | I |
| -- | | Methomyl | | | | | 2.5E-02 | I |
| -- | | Methoxy-5-nitroaniline, 2- | 4.9E-02 | C | 1.4E-05 | C | | |
| -- | | Methoxychlor | | | | | 5.0E-03 | I |
| -- | | Methoxyethanol Acetate, 2- | | | | | 8.0E-03 | P |
| -- | | Methoxyethanol, 2- | | | | | 5.0E-03 | P |
| -- | | Methyl Acetate | | | | | 1.0E+00 | X |
| -- | | Methyl Acrylate | | | | | | |
| -- | | Methyl Ethyl Ketone (2-Butanon | | | | | 6.0E-01 | I |
| -- | | Methyl Hydrazine | | | 1.0E-03 | X | 1.0E-03 | P |
| -- | | Methyl Isobutyl Ketone (4-methy | | | | | | |
| -- | | Methyl Isocyanate | | | | | | |
| -- | | Methyl Methacrylate | | | | | 1.4E+00 | I |
| -- | | Methyl Parathion | | | | | 2.5E-04 | I |
| -- | | Methyl Phosphonic Acid | | | | | 6.0E-02 | X |
| -- | | Methyl Styrene (Mixed Isomers) | | | | | 6.0E-03 | H |
| -- | | Methyl methanesulfonate | 9.9E-02 | C | 2.8E-05 | C | | |
| -- | | Methyl tert-Butyl Ether (MTBE) | 1.8E-03 | C | 2.6E-07 | C | | |
| -- | | Methyl-1,4-benzenediamine dihy | | | | | 3.0E-04 | X |
| -- | | Methyl-5-Nitroaniline, 2- | 9.0E-03 | P | | | 2.0E-02 | X |
| -- | | Methyl-N-nitro-N-nitrosoguanidir | 8.3E+00 | C | 2.4E-03 | C | | |
| -- | | Methylaniline Hydrochloride, 2- | 1.3E-01 | C | 3.7E-05 | C | | |
| -- | | Methylarsonic acid | | | | | 1.0E-02 | A |
| -- | | Methylbenzene,1-4-diamine mor | | | | | 2.0E-04 | X |
| -- | | Methylbenzene-1,4-diamine sulf | 1.0E-01 | X | | | 3.0E-04 | X |
| -- | | Methylcholanthrene, 3- | 2.2E+01 | C | 6.3E-03 | C | | |
| -- | | Methylene Chloride | 2.0E-03 | I | 1.0E-08 | I | 6.0E-03 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Methylene-bis(2-chloroaniline), 4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P |
| -- | | Methylene-bis(N,N-dimethyl) An | 4.6E-02 | I | 1.3E-05 | C | | |
| -- | | Methylenebisbenzenamine, 4,4'- | 1.6E+00 | C | 4.6E-04 | C | | |
| -- | | Methylenediphenyl Diisocyanate | | | | | | |
| -- | | Methylstyrene, Alpha- | | | | | 7.0E-02 | H |
| -- | | Metolachlor | | | | | 1.5E-01 | I |
| -- | | Metribuzin | | | | | 2.5E-02 | I |
| -- | | Metsulfuron-methyl | | | | | 2.5E-01 | I |
| -- | | Mineral oils | | | | | 3.0E+00 | P |
| -- | | Mirex | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I |
| -- | | Molinate | | | | | 2.0E-03 | I |
| -- | | Molybdenum | | | | | 5.0E-03 | I |
| -- | | Monochloramine | | | | | 1.0E-01 | I |
| -- | | Monomethylaniline | | | | | 2.0E-03 | P |
| -- | | Myclobutanil | | | | | 2.5E-02 | I |
| -- | | N,N'-Diphenyl-1,4-benzenediam | | | | | 3.0E-04 | X |
| -- | | Naled | | | | | 2.0E-03 | I |
| -- | | Naphtha, High Flash Aromatic (I | | | | | 3.0E-02 | X |
| -- | | Naphthylamine, 2- | 1.8E+00 | C | 0.0E+00 | C | | |
| -- | | Napropamide | | | | | 1.0E-01 | I |
| -- | | Nickel Acetate | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nickel Carbonate | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nickel Carbonyl | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nickel Hydroxide | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nickel Oxide | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nickel Refinery Dust | | | 2.4E-04 | I | 1.1E-02 | C |
| -- | X | Nickel | | | 2.6E-04 | C | 2.0E-02 | I |
| -- | | Nickel Subsulfide | 1.7E+00 | C | 4.8E-04 | I | 1.1E-02 | C |
| -- | | Nickelocene | | | 2.6E-04 | C | 1.1E-02 | C |
| -- | | Nitrate | | | | | 1.6E+00 | I |
| -- | | Nitrate + Nitrite (as N) | | | | | | |
| -- | | Nitrite | | | | | 1.0E-01 | I |
| -- | | Nitroaniline, 2- | | | | | 1.0E-02 | X |
| -- | | Nitroaniline, 4- | 2.0E-02 | P | | | 4.0E-03 | P |
| -- | | Nitrobenzene | | | 4.0E-05 | I | 2.0E-03 | I |
| -- | | Nitrocellulose | | | | | 3.0E+03 | P |
| -- | | Nitrofurantoin | | | | | 7.0E-02 | H |
| -- | | Nitrofurazone | 1.3E+00 | C | 3.7E-04 | C | | |
| -- | | Nitroglycerin | 1.7E-02 | P | | | 1.0E-04 | P |
| -- | | Nitroguanidine | | | | | 1.0E-01 | I |
| -- | | Nitromethane | | | 8.8E-06 | P | | |
| -- | | Nitropropane, 2- | | | 2.7E-03 | H | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Nitroso-N-ethylurea, N- | 2.7E+01 | C | 7.7E-03 | C | | |
| -- | | Nitroso-N-methylurea, N- | 1.2E+02 | C | 3.4E-02 | C | | |
| -- | | Nitroso-di-N-butylamine, N- | 5.4E+00 | I | 1.6E-03 | I | | |
| -- | | Nitroso-di-N-propylamine, N- | 7.0E+00 | I | 2.0E-03 | C | | |
| -- | | Nitrosodiethanolamine, N- | 2.8E+00 | I | 8.0E-04 | C | | |
| -- | | Nitrosodiethylamine, N- | 1.5E+02 | I | 4.3E-02 | I | | |
| -- | | Nitrosodimethylamine, N- | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P |
| -- | | Nitrosodiphenylamine, N- | 4.9E-03 | I | 2.6E-06 | C | | |
| -- | | Nitrosomethylethylamine, N- | 2.2E+01 | I | 6.3E-03 | C | | |
| -- | | Nitrosomorpholine [N-] | 6.7E+00 | C | 1.9E-03 | C | | |
| -- | | Nitrosopiperidine [N-] | 9.4E+00 | C | 2.7E-03 | C | | |
| -- | | Nitrosopyrrolidine, N- | 2.1E+00 | I | 6.1E-04 | I | | |
| -- | | Nitrotoluene, m- | | | | | 1.0E-04 | X |
| -- | | Nitrotoluene, o- | 2.2E-01 | P | | | 9.0E-04 | P |
| -- | | Nitrotoluene, p- | 1.6E-02 | P | | | 4.0E-03 | P |
| -- | | Nonane, n- | | | | | 3.0E-04 | X |
| -- | | Norflurazon | | | | | 4.0E-02 | I |
| -- | | Octabromodiphenyl Ether | | | | | 3.0E-03 | I |
| -- | | Octahydro-1,3,5,7-tetranitro-1,3, | | | | | 5.0E-02 | I |
| -- | | Octamethylpyrophosphoramide | | | | | 2.0E-03 | H |
| -- | | Oryzalin | | | | | 5.0E-02 | I |
| -- | | Oxadiazon | | | | | 5.0E-03 | I |
| -- | | Oxamyl | | | | | 2.5E-02 | I |
| -- | | Oxyfluorfen | | | | | 3.0E-03 | I |
| -- | | Paclobutrazol | | | | | 1.3E-02 | I |
| -- | | Paraquat Dichloride | | | | | 4.5E-03 | I |
| -- | | Parathion | | | | | 6.0E-03 | H |
| -- | | Pebulate | | | | | 5.0E-02 | H |
| -- | | Pendimethalin | | | | | 4.0E-02 | I |
| -- | | Pentabromodiphenyl Ether | | | | | 2.0E-03 | I |
| -- | | Pentabromodiphenyl ether, 2,2', | | | | | 1.0E-04 | I |
| -- | X | Pentachlorobenzene | | | | | 8.0E-04 | I |
| -- | | Pentachloroethane | 9.0E-02 | P | | | | |
| -- | | Pentachloronitrobenzene | 2.6E-01 | H | | | 3.0E-03 | I |
| -- | X | Pentachlorophenol | 4.0E-01 | I | 5.1E-06 | C | 5.0E-03 | I |
| -- | | Pentaerythritol tetranitrate (PET | 4.0E-03 | X | | | 2.0E-03 | P |
| -- | | Pentane, n- | | | | | | |
| -- | | Perchlorates | | | | | | |
| -- | | ~Ammonium Perchlorate | | | | | 7.0E-04 | I |
| -- | | ~Lithium Perchlorate | | | | | 7.0E-04 | I |
| -- | | ~Perchlorate and Perchlorate Sa | | | | | 7.0E-04 | I |
| -- | | ~Potassium Perchlorate | | | | | 7.0E-04 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | ~Sodium Perchlorate | | | | | 7.0E-04 | I |
| -- | | Perfluorobutane Sulfonate | | | | | 2.0E-02 | P |
| -- | | Permethrin | | | | | 5.0E-02 | I |
| -- | | Phenacetin | 2.2E-03 | C | 6.3E-07 | C | | |
| -- | | Phenmedipham | | | | | 2.5E-01 | I |
| -- | X | Phenol | | | | | 3.0E-01 | I |
| -- | | Phenol, 2-(1-methylethoxy)-, me | | | | | 4.0E-03 | I |
| -- | | Phenothiazine | | | | | 5.0E-04 | X |
| -- | | Phenylenediamine, m- | | | | | 6.0E-03 | I |
| -- | | Phenylenediamine, o- | 4.7E-02 | H | | | | |
| -- | | Phenylenediamine, p- | | | | | 1.9E-01 | H |
| -- | | Phenylphenol, 2- | 1.9E-03 | H | | | | |
| -- | | Phorate | | | | | 2.0E-04 | H |
| -- | | Phosgene | | | | | | |
| -- | | Phosmet | | | | | 2.0E-02 | I |
| -- | | Phosphates, Inorganic | | | | | | |
| -- | | ~Aluminum metaphosphate | | | | | 4.9E+01 | P |
| -- | | ~Ammonium polyphosphate | | | | | 4.9E+01 | P |
| -- | | ~Calcium pyrophosphate | | | | | 4.9E+01 | P |
| -- | | ~Diammonium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Dicalcium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Dimagnesium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Dipotassium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Disodium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monoaluminum phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monoammonium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monocalcium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monomagnesium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monopotassium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Monosodium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Polyphosphoric acid | | | | | 4.9E+01 | P |
| -- | | ~Potassium tripolyphosphate | | | | | 4.9E+01 | P |
| -- | | ~Sodium acid pyrophosphate | | | | | 4.9E+01 | P |
| -- | | ~Sodium aluminum phosphate ( | | | | | 4.9E+01 | P |
| -- | | ~Sodium aluminum phosphate ( | | | | | 4.9E+01 | P |
| -- | | ~Sodium aluminum phosphate ( | | | | | 4.9E+01 | P |
| -- | | ~Sodium hexametaphosphate | | | | | 4.9E+01 | P |
| -- | | ~Sodium polyphosphate | | | | | 4.9E+01 | P |
| -- | | ~Sodium trimetaphosphate | | | | | 4.9E+01 | P |
| -- | | ~Sodium tripolyphosphate | | | | | 4.9E+01 | P |
| -- | | ~Tetrapotassium phosphate | | | | | 4.9E+01 | P |
| -- | | ~Tetrasodium pyrophosphate | | | | | 4.9E+01 | P |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -- | | ~Trialuminum sodium tetra deca | | | | | | 4.9E+01 | P |
| -- | | ~Tricalcium phosphate | | | | | | 4.9E+01 | P |
| -- | | ~Trimagnesium phosphate | | | | | | 4.9E+01 | P |
| -- | | ~Tripotassium phosphate | | | | | | 4.9E+01 | P |
| -- | | ~Trisodium phosphate | | | | | | 4.9E+01 | P |
| -- | | Phosphine | | | | | | 3.0E-04 | I |
| -- | | Phosphoric Acid | | | | | | 4.9E+01 | P |
| -- | | Phosphorus, White | | | | | | 2.0E-05 | I |
| -- | | Phthalates | | | | | | | |
| -- | X | bis(2-Ethylhexyl)phthalate | 1.4E-02 | I | 2.4E-06 | C | | 2.0E-02 | I |
| -- | X | Butyl benzyl phthalate | 1.9E-03 | P | | | | 2.0E-01 | I |
| -- | | ~Butylphthalyl Butylglycolate | | | | | | 1.0E+00 | I |
| -- | | ~Dibutyl Phthalate | | | | | | 1.0E-01 | I |
| -- | | ~Diethyl Phthalate | | | | | | 8.0E-01 | I |
| -- | | ~Dimethylterephthalate | | | | | | 1.0E-01 | I |
| -- | X | Di-n-octylphthalate | | | | | | 1.0E-02 | P |
| -- | | ~Phthalic Acid, P- | | | | | | 1.0E+00 | H |
| -- | | ~Phthalic Anhydride | | | | | | 2.0E+00 | I |
| -- | | Picloram | | | | | | 7.0E-02 | I |
| -- | | Picramic Acid (2-Amino-4,6-dinit | | | | | | 1.0E-04 | X |
| -- | | Picric Acid (2,4,6-Trinitrophenol) | | | | | | 9.0E-04 | X |
| -- | | Pirimiphos, Methyl | | | | | | 1.0E-02 | I |
| -- | | Polybrominated Biphenyls | 3.0E+01 | C | 8.6E-03 | C | | 7.0E-06 | H |
| -- | | Polychlorinated Biphenyls (PCB | | | | | | | |
| -- | | ~Aroclor 1016 | 7.0E-02 | S | 2.0E-05 | S | | 7.0E-05 | I |
| -- | | ~Aroclor 1221 | 2.0E+00 | S | 5.7E-04 | S | | | |
| -- | | ~Aroclor 1232 | 2.0E+00 | S | 5.7E-04 | S | | | |
| -- | | ~Aroclor 1242 | 2.0E+00 | S | 5.7E-04 | S | | | |
| -- | X | Aroclor-1248 | 2.0E+00 | S | 5.7E-04 | S | | | |
| -- | X | Aroclor-1254 | 2.0E+00 | S | 5.7E-04 | S | | 2.0E-05 | I |
| -- | X | Aroclor-1260 | 2.0E+00 | S | 5.7E-04 | S | | | |
| -- | | ~Aroclor 5460 | | | | | | 6.0E-04 | X |
| ! | X | Total Aroclor | 2.0E+00 | S | 5.7E-04 | S | | 2.0E-05 | I |
| -- | | ~Heptachlorobiphenyl, 2,3,3',4,4 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Hexachlorobiphenyl, 2,3',4,4',5 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Hexachlorobiphenyl, 2,3,3',4,4' | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Hexachlorobiphenyl, 2,3,3',4,4' | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Hexachlorobiphenyl, 3,3',4,4',5 | 3.9E+03 | E | 1.1E+00 | E | | 2.3E-08 | E |
| -- | | ~Pentachlorobiphenyl, 2',3,4,4',5 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Pentachlorobiphenyl, 2,3',4,4',5 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Pentachlorobiphenyl, 2,3,3',4,4 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |
| -- | | ~Pentachlorobiphenyl, 2,3,4,4',5 | 3.9E+00 | E | 1.1E-03 | E | | 2.3E-05 | E |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | ~Pentachlorobiphenyl, 3,3',4,4',5 | 1.3E+04 | E | 3.8E+00 | E | 7.0E-09 | E |
| -- | | ~Polychlorinated Biphenyls (high | 2.0E+00 | I | 5.7E-04 | I | | |
| ! | X | Total PCBs | 2.0E+00 | I | 5.7E-04 | I | | |
| -- | | ~Polychlorinated Biphenyls (low | 4.0E-01 | I | 1.0E-04 | I | | |
| -- | | ~Polychlorinated Biphenyls (low | 7.0E-02 | I | 2.0E-05 | I | | |
| -- | | ~Tetrachlorobiphenyl, 3,3',4,4'- ( | 1.3E+01 | E | 3.8E-03 | E | 7.0E-06 | E |
| -- | | ~Tetrachlorobiphenyl, 3,4,4',5- ( | 3.9E+01 | E | 1.1E-02 | E | 2.3E-06 | E |
| -- | | Polymeric Methylene Diphenyl D | | | | | | |
| -- | | Polynuclear Aromatic Hydrocarb | | | | | | |
| -- | X | Acenaphthene | | | | | 6.0E-02 | I |
| ! | X | Acenaphthylene | | | | | 6.0E-02 | I |
| -- | X | Anthracene | | | | | 3.0E-01 | I |
| -- | X | Benzo(a)anthracene | 7.3E-01 | E | 1.1E-04 | C | | |
| -- | | ~Benzo(j)fluoranthene | 1.2E+00 | C | 1.1E-04 | C | | |
| -- | X | Benzo(a)pyrene | 7.3E+00 | I | 1.1E-03 | C | | |
| ! | X | Benzo(a)pyrene Equivalent | 7.3E+00 | I | 1.1E-03 | C | | |
| -- | X | Benzo(b)fluoranthene | 7.3E-01 | E | 1.1E-04 | C | | |
| ! | X | Benzo(g,h,i)perylene | | | | | 3.0E-02 | I |
| -- | X | Benzo(k)fluoranthene | 7.3E-02 | E | 1.1E-04 | C | | |
| -- | | ~Chloronaphthalene, Beta- | | | | | 8.0E-02 | I |
| -- | X | Chrysene | 7.3E-03 | E | 1.1E-05 | C | | |
| -- | X | Dibenzo(a,h)anthracene | 7.3E+00 | E | 1.2E-03 | C | | |
| -- | | ~Dibenzo(a,e)pyrene | 1.2E+01 | C | 1.1E-03 | C | | |
| -- | | ~Dimethylbenz(a)anthracene, 7, | 2.5E+02 | C | 7.1E-02 | C | | |
| -- | X | Fluoranthene | | | | | 4.0E-02 | I |
| -- | X | Fluorene | | | | | 4.0E-02 | I |
| -- | X | Indeno(1,2,3-cd)pyrene | 7.3E-01 | E | 1.1E-04 | C | | |
| -- | X | 1-Methylnaphthalene | 2.9E-02 | P | | | 7.0E-02 | A |
| -- | X | 2-Methylnaphthalene | | | | | 4.0E-03 | I |
| -- | | Naphthalene | | | 3.4E-05 | C | 2.0E-02 | I |
| -- | | ~Nitropyrene, 4- | 1.2E+00 | C | 1.1E-04 | C | | |
| ! | X | Phenanthrene | | | | | 3.0E-02 | I |
| -- | X | Pyrene | | | | | 3.0E-02 | I |
| -- | | Potassium Perfluorobutane Sulf | | | | | 2.0E-02 | P |
| -- | | Prochloraz | 1.5E-01 | I | | | 9.0E-03 | I |
| -- | | Profluralin | | | | | 6.0E-03 | H |
| -- | | Prometon | | | | | 1.5E-02 | I |
| -- | | Prometryn | | | | | 4.0E-03 | I |
| -- | | Propachlor | | | | | 1.3E-02 | I |
| -- | | Propanil | | | | | 5.0E-03 | I |
| -- | | Propargite | | | | | 2.0E-02 | I |
| -- | | Propargyl Alcohol | | | | | 2.0E-03 | I |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Propazine | | | | | 2.0E-02 | I |
| -- | | Propham | | | | | 2.0E-02 | I |
| -- | | Propiconazole | | | | | 1.3E-02 | I |
| -- | | Propionaldehyde | | | | | | |
| -- | X | n-Propylbenzene | | | | | 1.0E-01 | X |
| -- | | Propylene | | | | | | |
| -- | | Propylene Glycol | | | | | 2.0E+01 | P |
| -- | | Propylene Glycol Dinitrate | | | | | | |
| -- | | Propylene Glycol Monomethyl E | | | | | 7.0E-01 | H |
| -- | | Propylene Oxide | 2.4E-01 | I | 3.7E-06 | I | | |
| -- | | Propyzamide | | | | | 7.5E-02 | I |
| -- | | Pyridine | | | | | 1.0E-03 | I |
| -- | | Quinalphos | | | | | 5.0E-04 | I |
| -- | | Quinoline | 3.0E+00 | I | | | | |
| -- | | Quizalofop-ethyl | | | | | 9.0E-03 | I |
| -- | | Refractory Ceramic Fibers | | | | | | |
| -- | | Resmethrin | | | | | 3.0E-02 | I |
| -- | | Ronnel | | | | | 5.0E-02 | H |
| -- | | Rotenone | | | | | 4.0E-03 | I |
| -- | | Safrole | 2.2E-01 | C | 6.3E-05 | C | | |
| -- | | Selenious Acid | | | | | 5.0E-03 | I |
| -- | X | Selenium | | | | | 5.0E-03 | I |
| -- | | Selenium Sulfide | | | | | 5.0E-03 | C |
| -- | | Sethoxydim | | | | | 9.0E-02 | I |
| -- | | Silica (crystalline, respirable) | | | | | | |
| -- | X | Silver | | | | | 5.0E-03 | I |
| -- | | Simazine | 1.2E-01 | H | | | 5.0E-03 | I |
| -- | | Sodium Acifluorfen | | | | | 1.3E-02 | I |
| -- | | Sodium Azide | | | | | 4.0E-03 | I |
| -- | | Sodium Dichromate | 5.0E-01 | C | 1.5E-01 | C | 2.0E-02 | C |
| -- | | Sodium Diethyldithiocarbamate | 2.7E-01 | H | | | 3.0E-02 | I |
| -- | | Sodium Fluoride | | | | | 5.0E-02 | A |
| -- | | Sodium Fluoroacetate | | | | | 2.0E-05 | I |
| -- | | Sodium Metavanadate | | | | | 1.0E-03 | H |
| -- | | Sodium Tungstate | | | | | 8.0E-04 | P |
| -- | | Sodium Tungstate Dihydrate | | | | | 8.0E-04 | P |
| -- | | Stirofos (Tetrachlorovinphos) | 2.4E-02 | H | | | 3.0E-02 | I |
| -- | | Strontium Chromate | 5.0E-01 | C | 1.5E-01 | C | 2.0E-02 | C |
| -- | | Strontium, Stable | | | | | 6.0E-01 | I |
| -- | | Strychnine | | | | | 3.0E-04 | I |
| -- | | Styrene | | | | | 2.0E-01 | I |
| -- | | Styrene-Acrylonitrile (SAN) Trim | | | | | 3.0E-03 | P |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -- | | Sulfolane | | | | | | 1.0E-03 | P |
| -- | | Sulfonylbis(4-chlorobenzene), 1 | | | | | | 8.0E-04 | P |
| -- | | Sulfur Trioxide | | | | | | | |
| -- | | Sulfuric Acid | | | | | | | |
| -- | | Sulfurous acid, 2-chloroethyl 2-[ | 2.5E-02 | I | 7.1E-06 | I | | 5.0E-02 | H |
| -- | | TCMTB | | | | | | 3.0E-02 | H |
| -- | | Tebuthiuron | | | | | | 7.0E-02 | I |
| -- | | Temephos | | | | | | 2.0E-02 | H |
| -- | | Terbacil | | | | | | 1.3E-02 | I |
| -- | | Terbufos | | | | | | 2.5E-05 | H |
| -- | | Terbutryn | | | | | | 1.0E-03 | I |
| -- | | Tetrabromodiphenyl ether, 2,2',4 | | | | | | 1.0E-04 | I |
| -- | X | 1,2,4,5-Tetrachlorobenzene | | | | | | 3.0E-04 | I |
| -- | | Tetrachloroethane, 1,1,1,2- | 2.6E-02 | I | 7.4E-06 | I | | 3.0E-02 | I |
| -- | | Tetrachloroethane, 1,1,2,2- | 2.0E-01 | I | 5.8E-05 | C | | 2.0E-02 | I |
| -- | X | Tetrachloroethene | 2.1E-03 | I | 2.6E-07 | I | | 6.0E-03 | I |
| -- | | Tetrachlorophenol, 2,3,4,6- | | | | | | 3.0E-02 | I |
| -- | | Tetrachlorotoluene, p- alpha, alp | 2.0E+01 | H | | | | | |
| -- | | Tetraethyl Dithiopyrophosphate | | | | | | 5.0E-04 | I |
| -- | | Tetrafluoroethane, 1,1,1,2- | | | | | | | |
| -- | | Tetryl (Trinitrophenylmethylnitra | | | | | | 2.0E-03 | P |
| -- | | Thallic Oxide | | | | | | 2.0E-05 | S |
| -- | | Thallium (I) Nitrate | | | | | | 1.0E-05 | X |
| -- | X | Thallium | | | | | | 1.0E-05 | X |
| -- | | Thallium Acetate | | | | | | 1.0E-05 | X |
| -- | | Thallium Carbonate | | | | | | 2.0E-05 | X |
| -- | | Thallium Chloride | | | | | | 1.0E-05 | X |
| -- | | Thallium Selenite | | | | | | 1.0E-05 | S |
| -- | | Thallium Sulfate | | | | | | 2.0E-05 | X |
| -- | | Thifensulfuron-methyl | | | | | | 1.3E-02 | I |
| -- | | Thiobencarb | | | | | | 1.0E-02 | I |
| -- | | Thiodiglycol | | | | | | 7.0E-02 | X |
| -- | | Thiofanox | | | | | | 3.0E-04 | H |
| -- | | Thiophanate, Methyl | | | | | | 8.0E-02 | I |
| -- | | Thiram | | | | | | 5.0E-03 | I |
| -- | | Tin | | | | | | 6.0E-01 | H |
| -- | | Titanium Tetrachloride | | | | | | | |
| -- | | Toluene | | | | | | 8.0E-02 | I |
| ! | | 4-Isopropyltoluene | | | | | | 8.0E-02 | I |
| -- | | Toluene-2,4-diisocyante | | | 1.1E-05 | C | | | |
| -- | | Toluene-2,5-diamine | 1.8E-01 | X | | | | 2.0E-04 | X |
| -- | | Toluene-2,6-diisocyante | | | 1.1E-05 | C | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Toluidine, o- (Methylaniline, 2-) | 1.6E-02 | P | 5.1E-05 | C | | |
| -- | | Toluidine, p- | 3.0E-02 | P | | | 4.0E-03 | X |
| -- | | Total Petroleum Hydrocarbons ( | | | | | 3.0E+00 | P |
| -- | | Total Petroleum Hydrocarbons ( | | | | | | |
| ! | X | TPH (C10-C28) | | | | | 1.0E-02 | X |
| -- | | Total Petroleum Hydrocarbons ( | | | | | 4.0E-02 | P |
| -- | | Total Petroleum Hydrocarbons ( | | | | | 4.0E-03 | P |
| -- | | Total Petroleum Hydrocarbons ( | | | | | 4.0E-03 | P |
| -- | | Toxaphene | 1.1E+00 | I | 3.2E-04 | I | | |
| -- | | Tralomethrin | | | | | 7.5E-03 | I |
| -- | | Tri-n-butyltin | | | | | 3.0E-04 | A |
| -- | | Triacetin | | | | | 8.0E+01 | X |
| -- | | Triadimefon | | | | | 3.0E-02 | I |
| -- | | Triallate | | | | | 1.3E-02 | I |
| -- | | Triasulfuron | | | | | 1.0E-02 | I |
| -- | | Tribenuron-methyl | | | | | 8.0E-03 | I |
| -- | | Tribromobenzene, 1,2,4- | | | | | 5.0E-03 | I |
| -- | | Tributyl Phosphate | 9.0E-03 | P | | | 1.0E-02 | P |
| -- | | Tributyltin Compounds | | | | | 3.0E-04 | P |
| -- | | Tributyltin Oxide | | | | | 3.0E-04 | I |
| -- | | Trichloro-1,2,2-trifluoroethane, 1 | | | | | 3.0E+01 | I |
| -- | | Trichloroacetic Acid | 7.0E-02 | I | | | 2.0E-02 | I |
| -- | | Trichloroaniline HCl, 2,4,6- | 2.9E-02 | H | | | | |
| -- | | Trichloroaniline, 2,4,6- | 7.0E-03 | X | | | 3.0E-05 | X |
| -- | | Trichlorobenzene, 1,2,3- | | | | | 8.0E-04 | X |
| -- | | Trichlorobenzene, 1,2,4- | 2.9E-02 | P | | | 1.0E-02 | I |
| -- | | Trichloroethane, 1,1,1- | | | | | 2.0E+00 | I |
| -- | | Trichloroethane, 1,1,2- | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I |
| -- | X | Trichloroethene | 4.6E-02 | I | 4.1E-06 | I | 5.0E-04 | I |
| -- | | Trichlorofluoromethane | | | | | 3.0E-01 | I |
| -- | | Trichlorophenol, 2,4,5- | | | | | 1.0E-01 | I |
| -- | | Trichlorophenol, 2,4,6- | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P |
| -- | | Trichlorophenoxyacetic Acid, 2,4 | | | | | 1.0E-02 | I |
| -- | | Trichlorophenoxypropionic acid, | | | | | 8.0E-03 | I |
| -- | | Trichloropropane, 1,1,2- | | | | | 5.0E-03 | I |
| -- | | Trichloropropane, 1,2,3- | 3.0E+01 | I | | | 4.0E-03 | I |
| -- | | Trichloropropene, 1,2,3- | | | | | 3.0E-03 | X |
| -- | | Tricresyl Phosphate (TCP) | | | | | 2.0E-02 | A |
| -- | | Tridiphane | | | | | 3.0E-03 | I |
| -- | | Triethylamine | | | | | | |
| -- | | Triethylene Glycol | | | | | 2.0E+00 | P |
| -- | | Trifluoroethane, 1,1,1- | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| -- | | Trifluralin | 7.7E-03 | I | | | 7.5E-03 | I |
| -- | | Trimethyl Phosphate | 2.0E-02 | P | | | 1.0E-02 | P |
| -- | | Trimethylbenzene, 1,2,3- | | | | | | |
| -- | X | 1,2,4-Trimethylbenzene | | | | | | |
| -- | X | 1,3,5-Trimethylbenzene | | | | | 1.0E-02 | X |
| -- | | Trimethylpentene, 2,4,4- | | | | | 1.0E-02 | X |
| -- | | Trinitrobenzene, 1,3,5- | | | | | 3.0E-02 | I |
| -- | | Trinitrotoluene, 2,4,6- | 3.0E-02 | I | | | 5.0E-04 | I |
| -- | | Triphenylphosphine Oxide | | | | | 2.0E-02 | P |
| -- | | Tris(1,3-Dichloro-2-propyl) Phos | | | | | 2.0E-02 | A |
| -- | | Tris(1-chloro-2-propyl)phosphate | | | | | 1.0E-02 | X |
| -- | | Tris(2,3-dibromopropyl)phospha | 2.3E+00 | C | 6.6E-04 | C | | |
| -- | | Tris(2-chloroethyl)phosphate | 2.0E-02 | P | | | 7.0E-03 | P |
| -- | | Tris(2-ethylhexyl)phosphate | 3.2E-03 | P | | | 1.0E-01 | P |
| -- | | Tungsten | | | | | 8.0E-04 | P |
| -- | | Uranium (Soluble Salts) | | | | | 3.0E-03 | I |
| -- | | Urethane | 1.0E+00 | C | 2.9E-04 | C | | |
| -- | | Vanadium Pentoxide | | | 8.3E-03 | P | 9.0E-03 | I |
| -- | X | Vanadium | | | | | 5.0E-03 | S |
| -- | | Vernolate | | | | | 1.0E-03 | I |
| -- | | Vinclozolin | | | | | 2.5E-02 | I |
| -- | | Vinyl Acetate | | | | | 1.0E+00 | H |
| -- | | Vinyl Bromide | | | 3.2E-05 | H | | |
| -- | X | Vinyl Chloride | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I |
| -- | | Warfarin | | | | | 3.0E-04 | I |
| -- | | Xylene, P- | | | | | 2.0E-01 | S |
| -- | | Xylene, m- | | | | | 2.0E-01 | S |
| -- | | Xylene, o- | | | | | 2.0E-01 | S |
| -- | | Xylenes | | | | | 2.0E-01 | I |
| -- | | Zinc Phosphide | | | | | 3.0E-04 | I |
| -- | X | Zinc | | | | | 3.0E-01 | I |
| -- | | Zineb | | | | | 5.0E-02 | I |
| -- | | Zirconium | | | | | 8.0E-05 | X |

TR=THC

| 8 | 9 | 10 | 11 | 12 | 13 | 14 | | |
|---|---|---|---|---|---|---|---|---|
| d Chemical-specific Information | | | | | | | | Contaminant |
| (mg/m³) | y | l | gen | GIABS | ABS | (mg/kg) | FA | Analyte |
| | | | | 1 | 0.1 | | 1 | Acephate |
| 9.0E-03 | I | V | | 1 | | 1.1E+05 | 1 | Acetaldehyde |
| | | | | 1 | 0.1 | | 0.9 | Acetochlor |
| 3.1E+01 | A | V | | 1 | | 1.1E+05 | 1 | Acetone |
| 2.0E-03 | X | | | 1 | 0.1 | | 1 | Acetone Cyanohydrin |
| 6.0E-02 | I | V | | 1 | | 1.3E+05 | 1 | Acetonitrile |
| | | V | | 1 | | 2.5E+03 | 1 | Acetophenone |
| | | | | 1 | 0.1 | | 1 | Acetylaminofluorene, 2- |
| 2.0E-05 | I | V | | 1 | | 2.3E+04 | 1 | Acrolein |
| 6.0E-03 | I | | M | 1 | 0.1 | | 1 | Acrylamide |
| 1.0E-03 | I | V | | 1 | | 1.1E+05 | 1 | Acrylic Acid |
| 2.0E-03 | I | V | | 1 | | 1.1E+04 | 1 | Acrylonitrile |
| 6.0E-03 | P | | | 1 | 0.1 | | 1 | Adiponitrile |
| | | | | 1 | 0.1 | | 0.9 | Alachlor |
| | | | | 1 | 0.1 | | 1 | Aldicarb |
| | | | | 1 | 0.1 | | 1 | Aldicarb Sulfone |
| | | | | 1 | 0.1 | | 1 | Aldicarb sulfoxide |
| | | V | | 1 | | | 1 | Aldrin |
| 1.0E-04 | X | V | | 1 | | 1.1E+05 | 1 | Allyl Alcohol |
| 1.0E-03 | I | V | | 1 | | 1.4E+03 | 1 | Allyl Chloride |
| 5.0E-03 | P | | | 1 | | | 1 | Aluminum |
| | | | | 1 | | | 1 | Aluminum Phosphide |
| | | | | 1 | 0.1 | | 1 | Ametryn |
| | | | | 1 | 0.1 | | 1 | Aminobiphenyl, 4- |
| | | | | 1 | 0.1 | | 1 | Aminophenol, m- |
| | | | | 1 | 0.1 | | 1 | Aminophenol, p- |
| | | | | 1 | 0.1 | | 0.9 | Amitraz |
| 1.0E-01 | I | V | | 1 | | | 1 | Ammonia |
| | | | | 1 | | | 1 | Ammonium Sulfamate |
| 3.0E-03 | X | V | | 1 | | 1.4E+04 | 1 | Amyl Alcohol, tert- |
| 1.0E-03 | I | | | 1 | 0.1 | | 1 | Aniline |
| | | | | 1 | 0.1 | | 0.9 | Anthraquinone, 9,10- |
| | | | | 0.15 | | | 1 | Antimony (metallic) |
| | | | | 0.15 | | | 1 | Antimony Pentoxide |
| | | | | 0.15 | | | 1 | Antimony Tetroxide |
| 2.0E-04 | I | | | 0.15 | | | 1 | Antimony Trioxide |
| 1.5E-05 | C | | | 1 | 0.03 | | 1 | Arsenic, Inorganic |
| 5.0E-05 | I | | | 1 | | | 1 | Arsine |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 0.1 | | 1 | Asulam |
| | | | | 1 | 0.1 | | 1 | Atrazine |
| | | | | 1 | 0.1 | | 0.9 | Auramine |
| | | | | 1 | 0.1 | | 1 | Avermectin B1 |
| 1.0E-02 | A | | | 1 | 0.1 | | 1 | Azinphos-methyl |
| | | V | | 1 | | | 1 | Azobenzene |
| 7.0E-06 | P | | | 1 | 0.1 | | 1 | Azodicarbonamide |
| 5.0E-04 | H | | | 0.07 | | | 1 | Barium |
| 2.0E-04 | C | | M | 0.025 | | | 1 | Barium Chromate |
| | | V | | 1 | | | 0.8 | Benfluralin |
| | | | | 1 | 0.1 | | 1 | Benomyl |
| | | | | 1 | 0.1 | | 1 | Bensulfuron-methyl |
| | | | | 1 | 0.1 | | 1 | Bentazon |
| | | V | | 1 | | 1.2E+03 | 1 | Benzaldehyde |
| 3.0E-02 | I | V | | 1 | | 1.8E+03 | 1 | Benzene |
| | | | | 1 | 0.1 | | 1 | sulfate, 1,4- |
| | | V | | 1 | | 1.3E+03 | 1 | Benzenethiol |
| | | | M | 1 | 0.1 | | 1 | Benzidine |
| | | | | 1 | 0.1 | | 1 | Benzoic Acid |
| | | V | | 1 | | 3.2E+02 | 1 | Benzotrichloride |
| | | | | 1 | 0.1 | | 1 | Benzyl Alcohol |
| 1.0E-03 | P | V | | 1 | | 1.5E+03 | 1 | Benzyl Chloride |
| 2.0E-05 | I | | | 0.007 | | | 1 | Beryllium and compounds |
| | | | | 1 | 0.1 | | 0.9 | Bifenox |
| | | | | 1 | 0.1 | | 0 | Biphenthrin |
| 4.0E-04 | X | V | | 1 | | | 1 | Biphenyl, 1,1'- |
| | | V | | 1 | | 1.0E+03 | 1 | ether |
| | | | | 1 | 0.1 | | 1 | Bis(2-chloroethoxy)methane |
| | | V | | 1 | | 5.1E+03 | 1 | Bis(2-chloroethyl)ether |
| | | V | | 1 | | 4.2E+03 | 1 | Bis(chloromethyl)ether |
| | | | | 1 | 0.1 | | 1 | Bisphenol A |
| 2.0E-02 | H | | | 1 | | | 1 | Boron And Borates Only |
| 2.0E-02 | P | V | | 1 | | | 1 | Boron Trichloride |
| 1.3E-02 | C | V | | 1 | | | 1 | Boron Trifluoride |
| | | | | 1 | | | 1 | Bromate |
| | | V | | 1 | | 2.4E+03 | 1 | Bromo-2-chloroethane, 1- |
| 6.0E-02 | I | V | | 1 | | 6.8E+02 | 1 | Bromobenzene |
| 4.0E-02 | X | V | | 1 | | 4.0E+03 | 1 | Bromochloromethane |
| | | V | | 1 | | 9.3E+02 | 1 | Bromodichloromethane |
| | | V | | 1 | | 9.2E+02 | 1 | Bromoform |
| 5.0E-03 | I | V | | 1 | | 3.6E+03 | 1 | Bromomethane |
| | | V | | 1 | | | 0.8 | Bromophos |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 0.1 | | 0.9 | Bromoxynil |
| | | V | | 1 | | | 0.8 | Bromoxynil Octanoate |
| 2.0E-03 | I | V | | 1 | | 6.7E+02 | 1 | Butadiene, 1,3- |
| | | V | | 1 | | 7.6E+03 | 1 | Butanol, N- |
| 3.0E+01 | P | V | | 1 | | 2.1E+04 | 1 | Butyl alcohol, sec- |
| | | V | | 1 | | | 1 | Butylate |
| | | | | 1 | 0.1 | | 0.8 | Butylated hydroxyanisole |
| | | | | 1 | 0.1 | | 1 | Butylated hydroxytoluene |
| | | V | | 1 | | 1.1E+02 | 1 | Butylbenzene, n- |
| | | V | | 1 | | 1.5E+02 | 1 | Butylbenzene, sec- |
| | | V | | 1 | | 1.8E+02 | 1 | Butylbenzene, tert- |
| | | | | 1 | 0.1 | | 1 | Cacodylic Acid |
| 1.0E-05 | A | | | 0.025 | 0.001 | | 1 | Cadmium (Diet) |
| 1.0E-05 | A | | | 0.05 | 0.001 | | 1 | Cadmium (Water) |
| 2.0E-04 | C | | M | 0.025 | | | 1 | Calcium Chromate |
| 2.2E-03 | C | | | 1 | 0.1 | | 1 | Caprolactam |
| | | | | 1 | 0.1 | | 0.9 | Captafol |
| | | | | 1 | 0.1 | | 1 | Captan |
| | | | | 1 | 0.1 | | 1 | Carbaryl |
| | | | | 1 | 0.1 | | 1 | Carbofuran |
| 7.0E-01 | I | V | | 1 | | 7.4E+02 | 1 | Carbon Disulfide |
| 1.0E-01 | I | V | | 1 | | 4.6E+02 | 1 | Carbon Tetrachloride |
| 1.0E-01 | P | V | | 1 | | 5.9E+03 | 1 | Carbonyl Sulfide |
| | | | | 1 | 0.1 | | 0.8 | Carbosulfan |
| | | | | 1 | 0.1 | | 1 | Carboxin |
| 9.0E-04 | I | | | 1 | | | 1 | Ceric oxide |
| | | V | | 1 | | | 1 | Chloral Hydrate |
| | | | | 1 | 0.1 | | 1 | Chloramben |
| | | | | 1 | 0.1 | | 1 | Chloranil |
| 7.0E-04 | I | V | | 1 | 0.04 | | 0.7 | Chlordane |
| 7.0E-04 | I | V | | 1 | 0.04 | | 0.7 | Chlordane |
| 7.0E-04 | I | V | | 1 | 0.04 | | 0.7 | Chlordane |
| | | | | 1 | 0.1 | | 0.8 | Chlordecone (Kepone) |
| | | | | 1 | 0.1 | | 0.9 | Chlorfenvinphos |
| | | | | 1 | 0.1 | | 1 | Chlorimuron, Ethyl- |
| 1.5E-04 | A | V | | 1 | | 2.8E+03 | 1 | Chlorine |
| 2.0E-04 | I | V | | 1 | | | 1 | Chlorine Dioxide |
| | | | | 1 | | | 1 | Chlorite (Sodium Salt) |
| 5.0E+01 | I | V | | 1 | | 1.2E+03 | 1 | Chloro-1,1-difluoroethane, 1- |
| 2.0E-02 | I | V | | 1 | | 7.9E+02 | 1 | Chloro-1,3-butadiene, 2- |
| | | | | 1 | 0.1 | | 1 | 4- |
| | | | | 1 | 0.1 | | 1 | Chloro-2-methylaniline, 4- |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | V | | 1 | | 1.2E+04 | 1 | Chloroacetaldehyde, 2- |
| | | | | 1 | 0.1 | | 1 | Chloroacetic Acid |
| 3.0E-05 | I | | | 1 | 0.1 | | 1 | Chloroacetophenone, 2- |
| | | | | 1 | 0.1 | | 1 | Chloroaniline, p- |
| 5.0E-02 | P | V | | 1 | | 7.6E+02 | 1 | Chlorobenzene |
| | | | | 1 | 0.1 | | 0.8 | Chlorobenzilate |
| | | | | 1 | 0.1 | | 1 | Chlorobenzoic Acid, p- |
| 3.0E-01 | P | V | | 1 | | 2.9E+02 | 1 | Chlorobenzotrifluoride, 4- |
| | | V | | 1 | | 7.3E+02 | 1 | Chlorobutane, 1- |
| 5.0E+01 | I | V | | 1 | | 1.7E+03 | 1 | Chlorodifluoromethane |
| | | V | | 1 | | 1.1E+05 | 1 | Chloroethanol, 2- |
| 9.8E-02 | A | V | | 1 | | 2.5E+03 | 1 | Chloroform |
| 9.0E-02 | I | V | | 1 | | 1.3E+03 | 1 | Chloromethane |
| | | V | | 1 | | 9.3E+03 | 1 | Chloromethyl Methyl Ether |
| 1.0E-05 | X | | | 1 | 0.1 | | 1 | Chloronitrobenzene, o- |
| 2.0E-03 | P | | | 1 | 0.1 | | 1 | Chloronitrobenzene, p- |
| | | V | | 1 | | 2.7E+04 | 1 | Chlorophenol, 2- |
| 4.0E-04 | C | V | | 1 | | 6.2E+02 | 1 | Chloropicrin |
| | | | | 1 | 0.1 | | 0.9 | Chlorothalonil |
| | | V | | 1 | | 9.1E+02 | 1 | Chlorotoluene, o- |
| | | V | | 1 | | 2.5E+02 | 1 | Chlorotoluene, p- |
| | | | | 1 | 0.1 | | 1 | Chlorozotocin |
| | | | | 1 | 0.1 | | 0.9 | Chlorpropham |
| | | | | 1 | 0.1 | | 0.8 | Chlorpyrifos |
| | | | | 1 | 0.1 | | 0.9 | Chlorpyrifos Methyl |
| | | | | 1 | 0.1 | | 1 | Chlorsulfuron |
| | | | | 1 | 0.1 | | 0.9 | Chlorthal-dimethyl |
| | | | | 1 | 0.1 | | 0.8 | Chlorthiophos |
| | | | | 0.013 | | | 1 | Salts |
| 1.0E-04 | I | | M | 0.025 | | | 1 | Chromium(VI) |
| | | | | 0.013 | | | 1 | Chromium, Total |
| | | | | 1 | 0.1 | | 0.9 | Clofentezine |
| 6.0E-06 | P | | | 1 | | | 1 | Cobalt |
| | | V | M | 1 | | | 0 | Coke Oven Emissions |
| | | | | 1 | | | 1 | Copper |
| 6.0E-01 | C | | | 1 | 0.1 | | 1 | Cresol, m- |
| 6.0E-01 | C | | | 1 | 0.1 | | 1 | Cresol, o- |
| 6.0E-01 | C | | | 1 | 0.1 | | 1 | Cresol, p- |
| | | | | 1 | 0.1 | | 1 | Cresol, p-chloro-m- |
| 6.0E-01 | C | | | 1 | 0.1 | | 0.9 | Cresols |
| | | V | | 1 | | 1.7E+04 | 1 | Crotonaldehyde, trans- |
| 4.0E-01 | I | V | | 1 | | 2.7E+02 | 1 | Cumene |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 0.1 | | 1 | Cupferron |
| | | | | 1 | 0.1 | | 1 | Cyanazine |
| | | | | | | | | Cyanides |
| | | | | 1 | | | 1 | ~Calcium Cyanide |
| | | | | 1 | | | 1 | ~Copper Cyanide |
| 8.0E-04 | S | V | | 1 | | 9.5E+05 | 1 | ~Cyanide (CN-) |
| | | V | | 1 | | | 1 | ~Cyanogen |
| | | V | | 1 | | | 1 | ~Cyanogen Bromide |
| | | V | | 1 | | | 1 | ~Cyanogen Chloride |
| 8.0E-04 | I | V | | 1 | | 1.0E+07 | 1 | ~Hydrogen Cyanide |
| | | | | 1 | | | 1 | ~Potassium Cyanide |
| | | | | 0.04 | | | 1 | ~Potassium Silver Cyanide |
| | | | | 0.04 | | | 1 | ~Silver Cyanide |
| | | | | 1 | | | 1 | ~Sodium Cyanide |
| | | | | 1 | | | 0 | ~Thiocyanates |
| | | V | | 1 | | | 1 | ~Thiocyanic Acid |
| | | | | 1 | | | 1 | ~Zinc Cyanide |
| 6.0E+00 | I | V | | 1 | | 1.2E+02 | 1 | Cyclohexane |
| 6.0E+00 | I | V | | 1 | | 1.2E+02 | 1 | Cyclohexane |
| | | | | 1 | 0.1 | | 0.9 | pentabromo-6-chloro- |
| 7.0E-01 | P | V | | 1 | | 5.1E+03 | 1 | Cyclohexanone |
| 1.0E+00 | X | V | | 1 | | 2.8E+02 | 1 | Cyclohexene |
| | | V | | 1 | | 2.9E+05 | 1 | Cyclohexylamine |
| | | | | 1 | 0.1 | | 0.7 | Cyfluthrin |
| | | | | 1 | 0.1 | | 0.5 | Cyhalothrin |
| | | | | 1 | 0.1 | | 0.7 | Cypermethrin |
| | | | | 1 | 0.1 | | 1 | Cyromazine |
| | | | | 1 | 0.1 | | 0.8 | DDD |
| | | V | | 1 | | | 0.8 | DDE, p,p'- |
| | | | | 1 | 0.03 | | 0.7 | DDT |
| | | | | 1 | 0.1 | | 1 | Dalapon |
| | | | | 1 | 0.1 | | 1 | Daminozide |
| | | | | 1 | 0.1 | | 0 | 209) |
| | | | | 1 | 0.1 | | 0.8 | Demeton |
| | | | | 1 | 0.1 | | 0 | Di(2-ethylhexyl)adipate |
| | | | | 1 | 0.1 | | 0.9 | Diallate |
| | | | | 1 | 0.1 | | 0.9 | Diazinon |
| | | V | | 1 | | | 1 | Dibenzothiophene |
| 2.0E-04 | I | V | M | 1 | | 9.8E+02 | 1 | 1,2- |
| | | V | | 1 | | 1.6E+02 | 0.9 | Dibromobenzene, 1,3- |
| | | V | | 1 | | | 0.9 | Dibromobenzene, 1,4- |
| | | V | | 1 | | 8.0E+02 | 1 | Dibromochloromethane |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.0E-03 | I | V | 1 | | 1.3E+03 | 1 | Dibromoethane, 1,2- |
| 4.0E-03 | X | V | 1 | | 2.8E+03 | 1 | Bromide) |
| | | | 1 | 0.1 | | 0 | Dibutyltin Compounds |
| | | | 1 | 0.1 | | 1 | Dicamba |
| | | V | 1 | | 5.5E+02 | 1 | Dichloro-2-butene, 1,4- |
| | | V | 1 | | 5.2E+02 | 1 | Dichloro-2-butene, cis-1,4- |
| | | V | 1 | | 7.6E+02 | 1 | Dichloro-2-butene, trans-1,4- |
| | | | 1 | 0.1 | | 1 | Dichloroacetic Acid |
| 2.0E-01 | H | V | 1 | | 3.8E+02 | 1 | Dichlorobenzene, 1,2- |
| 8.0E-01 | I | V | 1 | | | 1 | Dichlorobenzene, 1,4- |
| | | | 1 | 0.1 | | 1 | Dichlorobenzidine, 3,3'- |
| | | | 1 | 0.1 | | 0.9 | Dichlorobenzophenone, 4,4'- |
| 1.0E-01 | X | V | 1 | | 8.5E+02 | 1 | Dichlorodifluoromethane |
| | | V | 1 | | 1.7E+03 | 1 | Dichloroethane, 1,1- |
| 7.0E-03 | P | V | 1 | | 3.0E+03 | 1 | Dichloroethane, 1,2- |
| 2.0E-01 | I | V | 1 | | 1.2E+03 | 1 | Dichloroethylene, 1,1- |
| | | V | 1 | | 2.4E+03 | 1 | Dichloroethylene, 1,2-cis- |
| | | V | 1 | | 1.9E+03 | 1 | Dichloroethylene, 1,2-trans- |
| | | | 1 | 0.1 | | 1 | Dichlorophenol, 2,4- |
| | | | 1 | 0.05 | | 1 | 2,4- |
| | | | 1 | 0.1 | | 0.9 | Acid, 4-(2,4- |
| 4.0E-03 | I | V | 1 | | 1.4E+03 | 1 | Dichloropropane, 1,2- |
| | | V | 1 | | 1.5E+03 | 1 | Dichloropropane, 1,3- |
| | | | 1 | 0.1 | | 1 | Dichloropropanol, 2,3- |
| 2.0E-02 | I | V | 1 | | 1.6E+03 | 1 | Dichloropropene, 1,3- |
| 5.0E-04 | I | | 1 | 0.1 | | 1 | Dichlorvos |
| | | | 1 | 0.1 | | 1 | Dicrotophos |
| 3.0E-04 | X | V | 1 | | 2.6E+02 | 1 | Dicyclopentadiene |
| | | | 1 | 0.1 | | 0.8 | Dieldrin |
| 5.0E-03 | I | | 1 | 0.1 | | 0 | Diesel Engine Exhaust |
| 2.0E-04 | P | | 1 | 0.1 | | 1 | Diethanolamine |
| 1.0E-04 | P | | 1 | 0.1 | | 1 | Ether |
| 3.0E-04 | P | | 1 | 0.1 | | 1 | Ether |
| | | V | 1 | | 1.1E+05 | 1 | Diethylformamide |
| | | | 1 | 0.1 | | 0.9 | Diethylstilbestrol |
| | | | 1 | 0.1 | | 1 | Difenzoquat |
| | | | 1 | 0.1 | | 0.9 | Diflubenzuron |
| 4.0E+01 | I | V | 1 | | 1.4E+03 | 1 | Difluoroethane, 1,1- |
| | | V | 1 | | | 1 | Dihydrosafrole |
| 7.0E-01 | P | V | 1 | | 2.3E+03 | 1 | Diisopropyl Ether |
| | | V | 1 | | 5.3E+02 | 1 | Methylphosphonate |
| | | | 1 | 0.1 | | 1 | Dimethipin |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 1 | 0.1 | 1 | Dimethoate |
| | | | 1 | 0.1 | 1 | Dimethoxybenzidine, 3,3'- |
| | | | 1 | 0.1 | 1 | Dimethyl methylphosphonate |
| | | | 1 | 0.1 | 1 | [p-] |
| | | | 1 | 0.1 | 1 | Dimethylaniline HCl, 2,4- |
| | | | 1 | 0.1 | 1 | Dimethylaniline, 2,4- |
| | | V | 1 | 8.3E+02 | 1 | Dimethylaniline, N,N- |
| | | | 1 | 0.1 | 1 | Dimethylbenzidine, 3,3'- |
| 3.0E-02 | I | V | 1 | 1.1E+05 | 1 | Dimethylformamide |
| 2.0E-06 | X | V | 1 | 1.7E+05 | 1 | Dimethylhydrazine, 1,1- |
| | | V | 1 | 1.9E+05 | 1 | Dimethylhydrazine, 1,2- |
| | | | 1 | 0.1 | 1 | Dimethylphenol, 2,4- |
| | | | 1 | 0.1 | 1 | Dimethylphenol, 2,6- |
| | | | 1 | 0.1 | 1 | Dimethylphenol, 3,4- |
| | | V | 1 | 4.7E+02 | 1 | Dimethylvinylchloride |
| | | | 1 | 0.1 | 1 | Dinitro-o-cresol, 4,6- |
| | | | 1 | 0.1 | 0.9 | 4,6- |
| | | | 1 | 0.1 | 1 | Dinitrobenzene, 1,2- |
| | | | 1 | 0.1 | 1 | Dinitrobenzene, 1,3- |
| | | | 1 | 0.1 | 1 | Dinitrobenzene, 1,4- |
| | | | 1 | 0.1 | 1 | Dinitrophenol, 2,4- |
| | | | 1 | 0.1 | 1 | 2,4/2,6- |
| | | | 1 | 0.102 | 1 | Dinitrotoluene, 2,4- |
| | | | 1 | 0.099 | 1 | Dinitrotoluene, 2,6- |
| | | | 1 | 0.006 | 1 | Dinitrotoluene, 2-Amino-4,6- |
| | | | 1 | 0.009 | 1 | Dinitrotoluene, 4-Amino-2,6- |
| | | | 1 | 0.1 | 0.8 | grade |
| | | | 1 | 0.1 | 0.9 | Dinoseb |
| 3.0E-02 | I | V | 1 | 1.2E+05 | 1 | Dioxane, 1,4- |
| | | | | | | Dioxins |
| | | | 1 | 0.03 | 0 | dioxin, Mixture |
| 4.0E-08 | C | V | 1 | 0.03 | 0.5 | ~TCDD, 2,3,7,8- |
| 4.0E-08 | C | V | 1 | 0.03 | 0.5 | ~TCDD, 2,3,7,8- |
| | | | 1 | 0.1 | 1 | Diphenamid |
| | | | 1 | 0.1 | 1 | Diphenyl Sulfone |
| | | | 1 | 0.1 | 1 | Diphenylamine |
| | | | 1 | 0.1 | 1 | Diphenylhydrazine, 1,2- |
| | | | 1 | 0.1 | 1 | Diquat |
| | | | 1 | 0.1 | 1 | Direct Black 38 |
| | | | 1 | 0.1 | 1 | Direct Blue 6 |
| | | | 1 | 0.1 | 1 | Direct Brown 95 |
| | | | 1 | 0.1 | 0.9 | Disulfoton |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | V | 1 | | | 1 | Dithiane, 1,4- |
| | | | 1 | 0.1 | | 1 | Diuron |
| | | | 1 | 0.1 | | 1 | Dodine |
| | | V | 1 | | | 1 | EPTC |
| | | V | 1 | | | 0.9 | Endosulfan |
| | | V | 1 | | | 0.9 | Endosulfan |
| | | V | 1 | | | 0.9 | Endosulfan |
| | | | 1 | 0.1 | | 1 | Endothall |
| | | | 1 | 0.1 | | 0.8 | Endrin |
| | | | 1 | 0.1 | | 0.8 | Endrin |
| | | | 1 | 0.1 | | 0.8 | Endrin |
| 1.0E-03 | I | V | 1 | | 1.1E+04 | 1 | Epichlorohydrin |
| 2.0E-02 | I | V | 1 | | 1.5E+04 | 1 | Epoxybutane, 1,2- |
| | | | 1 | 0.1 | | 1 | methoxyethoxy)- |
| | | | 1 | 0.1 | | 1 | Ethephon |
| | | | 1 | 0.1 | | 0.8 | Ethion |
| 6.0E-02 | P | V | 1 | | 2.4E+04 | 1 | Ethoxyethanol Acetate, 2- |
| 2.0E-01 | I | V | 1 | | 1.1E+05 | 1 | Ethoxyethanol, 2- |
| 7.0E-02 | P | V | 1 | | 1.1E+04 | 1 | Ethyl Acetate |
| 8.0E-03 | P | V | 1 | | 2.5E+03 | 1 | Ethyl Acrylate |
| 1.0E+01 | I | V | 1 | | 2.1E+03 | 1 | (Chloroethane) |
| | | V | 1 | | 1.0E+04 | 1 | Ethyl Ether |
| 3.0E-01 | P | V | 1 | | 1.1E+03 | 1 | Ethyl Methacrylate |
| | | | 1 | 0.1 | | 0.8 | Phosphonate |
| 1.0E+00 | I | V | 1 | | 4.8E+02 | 1 | Ethylbenzene |
| | | | 1 | 0.1 | | 1 | Ethylene Cyanohydrin |
| | | V | 1 | | 1.9E+05 | 1 | Ethylene Diamine |
| 4.0E-01 | C | | 1 | 0.1 | | 1 | Ethylene Glycol |
| 1.6E+00 | I | | 1 | 0.1 | | 1 | Ether |
| 3.0E-02 | C | V | 1 | | 1.2E+05 | 1 | Ethylene Oxide |
| | | | 1 | 0.1 | | 1 | Ethylene Thiourea |
| | | V | 1 | | 1.5E+05 | 1 | Ethyleneimine |
| | | | 1 | 0.1 | | 1 | Ethylphthalyl Ethyl Glycolate |
| | | | 1 | 0.1 | | 0.9 | Fenamiphos |
| | | | 1 | 0.1 | | 0.8 | Fenpropathrin |
| | | | 1 | 0.1 | | 0.7 | Fenvalerate |
| | | | 1 | 0.1 | | 1 | Fluometuron |
| 1.3E-02 | C | | 1 | | | 1 | Fluoride |
| 1.3E-02 | C | | 1 | | | 1 | Fluorine (Soluble Fluoride) |
| | | | 1 | 0.1 | | 0.9 | Fluridone |
| | | | 1 | 0.1 | | 0.9 | Flurprimidol |
| | | | 1 | 0.1 | | 0.9 | Flusilazole |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 0.1 | | 0.9 | Flutolanil |
| | | | 1 | 0.1 | | 0.6 | Fluvalinate |
| | | | 1 | 0.1 | | 1 | Folpet |
| | | | 1 | 0.1 | | 1 | Fomesafen |
| | | | 1 | 0.1 | | 0.9 | Fonofos |
| 9.8E-03 | A | V | 1 | | 4.2E+04 | 1 | Formaldehyde |
| 3.0E-04 | X | V | 1 | | 1.1E+05 | 1 | Formic Acid |
| | | | 1 | 0.1 | | 1 | Fosetyl-AL |
| | | | | | | | Furans |
| | | V | 1 | 0.03 | | 1 | ~Dibenzofuran |
| | | V | 1 | 0.03 | 6.2E+03 | 1 | ~Furan |
| 2.0E+00 | I | V | 1 | 0.03 | 1.7E+05 | 1 | ~Tetrahydrofuran |
| | | | 1 | 0.1 | | 1 | Furazolidone |
| 5.0E-02 | H | V | 1 | | 1.0E+04 | 1 | Furfural |
| | | | 1 | 0.1 | | 1 | Furium |
| | | | 1 | 0.1 | | 0.9 | Furmecyclox |
| | | | 1 | 0.1 | | 1 | Glufosinate, Ammonium |
| 8.0E-05 | C | | 1 | 0.1 | | 1 | Glutaraldehyde |
| 1.0E-03 | H | V | 1 | | 1.1E+05 | 1 | Glycidyl |
| | | | 1 | 0.1 | | 1 | Glyphosate |
| | | V | 1 | | | 1 | Guanidine |
| | | | 1 | 0.1 | | 1 | Guanidine Chloride |
| | | | 1 | 0.1 | | 0.9 | Haloxyfop, Methyl |
| | | V | 1 | | | 0.8 | Heptachlor |
| | | V | 1 | | | 0.8 | Heptachlor Epoxide |
| | | V | 1 | | | 0.7 | Hexabromobenzene |
| | | | 1 | 0.1 | | 0 | 2,2',4,4',5,5'- (BDE-153) |
| | | V | 1 | | | 0.9 | Hexachlorobenzene |
| | | V | 1 | | 1.7E+01 | 0.9 | Hexachlorobutadiene |
| | | | 1 | 0.1 | | 0.9 | Alpha- |
| | | | 1 | 0.1 | | 0.9 | Beta- |
| | | | 1 | 0.04 | | 0.9 | Gamma- (Lindane) |
| | | | 1 | 0.1 | | 0.9 | Technical |
| 2.0E-04 | I | V | 1 | | 1.6E+01 | 0.9 | Hexachlorocyclopentadiene |
| 3.0E-02 | I | V | 1 | | | 1 | Hexachloroethane |
| | | | 1 | 0.1 | | 0 | Hexachlorophene |
| | | | 1 | 0.015 | | 1 | 1,3,5-triazine (RDX) |
| 1.0E-05 | I | V | 1 | | 3.4E+03 | 1 | Diisocyanate, 1,6- |
| | | | 1 | 0.1 | | 1 | Hexamethylphosphoramide |
| 7.0E-01 | I | V | 1 | | 1.4E+02 | 1 | Hexane, N- |
| | | | 1 | 0.1 | | 1 | Hexanedioic Acid |
| 3.0E-02 | I | V | 1 | | 3.3E+03 | 1 | Hexanone, 2- |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 0.1 | | 1 | Hexazinone |
| | | | 1 | 0.1 | | 0.8 | Hexythiazox |
| | | | 1 | 0.1 | | 1 | Hydramethylnon |
| 3.0E-05 | P | V | 1 | | | 1 | Hydrazine |
| | | | 1 | | | 1 | Hydrazine Sulfate |
| 2.0E-02 | I | V | 1 | | | 1 | Hydrogen Chloride |
| 1.4E-02 | C | V | 1 | | | 1 | Hydrogen Fluoride |
| 2.0E-03 | I | V | 1 | | | 1 | Hydrogen Sulfide |
| | | | 1 | 0.1 | | 1 | Hydroquinone |
| | | | 1 | 0.1 | | 0.9 | Imazalil |
| | | | 1 | 0.1 | | 1 | Imazaquin |
| | | | 1 | 0.1 | | 1 | Imazethapyr |
| | | | 1 | | | 1 | Iodine |
| | | | 1 | 0.1 | | 0.9 | Iprodione |
| | | | 1 | | | 1 | Iron |
| | | V | 1 | | 1.0E+04 | 1 | Isobutyl Alcohol |
| 2.0E+00 | C | | 1 | 0.1 | | 1 | Isophorone |
| | | V | 1 | | | 0.8 | Isopropalin |
| 2.0E-01 | P | V | 1 | | 1.1E+05 | 1 | Isopropanol |
| | | | 1 | 0.1 | | 1 | Acid |
| | | | 1 | 0.1 | | 0.9 | Isoxaben |
| 3.0E-01 | A | V | 1 | | | 0 | JP-7 |
| | | | 1 | 0.1 | | 0.9 | Lactofen |
| | | | | | | | Lead Compounds |
| 2.0E-04 | C | M | 0.025 | | | 1 | ~Lead Chromate |
| | | | 1 | | | 0.8 | ~Lead Phosphate |
| | | | 1 | 0.1 | | 1 | ~Lead acetate |
| | | | 1 | | | 1 | ~Lead and Compounds |
| | | | 1 | 0.1 | | 1 | ~Lead subacetate |
| | | V | 1 | | 2.4E+00 | 0.9 | ~Tetraethyl Lead |
| | | V | 1 | | 3.8E+02 | 1 | Lewisite |
| | | | 1 | 0.1 | | 0.9 | Linuron |
| | | | 1 | | | 1 | Lithium |
| | | | 1 | 0.1 | | 1 | MCPA |
| | | | 1 | 0.1 | | 0.9 | MCPB |
| | | | 1 | 0.1 | | 1 | MCPP |
| | | | 1 | 0.1 | | 1 | Malathion |
| 7.0E-04 | C | | 1 | 0.1 | | 1 | Maleic Anhydride |
| | | | 1 | 0.1 | | 1 | Maleic Hydrazide |
| | | | 1 | 0.1 | | 1 | Malononitrile |
| | | | 1 | 0.1 | | 0.9 | Mancozeb |
| | | | 1 | 0.1 | | 1 | Maneb |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5.0E-05 | I | | | 1 | | | 1 | Manganese (Diet) |
| 5.0E-05 | I | | | 0.04 | | | 1 | Manganese (Non-diet) |
| | | | | 1 | 0.1 | | 1 | Mephosfolan |
| | | | | 1 | 0.1 | | 1 | Mepiquat Chloride |
| | | | | | | | | Mercury Compounds |
| 3.0E-04 | S | | | 0.07 | | | 1 | other Mercury salts) |
| 3.0E-04 | I | V | | 1 | | 3.1E+00 | 1 | ~Mercury (elemental) |
| | | | | 1 | | | 1 | ~Methyl Mercury |
| | | | | 1 | 0.1 | | 1 | ~Phenylmercuric Acetate |
| | | V | | 1 | | | 0.3 | Merphos |
| | | | | 1 | 0.1 | | 0.9 | Merphos Oxide |
| | | | | 1 | 0.1 | | 1 | Metalaxyl |
| 3.0E-02 | P | V | | 1 | | 4.6E+03 | 1 | Methacrylonitrile |
| | | | | 1 | 0.1 | | 1 | Methamidophos |
| 2.0E+01 | I | V | | 1 | | 1.1E+05 | 1 | Methanol |
| | | | | 1 | 0.1 | | 1 | Methidathion |
| | | | | 1 | 0.1 | | 1 | Methomyl |
| | | | | 1 | 0.1 | | 1 | Methoxy-5-nitroaniline, 2- |
| | | | | 1 | 0.1 | | 0.8 | Methoxychlor |
| 1.0E-03 | P | V | | 1 | | 1.2E+05 | 1 | Methoxyethanol Acetate, 2- |
| 2.0E-02 | I | V | | 1 | | 1.1E+05 | 1 | Methoxyethanol, 2- |
| | | V | | 1 | | 2.9E+04 | 1 | Methyl Acetate |
| 2.0E-02 | P | V | | 1 | | 6.8E+03 | 1 | Methyl Acrylate |
| 5.0E+00 | I | V | | 1 | | 2.8E+04 | 1 | Butanone) |
| 2.0E-05 | X | V | | 1 | | 1.8E+05 | 1 | Methyl Hydrazine |
| 3.0E+00 | I | V | | 1 | | 3.4E+03 | 1 | methyl-2-pentanone) |
| 1.0E-03 | C | V | | 1 | | 1.0E+04 | 1 | Methyl Isocyanate |
| 7.0E-01 | I | V | | 1 | | 2.4E+03 | 1 | Methyl Methacrylate |
| | | | | 1 | 0.1 | | 1 | Methyl Parathion |
| | | | | 1 | 0.1 | | 1 | Methyl Phosphonic Acid |
| 4.0E-02 | H | V | | 1 | | 3.9E+02 | 0.8 | Isomers) |
| | | | | 1 | 0.1 | | 1 | Methyl methanesulfonate |
| 3.0E+00 | I | V | | 1 | | 8.9E+03 | 1 | (MTBE) |
| | | | | 1 | 0.1 | | 1 | dihydrochloride, 2- |
| | | | | 1 | 0.1 | | 1 | Methyl-5-Nitroaniline, 2- |
| | | | | 1 | 0.1 | | 1 | nitrosoguanidine, N- |
| | | | | 1 | 0.1 | | 1 | 2- |
| | | | | 1 | 0.1 | | 1 | Methylarsonic acid |
| | | | | 1 | 0.1 | | 0 | monohydrochloride, 2- |
| | | | | 1 | 0.1 | | 0 | sulfate, 2- |
| | | | M | 1 | 0.1 | | 0.8 | Methylcholanthrene, 3- |
| 6.0E-01 | I | V | M | 1 | | 3.3E+03 | 1 | Methylene Chloride |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | M | 1 | 0.1 | 0.9 | chloroaniline), 4,4'- |
| | | | | 1 | 0.1 | 1 | Aniline, 4,4'- |
| 2.0E-02 | C | | | 1 | 0.1 | 1 | 4,4'- |
| 6.0E-04 | I | | | 1 | 0.1 | 0.9 | Diisocyanate |
| | | V | | 1 | 5.0E+02 | 1 | Methylstyrene, Alpha- |
| | | | | 1 | 0.1 | 1 | Metolachlor |
| | | | | 1 | 0.1 | 1 | Metribuzin |
| | | | | 1 | 0.1 | 1 | Metsulfuron-methyl |
| | | V | | 1 | 3.4E-01 | 1 | Mineral oils |
| | | V | | 1 | | 0.5 | Mirex |
| | | | | 1 | 0.1 | 1 | Molinate |
| | | | | 1 | | 1 | Molybdenum |
| | | | | 1 | | 1 | Monochloramine |
| | | | | 1 | 0.1 | 1 | Monomethylaniline |
| | | | | 1 | 0.1 | 1 | Myclobutanil |
| | | | | 1 | 0.1 | 0.9 | benzenediamine |
| | | V | | 1 | | 1 | Naled |
| 1.0E-01 | P | V | | 1 | | 0 | Aromatic (HFAN) |
| | | | | 1 | 0.1 | 1 | Naphthylamine, 2- |
| | | | | 1 | 0.1 | 0.9 | Napropamide |
| 1.4E-05 | C | | | 1 | 0.1 | 1 | Nickel Acetate |
| 1.4E-05 | C | | | 1 | 0.1 | 1 | Nickel Carbonate |
| 1.4E-05 | C | V | | 1 | | 0 | Nickel Carbonyl |
| 1.4E-05 | C | | | 0.04 | | 1 | Nickel Hydroxide |
| 2.0E-05 | C | | | 0.04 | | 1 | Nickel Oxide |
| 1.4E-05 | C | | | 0.04 | | 0 | Nickel Refinery Dust |
| 9.0E-05 | A | | | 0.04 | | 1 | Nickel Soluble Salts |
| 1.4E-05 | C | | | 0.04 | | 1 | Nickel Subsulfide |
| 1.4E-05 | C | | | 1 | 0.1 | 0 | Nickelocene |
| | | | | 1 | | 1 | Nitrate |
| | | | | 1 | | 0 | Nitrate + Nitrite (as N) |
| | | | | 1 | | 1 | Nitrite |
| 5.0E-05 | X | | | 1 | 0.1 | 1 | Nitroaniline, 2- |
| 6.0E-03 | P | | | 1 | 0.1 | 1 | Nitroaniline, 4- |
| 9.0E-03 | I | V | | 1 | 3.1E+03 | 1 | Nitrobenzene |
| | | | | 1 | 0.1 | 1 | Nitrocellulose |
| | | | | 1 | 0.1 | 1 | Nitrofurantoin |
| | | | | 1 | 0.1 | 1 | Nitrofurazone |
| | | | | 1 | 0.1 | 1 | Nitroglycerin |
| | | | | 1 | 0.1 | 1 | Nitroguanidine |
| 5.0E-03 | P | V | | 1 | 1.8E+04 | 1 | Nitromethane |
| 2.0E-02 | I | V | | 1 | 4.9E+03 | 1 | Nitropropane, 2- |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | M | 1 | 0.1 | | 1 | Nitroso-N-ethylurea, N- |
| | | | M | 1 | 0.1 | | 1 | Nitroso-N-methylurea, N- |
| | | V | | 1 | | | 1 | Nitroso-di-N-butylamine, N- |
| | | | | 1 | 0.1 | | 1 | Nitroso-di-N-propylamine, N- |
| | | | | 1 | 0.1 | | 1 | Nitrosodiethanolamine, N- |
| | | | M | 1 | 0.1 | | 1 | Nitrosodiethylamine, N- |
| 4.0E-05 | X | V | M | 1 | | 2.4E+05 | 1 | Nitrosodimethylamine, N- |
| | | | | 1 | 0.1 | | 1 | Nitrosodiphenylamine, N- |
| | | V | | 1 | | 1.1E+05 | 1 | Nitrosomethylethylamine, N- |
| | | | | 1 | 0.1 | | 1 | Nitrosomorpholine [N-] |
| | | | | 1 | 0.1 | | 1 | Nitrosopiperidine [N-] |
| | | | | 1 | 0.1 | | 1 | Nitrosopyrrolidine, N- |
| | | | | 1 | 0.1 | | 1 | Nitrotoluene, m- |
| | | V | | 1 | | 1.5E+03 | 1 | Nitrotoluene, o- |
| | | | | 1 | 0.1 | | 1 | Nitrotoluene, p- |
| 2.0E-02 | P | V | | 1 | | 6.9E+00 | 1 | Nonane, n- |
| | | | | 1 | 0.1 | | 1 | Norflurazon |
| | | | | 1 | 0.1 | | 0.3 | Octabromodiphenyl Ether |
| | | | | 1 | 0.006 | | 1 | 1,3,5,7-tetrazocine (HMX) |
| | | | | 1 | 0.1 | | 1 | de |
| | | | | 1 | 0.1 | | 0.9 | Oryzalin |
| | | | | 1 | 0.1 | | 0.8 | Oxadiazon |
| | | | | 1 | 0.1 | | 1 | Oxamyl |
| | | | | 1 | 0.1 | | 0.8 | Oxyfluorfen |
| | | | | 1 | 0.1 | | 0.9 | Paclobutrazol |
| | | | | 1 | 0.1 | | 1 | Paraquat Dichloride |
| | | | | 1 | 0.1 | | 0.9 | Parathion |
| | | V | | 1 | | | 1 | Pebulate |
| | | | | 1 | 0.1 | | 0.9 | Pendimethalin |
| | | V | | 1 | | 3.1E-01 | 0.6 | Pentabromodiphenyl Ether |
| | | | | 1 | 0.1 | | 0.6 | 2,2',4,4',5- (BDE-99) |
| | | V | | 1 | | | 0.9 | Pentachlorobenzene |
| | | V | | 1 | | 4.6E+02 | 1 | Pentachloroethane |
| | | V | | 1 | | | 0.9 | Pentachloronitrobenzene |
| | | | | 1 | 0.25 | | 0.9 | Pentachlorophenol |
| | | | | 1 | 0.1 | | 1 | (PETN) |
| 1.0E+00 | P | V | | 1 | | 3.9E+02 | 1 | Pentane, n- |
| | | | | | | | | Perchlorates |
| | | | | 1 | | | 1 | ~Ammonium Perchlorate |
| | | | | 1 | | | 1 | ~Lithium Perchlorate |
| | | | | 1 | | | 1 | Salts |
| | | | | 1 | | | 1 | ~Potassium Perchlorate |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 1 | | | 1 | ~Sodium Perchlorate |
| | V | 1 | | | 1 | Perfluorobutane Sulfonate |
| | | 1 | 0.1 | | 0.6 | Permethrin |
| | | 1 | 0.1 | | 1 | Phenacetin |
| | | 1 | 0.1 | | 0.9 | Phenmedipham |
| 2.0E-01 | C | 1 | 0.1 | | 1 | Phenol |
| | | 1 | 0.1 | | 1 | methylcarbamate |
| | | 1 | 0.1 | | 1 | Phenothiazine |
| | | 1 | 0.1 | | 1 | Phenylenediamine, m- |
| | | 1 | 0.1 | | 1 | Phenylenediamine, o- |
| | | 1 | 0.1 | | 1 | Phenylenediamine, p- |
| | | 1 | 0.1 | | 1 | Phenylphenol, 2- |
| | | 1 | 0.1 | | 0.9 | Phorate |
| 3.0E-04 | I V | 1 | | 1.6E+03 | 1 | Phosgene |
| | | 1 | 0.1 | | 1 | Phosmet |
| | | | | | | Phosphates, Inorganic |
| | | 1 | | | 1 | ~Aluminum metaphosphate |
| | | 1 | | | 0 | ~Ammonium polyphosphate |
| | | 1 | | | 1 | ~Calcium pyrophosphate |
| | | 1 | | | 1 | ~Diammonium phosphate |
| | | 1 | | | 1 | ~Dicalcium phosphate |
| | | 1 | | | 1 | ~Dimagnesium phosphate |
| | | 1 | | | 1 | ~Dipotassium phosphate |
| | | 1 | | | 1 | ~Disodium phosphate |
| | | 1 | | | 1 | ~Monoaluminum phosphate |
| | | 1 | | | 1 | ~Monoammonium phosphate |
| | | 1 | | | 1 | ~Monocalcium phosphate |
| | | 1 | | | 1 | phosphate |
| | | 1 | | | 1 | ~Monopotassium phosphate |
| | | 1 | | | 1 | ~Monosodium phosphate |
| | | 1 | | | 1 | ~Polyphosphoric acid |
| | | 1 | | | 0.9 | ~Potassium tripolyphosphate |
| | | 1 | | | 1 | ~Sodium acid pyrophosphate |
| | | 1 | | | 1 | phosphate (acidic) |
| | | 1 | | | 0 | phosphate (anhydrous) |
| | | 1 | | | 0.8 | phosphate (tetrahydrate) |
| | | 1 | | | 0.9 | hexametaphosphate |
| | | 1 | | | 1 | ~Sodium polyphosphate |
| | | 1 | | | 1 | ~Sodium trimetaphosphate |
| | | 1 | | | 1 | ~Sodium tripolyphosphate |
| | | 1 | | | 1 | ~Tetrapotassium phosphate |
| | | 1 | | | 1 | ~Tetrasodium pyrophosphate |

| | | | | | |
|---|---|---|---|---|---|
| | | | 1 | 0.8 | phate (dihydrate) |
| | | | 1 | 1 | ~Tricalcium phosphate |
| | | | 1 | 1 | ~Trimagnesium phosphate |
| | | | 1 | 1 | ~Tripotassium phosphate |
| | | | 1 | 1 | ~Trisodium phosphate |
| 3.0E-04 | I | V | 1 | 1 | Phosphine |
| 1.0E-02 | I | | 1 | 1 | Phosphoric Acid |
| | | V | 1 | 1 | Phosphorus, White |
| | | | | | Phthalates |
| | | | 1 | 0.1 | 0.8 | ~Bis(2-ethylhexyl)phthalate |
| | | | 1 | 0.1 | 0.9 | ~Butyl Benzyl Phthalate |
| | | | 1 | 0.1 | 0.9 | ~Butylphthalyl Butylglycolate |
| | | | 1 | 0.1 | 0.9 | ~Dibutyl Phthalate |
| | | | 1 | 0.1 | 1 | ~Diethyl Phthalate |
| | | V | 1 | | 1 | ~Dimethylterephthalate |
| | | | 1 | 0.1 | 0 | ~Octyl Phthalate, di-N- |
| | | | 1 | 0.1 | 1 | ~Phthalic Acid, P- |
| 2.0E-02 | C | | 1 | 0.1 | 1 | ~Phthalic Anhydride |
| | | | 1 | 0.1 | 1 | Picloram |
| | | | 1 | 0.1 | 1 | dinitrophenol) |
| | | | 1 | 0.1 | 1 | Trinitrophenol) |
| | | | 1 | 0.1 | 0.9 | Pirimiphos, Methyl |
| | | | 1 | 0.1 | 0 | Polybrominated Biphenyls |
| | | | | | | (PCBs) |
| | | V | 1 | 0.14 | 0 | ~Aroclor 1016 |
| | | V | 1 | 0.14 | 1 | ~Aroclor 1221 |
| | | V | 1 | 0.14 | 1 | ~Aroclor 1232 |
| | | V | 1 | 0.14 | 0.7 | ~Aroclor 1242 |
| | | V | 1 | 0.14 | 0 | ~Aroclor 1248 |
| | | V | 1 | 0.14 | 0.5 | ~Aroclor 1254 |
| | | V | 1 | 0.14 | 0 | ~Aroclor 1260 |
| | | V | 1 | 0.14 | 0.7 | ~Aroclor 5460 |
| | | V | 1 | 0.14 | 0.5 | ~Aroclor 1254 |
| 1.3E-03 | E | V | 1 | 0.14 | 0 | 2,3,3',4,4',5,5'- (PCB 189) |
| 1.3E-03 | E | V | 1 | 0.14 | 0 | 2,3',4,4',5,5'- (PCB 167) |
| 1.3E-03 | E | V | 1 | 0.14 | 0 | 2,3,3',4,4',5'- (PCB 157) |
| 1.3E-03 | E | V | 1 | 0.14 | 0 | 2,3,3',4,4',5- (PCB 156) |
| 1.3E-06 | E | V | 1 | 0.14 | 0.1 | 3,3',4,4',5,5'- (PCB 169) |
| 1.3E-03 | E | V | 1 | 0.14 | 0.4 | 2',3,4,4',5- (PCB 123) |
| 1.3E-03 | E | V | 1 | 0.14 | 0.3 | 2,3',4,4',5- (PCB 118) |
| 1.3E-03 | E | V | 1 | 0.14 | 0.5 | 2,3,3',4,4'- (PCB 105) |
| 1.3E-03 | E | V | 1 | 0.14 | 0.4 | 2,3,4,4',5- (PCB 114) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4.0E-07 | E | V | | 1 | 0.14 | 0.4 | 3,3',4,4',5- (PCB 126) |
| | | V | | 1 | 0.14 | 0.7 | (high risk) |
| | | V | | 1 | 0.14 | 0.7 | (high risk) |
| | | V | | 1 | 0.14 | 0.7 | (low risk) |
| | | V | | 1 | 0.14 | 0.7 | (lowest risk) |
| 4.0E-04 | E | | | 1 | 0.14 | 0.6 | 3,3',4,4'- (PCB 77) |
| 1.3E-04 | E | V | | 1 | 0.14 | 0.7 | 3,4,4',5- (PCB 81) |
| 6.0E-04 | I | | | 1 | 0.1 | 0 | (PMDI) |
| | | | | | | | Hydrocarbons (PAHs) |
| | | V | | 1 | 0.13 | 1 | ~Acenaphthene |
| | | V | | 1 | 0.13 | 1 | ~Acenaphthene |
| | | V | | 1 | 0.13 | 1 | ~Anthracene |
| | | V | M | 1 | 0.13 | 1 | ~Benz[a]anthracene |
| | | | | 1 | 0.13 | 0.9 | ~Benzo(j)fluoranthene |
| | | | M | 1 | 0.13 | 1 | ~Benzo[a]pyrene |
| | | | M | 1 | 0.13 | 1 | ~Benzo[a]pyrene |
| | | | M | 1 | 0.13 | 1 | ~Benzo[b]fluoranthene |
| | | V | | 1 | 0.13 | 1 | ~Pyrene |
| | | | M | 1 | 0.13 | 0.9 | ~Benzo[k]fluoranthene |
| | | V | | 1 | 0.13 | 1 | ~Chloronaphthalene, Beta- |
| | | | M | 1 | 0.13 | 1 | ~Chrysene |
| | | | M | 1 | 0.13 | 0.6 | ~Dibenz[a,h]anthracene |
| | | | | 1 | 0.13 | 0.3 | ~Dibenzo(a,e)pyrene |
| | | | M | 1 | 0.13 | 0.9 | , 7,12- |
| | | | | 1 | 0.13 | 1 | ~Fluoranthene |
| | | V | | 1 | 0.13 | 1 | ~Fluorene |
| | | | M | 1 | 0.13 | 0.6 | ~Indeno[1,2,3-cd]pyrene |
| | | V | | 1 | 0.13 | 3.9E+02 | 1 | ~Methylnaphthalene, 1- |
| | | V | | 1 | 0.13 | 1 | ~Methylnaphthalene, 2- |
| 3.0E-03 | I | V | | 1 | 0.13 | 1 | ~Naphthalene |
| | | | | 1 | 0.13 | 0.9 | ~Nitropyrene, 4- |
| | | V | | 1 | 0.13 | 1 | ~Pyrene |
| | | V | | 1 | 0.13 | 1 | ~Pyrene |
| | | | | 1 | 0.1 | 1 | Sulfonate |
| | | | | 1 | 0.1 | 0.9 | Prochloraz |
| | | V | | 1 | | 0.8 | Profluralin |
| | | | | 1 | 0.1 | 1 | Prometon |
| | | | | 1 | 0.1 | 0.9 | Prometryn |
| | | | | 1 | 0.1 | 1 | Propachlor |
| | | | | 1 | 0.1 | 1 | Propanil |
| | | | | 1 | 0.1 | 0.8 | Propargite |
| | | V | | 1 | 1.1E+05 | 1 | Propargyl Alcohol |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 0.1 | | 1 | Propazine |
| | | | | 1 | 0.1 | | 1 | Propham |
| | | | | 1 | 0.1 | | 0.9 | Propiconazole |
| 8.0E-03 | I | V | | 1 | | 3.3E+04 | 1 | Propionaldehyde |
| 1.0E+00 | X | V | | 1 | | 2.6E+02 | 1 | Propyl benzene |
| 3.0E+00 | C | V | | 1 | | 3.5E+02 | 1 | Propylene |
| | | | | 1 | 0.1 | | 1 | Propylene Glycol |
| 2.7E-04 | A | | | 1 | 0.1 | | 1 | Propylene Glycol Dinitrate |
| 2.0E+00 | I | V | | 1 | | 1.1E+05 | 1 | Monomethyl Ether |
| 3.0E-02 | I | V | | 1 | | 7.8E+04 | 1 | Propylene Oxide |
| | | | | 1 | 0.1 | | 0.9 | Propyzamide |
| | | V | | 1 | | 5.3E+05 | 1 | Pyridine |
| | | | | 1 | 0.1 | | 0.9 | Quinalphos |
| | | | | 1 | 0.1 | | 1 | Quinoline |
| | | | | 1 | 0.1 | | 0.9 | Quizalofop-ethyl |
| 3.0E-02 | A | | | 1 | | | 0 | Refractory Ceramic Fibers |
| | | | | 1 | 0.1 | | 0.7 | Resmethrin |
| | | V | | 1 | | | 0.8 | Ronnel |
| | | | | 1 | 0.1 | | 0.9 | Rotenone |
| | | | M | 1 | 0.1 | | 1 | Safrole |
| | | | | 1 | | | 1 | Selenious Acid |
| 2.0E-02 | C | | | 1 | | | 1 | Selenium |
| 2.0E-02 | C | | | 1 | | | 1 | Selenium Sulfide |
| | | | | 1 | 0.1 | | 0.9 | Sethoxydim |
| 3.0E-03 | C | | | 1 | | | 1 | Silica (crystalline, respirable) |
| | | | | 0.04 | | | 1 | Silver |
| | | | | 1 | 0.1 | | 1 | Simazine |
| | | | | 1 | 0.1 | | 1 | Sodium Acifluorfen |
| | | | | 1 | | | 1 | Sodium Azide |
| 2.0E-04 | C | | M | 0.025 | | | 1 | Sodium Dichromate |
| | | | | 1 | 0.1 | | 1 | Diethyldithiocarbamate |
| 1.3E-02 | C | | | 1 | | | 1 | Sodium Fluoride |
| | | | | 1 | 0.1 | | 1 | Sodium Fluoroacetate |
| | | | | 1 | | | 1 | Sodium Metavanadate |
| | | | | 1 | | | 1 | Sodium Tungstate |
| | | | | 1 | | | 1 | Sodium Tungstate Dihydrate |
| | | | | 1 | 0.1 | | 0.9 | Stirofos (Tetrachlorovinphos) |
| 2.0E-04 | C | | M | 0.025 | | | 1 | Strontium Chromate |
| | | | | 1 | | | 1 | Strontium, Stable |
| | | | | 1 | 0.1 | | 1 | Strychnine |
| 1.0E+00 | I | V | | 1 | | 8.7E+02 | 1 | Styrene |
| | | | | 1 | 0.1 | | 1 | Trimer |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2.0E-03 | X | | 1 | 0.1 | 1 | Sulfolane |
| | | | 1 | 0.1 | 0.9 | chlorobenzene), 1,1'- |
| 1.0E-03 | C | V | 1 | | 1 | Sulfur Trioxide |
| 1.0E-03 | C | | 1 | | 1 | Sulfuric Acid |
| | | | 1 | 0.1 | 0.8 | methylethyl ester |
| | | | 1 | 0.1 | 0.9 | TCMTB |
| | | | 1 | 0.1 | 1 | Tebuthiuron |
| | | | 1 | 0.1 | 0.7 | Temephos |
| | | | 1 | 0.1 | 1 | Terbacil |
| | | V | 1 | 3.1E+01 | 0.9 | Terbufos |
| | | | 1 | 0.1 | 0.9 | Terbutryn |
| | | | 1 | 0.1 | 0.6 | 2,2',4,4'- (BDE-47) |
| | | V | 1 | | 1 | Tetrachlorobenzene, 1,2,4,5- |
| | | V | 1 | 6.8E+02 | 1 | Tetrachloroethane, 1,1,1,2- |
| | | V | 1 | 1.9E+03 | 1 | Tetrachloroethane, 1,1,2,2- |
| 4.0E-02 | I | V | 1 | 1.7E+02 | 1 | Tetrachloroethene |
| | | | 1 | 0.1 | 0.9 | Tetrachlorophenol, 2,3,4,6- |
| | | V | 1 | | 0.9 | alpha, alpha- |
| | | | 1 | 0.1 | 0.9 | Dithiopyrophosphate |
| 8.0E+01 | I | V | 1 | 2.1E+03 | 1 | Tetrafluoroethane, 1,1,1,2- |
| | | | 1 | 0.00065 | 1 | e) |
| | | | 1 | | 0.9 | Thallic Oxide |
| | | | 1 | | 1 | Thallium (I) Nitrate |
| | | | 1 | | 1 | Thallium (Soluble Salts) |
| | | V | 1 | | 1 | Thallium Acetate |
| | | V | 1 | | 1 | Thallium Carbonate |
| | | | 1 | | 1 | Thallium Chloride |
| | | | 1 | | 1 | Thallium Selenite |
| | | | 1 | | 0.9 | Thallium Sulfate |
| | | | 1 | 0.1 | 1 | Thifensulfuron-methyl |
| | | | 1 | 0.1 | 0.9 | Thiobencarb |
| | | | 1 | 0.0075 | 1 | Thiodiglycol |
| | | | 1 | 0.1 | 1 | Thiofanox |
| | | | 1 | 0.1 | 1 | Thiophanate, Methyl |
| | | | 1 | 0.1 | 1 | Thiram |
| | | | 1 | | 1 | Tin |
| 1.0E-04 | A | V | 1 | | 1 | Titanium Tetrachloride |
| 5.0E+00 | I | V | 1 | 8.2E+02 | 1 | Toluene |
| 5.0E+00 | I | V | 1 | 8.2E+02 | 1 | Toluene |
| 8.0E-06 | C | V | 1 | | 1 | Toluene-2,4-diisocyante |
| | | | 1 | 0.1 | 1 | Toluene-2,5-diamine |
| 8.0E-06 | C | V | 1 | 1.7E+03 | 1 | Toluene-2,6-diisocyante |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1 | 0.1 | 1 | 2-) |
| | | | | 1 | 0.1 | 1 | Toluidine, p- |
| | | V | | 1 | 3.4E-01 | 1 | High) |
| 6.0E-01 | P | V | | 1 | 1.4E+02 | 1 | Low) |
| 1.0E-01 | P | V | | 1 | 6.9E+00 | 1 | Medium) |
| | | | | 1 | 0.1 | 1 | High) |
| 3.0E-02 | P | V | | 1 | 1.8E+03 | 1 | Low) |
| 3.0E-03 | P | V | | 1 | | 1 | Medium) |
| | | | | 1 | 0.1 | 0.8 | Toxaphene |
| | | | | 1 | 0.1 | 0.5 | Tralomethrin |
| | | V | | 1 | | 0.9 | Tri-n-butyltin |
| | | | | 1 | 0.1 | 1 | Triacetin |
| | | | | 1 | 0.1 | 1 | Triadimefon |
| | | V | | 1 | | 0.9 | Triallate |
| | | | | 1 | 0.1 | 1 | Triasulfuron |
| | | | | 1 | 0.1 | 1 | Tribenuron-methyl |
| | | V | | 1 | | 0.9 | Tribromobenzene, 1,2,4- |
| | | | | 1 | 0.1 | 0.9 | Tributyl Phosphate |
| | | | | 1 | 0.1 | 0 | Tributyltin Compounds |
| | | | | 1 | 0.1 | 1 | Tributyltin Oxide |
| 3.0E+01 | H | V | | 1 | 9.1E+02 | 1 | trifluoroethane, 1,1,2- |
| | | | | 1 | 0.1 | 1 | Trichloroacetic Acid |
| | | | | 1 | 0.1 | 1 | Trichloroaniline HCl, 2,4,6- |
| | | | | 1 | 0.1 | 1 | Trichloroaniline, 2,4,6- |
| | | V | | 1 | | 1 | Trichlorobenzene, 1,2,3- |
| 2.0E-03 | P | V | | 1 | 4.0E+02 | 1 | Trichlorobenzene, 1,2,4- |
| 5.0E+00 | I | V | | 1 | 6.4E+02 | 1 | Trichloroethane, 1,1,1- |
| 2.0E-04 | X | V | | 1 | 2.2E+03 | 1 | Trichloroethane, 1,1,2- |
| 2.0E-03 | I | V | M | 1 | 6.9E+02 | 1 | Trichloroethene |
| | | V | | 1 | 1.2E+03 | 1 | Trichlorofluoromethane |
| | | | | 1 | 0.1 | 1 | Trichlorophenol, 2,4,5- |
| | | | | 1 | 0.1 | 1 | Trichlorophenol, 2,4,6- |
| | | | | 1 | 0.1 | 0.9 | 2,4,5- |
| | | | | 1 | 0.1 | 0.9 | acid, -2,4,5 |
| | | V | | 1 | 1.3E+03 | 1 | Trichloropropane, 1,1,2- |
| 3.0E-04 | I | V | M | 1 | 1.4E+03 | 1 | Trichloropropane, 1,2,3- |
| 3.0E-04 | P | V | | 1 | 3.1E+02 | 1 | Trichloropropene, 1,2,3- |
| | | | | 1 | 0.1 | 0.8 | Tricresyl Phosphate (TCP) |
| | | | | 1 | 0.1 | 0.8 | Tridiphane |
| 7.0E-03 | I | V | | 1 | 2.8E+04 | 1 | Triethylamine |
| | | | | 1 | 0.1 | 1 | Triethylene Glycol |
| 2.0E+01 | P | V | | 1 | 4.8E+03 | 1 | Trifluoroethane, 1,1,1- |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | V | | 1 | | | 0.8 | Trifluralin |
| | | | | 1 | 0.1 | | 1 | Trimethyl Phosphate |
| 5.0E-03 | P | V | | 1 | | 2.9E+02 | 1 | Trimethylbenzene, 1,2,3- |
| 7.0E-03 | P | V | | 1 | | 2.2E+02 | 1 | Trimethylbenzene, 1,2,4- |
| | | V | | 1 | | 1.8E+02 | 1 | Trimethylbenzene, 1,3,5- |
| | | V | | 1 | | 3.0E+01 | 1 | Trimethylpentene, 2,4,4- |
| | | | | 1 | 0.019 | | 1 | Trinitrobenzene, 1,3,5- |
| | | | | 1 | 0.032 | | 1 | Trinitrotoluene, 2,4,6- |
| | | | | 1 | 0.1 | | 1 | Triphenylphosphine Oxide |
| | | | | 1 | 0.1 | | 0.9 | Phosphate |
| | | | | 1 | 0.1 | | 1 | propyl)phosphate |
| | | V | | 1 | | 4.7E+02 | 1 | dibromopropyl)phosphate |
| | | | | 1 | 0.1 | | 1 | Tris(2-chloroethyl)phosphate |
| | | | | 1 | 0.1 | | 0 | Tris(2-ethylhexyl)phosphate |
| | | | | 1 | | | 1 | Tungsten |
| 4.0E-05 | A | | | 1 | | | 1 | Uranium (Soluble Salts) |
| | | | M | 1 | 0.1 | | 1 | Urethane |
| 7.0E-06 | P | | | 0.026 | | | 1 | Vanadium Pentoxide |
| 1.0E-04 | A | | | 0.026 | | | 1 | Vanadium and Compounds |
| | | V | | 1 | | | 1 | Vernolate |
| | | | | 1 | 0.1 | | 0.9 | Vinclozolin |
| 2.0E-01 | I | V | | 1 | | 2.8E+03 | 1 | Vinyl Acetate |
| 1.0E-03 | I | V | | 1 | | 2.5E+03 | 1 | Vinyl Bromide |
| 1.0E-01 | I | V | M | 1 | | 3.9E+03 | 1 | Vinyl Chloride |
| | | | | 1 | 0.1 | | 1 | Warfarin |
| 1.0E-01 | S | V | | 1 | | 3.9E+02 | 1 | Xylene, P- |
| 1.0E-01 | S | V | | 1 | | 3.9E+02 | 1 | Xylene, m- |
| 1.0E-01 | S | V | | 1 | | 4.3E+02 | 1 | Xylene, o- |
| 1.0E-01 | I | V | | 1 | | 2.6E+02 | 1 | Xylenes |
| | | | | 1 | | | 1 | Zinc Phosphide |
| | | | | 1 | | | 1 | Zinc and Compounds |
| | | | | 1 | 0.1 | | 1 | Zineb |
| | | | | 1 | | | 1 | Zirconium |

1E-06

Q=1.0

Csat (See User Guide)

| aminant | Screening Levels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CAS No. | (mg/kg) | key | (mg/kg) | key | (ug/m$^3$) | key | (ug/m$^3$) | key |
| 30560-19-1 | 6.2E+01 | c** | 2.6E+02 | c* | | | | |
| 75-07-0 | 1.1E+01 | c** | 4.9E+01 | c** | 1.3E+00 | c** | 5.6E+00 | c** |
| 34256-82-1 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 67-64-1 | 6.1E+04 | n | 6.7E+05 | nms | 3.2E+04 | n | 1.4E+05 | n |
| 75-86-5 | 2.8E+06 | nm | 1.2E+07 | nm | 2.1E+00 | n | 8.8E+00 | n |
| 75-05-8 | 8.1E+02 | n | 3.4E+03 | n | 6.3E+01 | n | 2.6E+02 | n |
| 98-86-2 | 7.8E+03 | ns | 1.2E+05 | nms | | | | |
| 53-96-3 | 1.4E-01 | c | 6.0E-01 | c | 2.2E-03 | c | 9.4E-03 | c |
| 107-02-8 | 1.4E-01 | n | 6.0E-01 | n | 2.1E-02 | n | 8.8E-02 | n |
| 79-06-1 | 2.4E-01 | c | 4.6E+00 | c | 1.0E-02 | c | 1.2E-01 | c |
| 79-10-7 | 9.9E+01 | n | 4.2E+02 | n | 1.0E+00 | n | 4.4E+00 | n |
| 107-13-1 | 2.5E-01 | c* | 1.1E+00 | c* | 4.1E-02 | c* | 1.8E-01 | c* |
| 111-69-3 | 8.5E+06 | nm | 3.6E+07 | nm | 6.3E+00 | n | 2.6E+01 | n |
| 15972-60-8 | 9.7E+00 | c* | 4.1E+01 | c | | | | |
| 116-06-3 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 1646-88-4 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 1646-87-3 | | | | | | | | |
| 309-00-2 | 3.9E-02 | c* | 1.8E-01 | c | 5.7E-04 | c | 2.5E-03 | c |
| 107-18-6 | 3.5E+00 | n | 1.5E+01 | n | 1.0E-01 | n | 4.4E-01 | n |
| 107-05-1 | 7.2E-01 | c** | 3.2E+00 | c** | 4.70E-01 | c** | 2.00E+00 | c** |
| 7429-90-5 | 7.7E+04 | n | 1.1E+06 | nm | 5.2E+00 | n | 2.2E+01 | n |
| 20859-73-8 | 3.1E+01 | n | 4.7E+02 | n | | | | |
| 834-12-8 | 5.7E+02 | n | 7.4E+03 | n | | | | |
| 92-67-1 | 2.6E-02 | c | 1.1E-01 | c | 4.7E-04 | c | 2.0E-03 | c |
| 591-27-5 | 5.1E+03 | n | 6.6E+04 | n | | | | |
| 123-30-8 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 33089-61-1 | 1.6E+02 | n | 2.1E+03 | n | | | | |
| 7664-41-7 | | | | | 1.0E+02 | n | 4.4E+02 | n |
| 7773-06-0 | 1.6E+04 | n | 2.3E+05 | nm | | | | |
| 75-85-4 | 8.2E+01 | n | 3.4E+02 | n | 3.1E+00 | n | 1.3E+01 | n |
| 62-53-3 | 9.5E+01 | c** | 4.0E+02 | c* | 1.0E+00 | n | 4.4E+00 | n |
| 84-65-1 | 1.4E+01 | c** | 5.7E+01 | c* | | | | |
| 7440-36-0 | 3.1E+01 | n | 4.7E+02 | n | | | | |
| 1314-60-9 | 3.9E+01 | n | 5.8E+02 | n | | | | |
| 1332-81-6 | 3.1E+01 | n | 4.7E+02 | n | | | | |
| 1309-64-4 | 2.8E+05 | nm | 1.2E+06 | nm | 2.1E-01 | n | 8.8E-01 | n |
| 7440-38-2 | 6.8E-01 | c*R | 3.0E+00 | cR | 6.5E-04 | c* | 2.9E-03 | c* |
| 7784-42-1 | 2.7E-01 | n | 4.1E+00 | n | 5.2E-02 | n | 2.2E-01 | n |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3337-71-1 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 1912-24-9 | 2.4E+00 | c | 1.0E+01 | c | | | | |
| 492-80-8 | 6.2E-01 | c | 2.6E+00 | c | 1.1E-02 | c | 4.9E-02 | c |
| 65195-55-3 | 2.5E+01 | n | 3.3E+02 | n | | | | |
| 86-50-0 | 1.9E+02 | n | 2.5E+03 | n | 1.0E+01 | n | 4.4E+01 | n |
| 103-33-3 | 5.6E+00 | c | 2.6E+01 | c | 9.1E-02 | c | 4.0E-01 | c |
| 123-77-3 | 8.6E+03 | n | 4.0E+04 | n | 7.3E-03 | n | 3.1E-02 | n |
| 7440-39-3 | 1.5E+04 | n | 2.2E+05 | nm | 5.2E-01 | n | 2.2E+00 | n |
| 10294-40-3 | 3.0E-01 | c | 6.2E+00 | c | 6.8E-06 | c | 8.2E-05 | c |
| 1861-40-1 | 2.3E+04 | n | 3.5E+05 | nm | | | | |
| 17804-35-2 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 83055-99-6 | 1.3E+04 | n | 1.6E+05 | nm | | | | |
| 25057-89-0 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 100-52-7 | 1.7E+02 | c* | 8.2E+02 | c | | | | |
| 71-43-2 | 1.2E+00 | c* | 5.1E+00 | c* | 3.6E-01 | c* | 1.6E+00 | c* |
| 6369-59-1 | 5.4E+00 | c** | 2.3E+01 | c* | | | | |
| 108-98-5 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 92-87-5 | 5.3E-04 | c | 1.0E-02 | c | 1.5E-05 | c | 1.8E-04 | c |
| 65-85-0 | 2.5E+05 | nm | 3.3E+06 | nm | | | | |
| 98-07-7 | 5.3E-02 | c | 2.5E-01 | c | | | | |
| 100-51-6 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 100-44-7 | 1.1E+00 | c* | 4.8E+00 | c* | 5.7E-02 | c* | 2.5E-01 | c* |
| 7440-41-7 | 1.6E+02 | n | 2.3E+03 | n | 1.2E-03 | c* | 5.1E-03 | c* |
| 42576-02-3 | 5.7E+02 | n | 7.4E+03 | n | | | | |
| 82657-04-3 | 9.5E+02 | n | 1.2E+04 | n | | | | |
| 92-52-4 | 4.7E+01 | n | 2.0E+02 | n | 4.2E-01 | n | 1.8E+00 | n |
| 108-60-1 | 3.1E+03 | ns | 4.7E+04 | ns | | | | |
| 111-91-1 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 111-44-4 | 2.3E-01 | c | 1.0E+00 | c | 8.5E-03 | c | 3.7E-02 | c |
| 542-88-1 | 8.3E-05 | c | 3.6E-04 | c | 4.5E-05 | c | 2.0E-04 | c |
| 80-05-7 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 7440-42-8 | 1.6E+04 | n | 2.3E+05 | nm | 2.1E+01 | n | 8.8E+01 | n |
| 10294-34-5 | 1.6E+05 | nm | 2.3E+06 | nm | 2.1E+01 | n | 8.8E+01 | n |
| 7637-07-2 | 3.1E+03 | n | 4.7E+04 | n | 1.4E+01 | n | 5.7E+01 | n |
| 15541-45-4 | 9.9E-01 | c | 4.7E+00 | c | | | | |
| 107-04-0 | 2.6E-02 | c | 1.1E-01 | c | 4.7E-03 | c | 2.0E-02 | c |
| 108-86-1 | 2.9E+02 | n | 1.8E+03 | ns | 6.3E+01 | n | 2.6E+02 | n |
| 74-97-5 | 1.5E+02 | n | 6.3E+02 | n | 4.2E+01 | n | 1.8E+02 | n |
| 75-27-4 | 2.9E-01 | c | 1.3E+00 | c | 7.6E-02 | c | 3.3E-01 | c |
| 75-25-2 | 1.9E+01 | c* | 8.6E+01 | c | 2.6E+00 | c | 1.1E+01 | c |
| 74-83-9 | 6.8E+00 | n | 3.0E+01 | n | 5.2E+00 | n | 2.2E+01 | n |
| 2104-96-3 | 3.9E+02 | n | 5.8E+03 | n | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1689-84-5 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 1689-99-2 | 1.6E+03 | n | 2.3E+04 | n | | | | |
| 106-99-0 | 5.8E-02 | c* | 2.6E-01 | c* | 9.4E-02 | c* | 4.1E-01 | c* |
| 71-36-3 | 7.8E+03 | ns | 1.2E+05 | nms | | | | |
| 78-92-2 | 1.3E+05 | nms | 1.5E+06 | nms | 3.1E+04 | n | 1.3E+05 | n |
| 2008-41-5 | 3.9E+03 | n | 5.8E+04 | n | | | | |
| 25013-16-5 | 2.7E+03 | c | 1.1E+04 | c | 4.9E+01 | c | 2.2E+02 | c |
| 128-37-0 | 1.5E+02 | c | 6.4E+02 | c | | | | |
| 104-51-8 | 3.9E+03 | ns | 5.8E+04 | ns | | | | |
| 135-98-8 | 7.8E+03 | ns | 1.2E+05 | nms | | | | |
| 98-06-6 | 7.8E+03 | ns | 1.2E+05 | nms | | | | |
| 75-60-5 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 7440-43-9 | 7.1E+01 | n | 9.8E+02 | n | | | | |
| 7440-43-9 | | | | | 1.6E-03 | c** | 6.8E-03 | c** |
| 13765-19-0 | 3.0E-01 | c | 6.2E+00 | c | 6.8E-06 | c | 8.2E-05 | c |
| 105-60-2 | 3.1E+04 | n | 4.0E+05 | nm | 2.3E+00 | n | 9.6E+00 | n |
| 2425-06-1 | 3.6E+00 | c* | 1.5E+01 | c | 6.5E-02 | c | 2.9E-01 | c |
| 133-06-2 | 2.4E+02 | c* | 1.0E+03 | c | 4.3E+00 | c | 1.9E+01 | c |
| 63-25-2 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 1563-66-2 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 75-15-0 | 7.7E+02 | ns | 3.5E+03 | ns | 7.3E+02 | n | 3.1E+03 | n |
| 56-23-5 | 6.5E-01 | c | 2.9E+00 | c | 4.7E-01 | c | 2.0E+00 | c |
| 463-58-1 | 6.7E+01 | n | 2.8E+02 | n | 1.0E+02 | n | 4.4E+02 | n |
| 55285-14-8 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 5234-68-4 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 1306-38-3 | 1.3E+06 | nm | 5.4E+06 | nm | 9.4E-01 | n | 3.9E+00 | n |
| 302-17-0 | 7.8E+03 | n | 1.2E+05 | nm | | | | |
| 133-90-4 | 9.5E+02 | n | 1.2E+04 | n | | | | |
| 118-75-2 | 1.3E+00 | c | 5.7E+00 | c | | | | |
| 12789-03-6 | 1.7E+00 | c* | 7.7E+00 | c* | 2.8E-02 | c* | 1.2E-01 | c* |
| 5103-71-9 | 1.7E+00 | c* | 7.7E+00 | c* | 2.8E-02 | c* | 1.2E-01 | c* |
| 5566-34-7 | 1.7E+00 | c* | 7.7E+00 | c* | 2.8E-02 | c* | 1.2E-01 | c* |
| 143-50-0 | 5.4E-02 | c | 2.3E-01 | c | 6.1E-04 | c | 2.7E-03 | c |
| 470-90-6 | 4.4E+01 | n | 5.7E+02 | n | | | | |
| 90982-32-4 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 7782-50-5 | 1.8E-01 | n | 7.8E-01 | n | 1.5E-01 | n | 6.4E-01 | n |
| 10049-04-4 | 2.3E+03 | n | 3.4E+04 | n | 2.1E-01 | n | 8.8E-01 | n |
| 7758-19-2 | 2.3E+03 | n | 3.5E+04 | n | | | | |
| 75-68-3 | 5.4E+04 | ns | 2.3E+05 | nms | 5.2E+04 | n | 2.2E+05 | n |
| 126-99-8 | 1.0E-02 | c | 4.4E-02 | c | 9.4E-03 | c | 4.1E-02 | c |
| 3165-93-3 | 1.2E+00 | c | 5.0E+00 | c | | | | |
| 95-69-2 | 5.4E+00 | c* | 2.3E+01 | c | 3.6E-02 | c | 1.6E-01 | c |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 107-20-0 | 2.6E+00 | c | 1.2E+01 | c | | | | |
| 79-11-8 | | | | | | | | |
| 532-27-4 | 4.3E+04 | n | 1.8E+05 | nm | 3.1E-02 | n | 1.3E-01 | n |
| 106-47-8 | 2.7E+00 | c* | 1.1E+01 | c | | | | |
| 108-90-7 | 2.8E+02 | n | 1.3E+03 | ns | 5.2E+01 | n | 2.2E+02 | n |
| 510-15-6 | 4.9E+00 | c | 2.1E+01 | c | 9.1E-02 | c | 4.0E-01 | c |
| 74-11-3 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 98-56-6 | 2.1E+02 | n | 2.5E+03 | ns | 3.1E+02 | n | 1.3E+03 | n |
| 109-69-3 | 3.1E+03 | ns | 4.7E+04 | ns | | | | |
| 75-45-6 | 4.9E+04 | ns | 2.1E+05 | nms | 5.2E+04 | n | 2.2E+05 | n |
| 107-07-3 | 1.6E+03 | n | 2.3E+04 | n | | | | |
| 67-66-3 | 3.2E-01 | c | 1.4E+00 | c | 1.2E-01 | c | 5.3E-01 | c |
| 74-87-3 | 1.1E+02 | n | 4.6E+02 | n | 9.4E+01 | n | 3.9E+02 | n |
| 107-30-2 | 2.0E-02 | c | 8.9E-02 | c | 4.1E-03 | c | 1.8E-02 | c |
| 88-73-3 | 1.8E+00 | c | 7.7E+00 | c | 1.0E-02 | n | 4.4E-02 | n |
| 100-00-5 | 9.0E+00 | c** | 3.8E+01 | c* | 2.1E+00 | n | 8.8E+00 | n |
| 95-57-8 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 76-06-2 | 2.0E+00 | n | 8.2E+00 | n | 4.2E-01 | n | 1.8E+00 | n |
| 1897-45-6 | 1.8E+02 | c** | 7.4E+02 | c* | 3.2E+00 | c | 1.4E+01 | c |
| 95-49-8 | 1.6E+03 | ns | 2.3E+04 | ns | | | | |
| 106-43-4 | 1.6E+03 | ns | 2.3E+04 | ns | | | | |
| 54749-90-5 | 2.3E-03 | c | 9.6E-03 | c | 4.1E-05 | c | 1.8E-04 | c |
| 101-21-3 | 1.3E+04 | n | 1.6E+05 | nm | | | | |
| 2921-88-2 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 5598-13-0 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 64902-72-3 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 1861-32-1 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 60238-56-4 | 5.1E+01 | n | 6.6E+02 | n | | | | |
| 16065-83-1 | 1.2E+05 | nm | 1.8E+06 | nm | | | | |
| 18540-29-9 | 3.0E-01 | c | 6.3E+00 | c | 1.2E-05 | c | 1.5E-04 | c |
| 7440-47-3 | | | | | | | | |
| 74115-24-5 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 7440-48-4 | 2.3E+01 | n | 3.5E+02 | n | 3.1E-04 | c* | 1.4E-03 | c* |
| 8007-45-2 | | | | | 1.6E-03 | c | 2.0E-02 | c |
| 7440-50-8 | 3.1E+03 | n | 4.7E+04 | n | | | | |
| 108-39-4 | 3.2E+03 | n | 4.1E+04 | n | 6.3E+02 | n | 2.6E+03 | n |
| 95-48-7 | 3.2E+03 | n | 4.1E+04 | n | 6.3E+02 | n | 2.6E+03 | n |
| 106-44-5 | 6.3E+03 | n | 8.2E+04 | n | 6.3E+02 | n | 2.6E+03 | n |
| 59-50-7 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 1319-77-3 | 6.3E+03 | n | 8.2E+04 | n | 6.3E+02 | n | 2.6E+03 | n |
| 123-73-9 | 3.7E-01 | c | 1.7E+00 | c | | | | |
| 98-82-8 | 1.9E+03 | ns | 9.9E+03 | ns | 4.2E+02 | n | 1.8E+03 | n |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 135-20-6 | 2.5E+00 | c | 1.0E+01 | c | 4.5E-02 | c | 1.9E-01 | c |
| 21725-46-2 | 6.5E-01 | c | 2.7E+00 | c | | | | |
| 592-01-8 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 544-92-3 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 57-12-5 | 2.3E+01 | n | 1.5E+02 | n | 8.3E-01 | n | 3.5E+00 | n |
| 460-19-5 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 506-68-3 | 7.0E+03 | n | 1.1E+05 | nm | | | | |
| 506-77-4 | 3.9E+03 | n | 5.8E+04 | n | | | | |
| 74-90-8 | 2.3E+01 | n | 1.5E+02 | n | 8.3E-01 | n | 3.5E+00 | n |
| 151-50-8 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 506-61-6 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 506-64-9 | 7.8E+03 | n | 1.2E+05 | nm | | | | |
| 143-33-9 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| NA | 1.6E+01 | n | 2.3E+02 | n | | | | |
| 463-56-9 | 1.6E+01 | n | 2.3E+02 | n | | | | |
| 557-21-1 | 3.9E+03 | n | 5.8E+04 | n | | | | |
| 110-82-7 | 6.5E+03 | ns | 2.7E+04 | ns | 6.3E+03 | n | 2.6E+04 | n |
| 108-87-2 | 6.5E+03 | ns | 2.7E+04 | ns | 6.3E+03 | n | 2.6E+04 | n |
| 87-84-3 | 2.4E+01 | c | 1.0E+02 | c | | | | |
| 108-94-1 | 2.8E+04 | ns | 1.3E+05 | nms | 7.3E+02 | n | 3.1E+03 | n |
| 110-83-8 | 3.1E+02 | ns | 3.1E+03 | ns | 1.0E+03 | n | 4.4E+03 | n |
| 108-91-8 | 1.6E+04 | n | 2.3E+05 | nm | | | | |
| 68359-37-5 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 68085-85-8 | 6.2E+02 | n | 8.1E+03 | n | | | | |
| 52315-07-8 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 66215-27-8 | 4.7E+02 | n | 6.2E+03 | n | | | | |
| 72-54-8 | 2.3E+00 | c | 9.6E+00 | c | 4.1E-02 | c | 1.8E-01 | c |
| 72-55-9 | 2.0E+00 | c | 9.3E+00 | c | 2.9E-02 | c | 1.3E-01 | c |
| 50-29-3 | 1.9E+00 | c* | 8.5E+00 | c* | 2.9E-02 | c | 1.3E-01 | c |
| 75-99-0 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 1596-84-5 | 3.0E+01 | c | 1.3E+02 | c | 5.5E-01 | c | 2.4E+00 | c |
| 1163-19-5 | 4.4E+02 | n | 3.3E+03 | c** | | | | |
| 8065-48-3 | 2.5E+00 | n | 3.3E+01 | n | | | | |
| 103-23-1 | 4.5E+02 | c* | 1.9E+03 | c | | | | |
| 2303-16-4 | 8.9E+00 | c | 3.8E+01 | c | | | | |
| 333-41-5 | 4.4E+01 | n | 5.7E+02 | n | | | | |
| 132-65-0 | 7.8E+02 | n | 1.2E+04 | n | | | | |
| 96-12-8 | 5.3E-03 | c | 6.4E-02 | c | 1.7E-04 | c | 2.0E-03 | c |
| 108-36-1 | 3.1E+01 | n | 4.7E+02 | ns | | | | |
| 106-37-6 | 7.8E+02 | n | 1.2E+04 | n | | | | |
| 124-48-1 | 8.3E+00 | c | 3.9E+01 | c | | | | |

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|---|---|---|---|---|---|---|---|---|
| 106-93-4 | 3.6E-02 | c | 1.6E-01 | c | 4.7E-03 | c | 2.0E-02 | c |
| 74-95-3 | 2.4E+01 | n | 9.9E+01 | n | 4.2E+00 | n | 1.8E+01 | n |
| NA | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 1918-00-9 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 764-41-0 | 2.1E-03 | c | 9.4E-03 | c | 6.7E-04 | c | 2.9E-03 | c |
| 1476-11-5 | 7.4E-03 | c | 3.2E-02 | c | 6.7E-04 | c | 2.9E-03 | c |
| 110-57-6 | 7.4E-03 | c | 3.2E-02 | c | 6.7E-04 | c | 2.9E-03 | c |
| 79-43-6 | 1.1E+01 | c* | 4.6E+01 | c* | | | | |
| 95-50-1 | 1.8E+03 | ns | 9.3E+03 | ns | 2.1E+02 | n | 8.8E+02 | n |
| 106-46-7 | 2.6E+00 | c | 1.1E+01 | c | 2.6E-01 | c | 1.1E+00 | c |
| 91-94-1 | 1.2E+00 | c | 5.1E+00 | c | 8.3E-03 | c | 3.6E-02 | c |
| 90-98-2 | 5.7E+02 | n | 7.4E+03 | n | | | | |
| 75-71-8 | 8.7E+01 | n | 3.7E+02 | n | 1.0E+02 | n | 4.4E+02 | n |
| 75-34-3 | 3.6E+00 | c | 1.6E+01 | c | 1.8E+00 | c | 7.7E+00 | c |
| 107-06-2 | 4.6E-01 | c* | 2.0E+00 | c* | 1.1E-01 | c* | 4.7E-01 | c* |
| 75-35-4 | 2.3E+02 | n | 1.0E+03 | n | 2.1E+02 | n | 8.8E+02 | n |
| 156-59-2 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 156-60-5 | 1.6E+03 | n | 2.3E+04 | ns | | | | |
| 120-83-2 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 94-75-7 | 7.0E+02 | n | 9.6E+03 | n | | | | |
| 94-82-6 | 5.1E+02 | n | 6.6E+03 | n | | | | |
| 78-87-5 | 1.0E+00 | c* | 4.4E+00 | c* | 2.8E-01 | c* | 1.2E+00 | c* |
| 142-28-9 | 1.6E+03 | ns | 2.3E+04 | ns | | | | |
| 616-23-9 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 542-75-6 | 1.8E+00 | c* | 8.2E+00 | c* | 7.0E-01 | c* | 3.1E+00 | c* |
| 62-73-7 | 1.9E+00 | c* | 7.9E+00 | c* | 3.4E-02 | c* | 1.5E-01 | c* |
| 141-66-2 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 77-73-6 | 1.3E+00 | n | 5.4E+00 | n | 3.1E-01 | n | 1.3E+00 | n |
| 60-57-1 | 3.4E-02 | c* | 1.4E-01 | c | 6.1E-04 | c | 2.7E-03 | c |
| NA | | | | | 9.4E-03 | c | 4.1E-02 | c |
| 111-42-2 | 1.3E+02 | n | 1.6E+03 | n | 2.1E-01 | n | 8.8E-01 | n |
| 112-34-5 | 1.9E+03 | n | 2.4E+04 | n | 1.0E-01 | n | 4.4E-01 | n |
| 111-90-0 | 3.8E+03 | n | 4.8E+04 | n | 3.1E-01 | n | 1.3E+00 | n |
| 617-84-5 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 56-53-1 | 1.6E-03 | c | 6.6E-03 | c | 2.8E-05 | c | 1.2E-04 | c |
| 43222-48-6 | 5.1E+03 | n | 6.6E+04 | n | | | | |
| 35367-38-5 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 75-37-6 | 4.8E+04 | ns | 2.0E+05 | nms | 4.2E+04 | n | 1.8E+05 | n |
| 94-58-6 | 9.9E+00 | c | 4.5E+01 | c | 2.2E-01 | c | 9.4E-01 | c |
| 108-20-3 | 2.2E+03 | n | 9.4E+03 | ns | 7.3E+02 | n | 3.1E+03 | n |
| 1445-75-6 | 6.3E+03 | ns | 9.3E+04 | ns | | | | |
| 55290-64-7 | 1.3E+03 | n | 1.6E+04 | n | | | | |

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|---|---|---|---|---|---|---|---|---|
| 60-51-5 | 1.3E+01 | n | 1.6E+02 | n | | | | |
| 119-90-4 | 3.4E-01 | c | 1.4E+00 | c | | | | |
| 756-79-6 | 3.2E+02 | c* | 1.4E+03 | c* | | | | |
| 60-11-7 | 1.2E-01 | c | 5.0E-01 | c | 2.2E-03 | c | 9.4E-03 | c |
| 21436-96-4 | 9.4E-01 | c | 4.0E+00 | c | | | | |
| 95-68-1 | 2.7E+00 | c* | 1.1E+01 | c | | | | |
| 121-69-7 | 1.6E+02 | n | 2.3E+03 | ns | | | | |
| 119-93-7 | 4.9E-02 | c | 2.1E-01 | c | | | | |
| 68-12-2 | 2.6E+03 | n | 1.5E+04 | n | 3.1E+01 | n | 1.3E+02 | n |
| 57-14-7 | 5.7E-02 | n | 2.4E-01 | n | 2.1E-03 | n | 8.8E-03 | n |
| 540-73-8 | 8.8E-04 | c | 4.1E-03 | c | 1.8E-05 | c | 7.7E-05 | c |
| 105-67-9 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 576-26-1 | 3.8E+01 | n | 4.9E+02 | n | | | | |
| 95-65-8 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 513-37-1 | 1.1E+00 | c | 4.8E+00 | c | 2.2E-01 | c | 9.4E-01 | c |
| 53[illegible]-5[illegible]-1 | 5.1E+0[illegible] | n | 6.6E+01 | [illegible] | | | | |
| 13[illegible]-89-5 | 1.3E+0[illegible] | n | 1.6E+03 | [illegible] | | | | |
| 52[illegible]-29-0 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 99-65-0 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 100-25-4 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 51[illegible]28-5 | 1.[illegible]E+02 | n | 1.[illegible]E+03 | [illegible] | | | | |
| NA | 8.0E-01 | c | 3.[illegible]E+00 | c | | | | |
| 12[illegible]-14-2 | 1.[illegible]E+00 | c* | 7.[illegible]E+00 | c | 3.2E-02 | c | 1.4E-01 | c |
| 606-20-2 | 3.6E-01 | c* | 1.5E+00 | c | | | | |
| 35572-78-2 | 1.5E+02 | n | 2.3E+03 | n | | | | |
| 19406-51-0 | 1.5E+02 | n | 2.3E+03 | n | | | | |
| 25321-14-6 | 1.2E+00 | c* | 5.1E+00 | c | | | | |
| 88-85-7 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 123-91-1 | 5.3E+00 | c | 2.4E+01 | c | 5.6E-01 | c* | 2.5E+00 | c* |
| | | | | | | | | |
| NA | 1.0E-04 | c | 4.7E-04 | c | 2.2E-06 | c | 9.4E-06 | c |
| 1746-01-6 | 4.8E-06 | c* | 2.2E-05 | c* | 7.4E-08 | c | 3.2E-07 | c |
| 1746-01-6 | 4.8E-06 | c* | 2.2E-05 | c* | 7.4E-08 | c | 3.2E-07 | c |
| 957-51-7 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 127-63-9 | 5.1E+01 | n | 6.6E+02 | n | | | | |
| 122-39-4 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 122-66-7 | 6.8E-01 | c | 2.9E+00 | c | 1.3E-02 | c | 5.6E-02 | c |
| 85-00-7 | 1.4E+02 | n | 1.8E+03 | n | | | | |
| 1937-37-7 | 7.6E-02 | c | 3.2E-01 | c | 2.0E-05 | c | 8.8E-05 | c |
| 2602-46-2 | 7.3E-02 | c | 3.1E-01 | c | 2.0E-05 | c | 8.8E-05 | c |
| 16071-86-6 | 8.1E-02 | c | 3.4E-01 | c | 2.0E-05 | c | 8.8E-05 | c |
| 298-04-4 | 2.5E+00 | n | 3.3E+01 | n | | | | |

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HQ=1.0

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|---|---|---|---|---|---|---|---|---|
| 505-29-3 | 7.8E+02 | n | 1.2E+04 | n | | | | |
| 330-54-1 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 2439-10-3 | 2.5E+02 | n | 3.3E+03 | n | | | | |
| 759-94-4 | 2.0E+03 | n | 2.9E+04 | n | | | | |
| 115-29-7 | 4.7E+02 | n | 7.0E+03 | n | | | | |
| 959-98-8 | 4.7E+02 | n | 7.0E+03 | n | | | | |
| 33213-65-9 | 4.7E+02 | n | 7.0E+03 | n | | | | |
| 145-73-3 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 72-20-8 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 7421-93-4 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 53494-70-5 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 106-89-8 | 1.9E+01 | n | 8.2E+01 | n | 1.0E+00 | n | 4.4E+00 | n |
| 106-88-7 | 1.6E+02 | n | 6.7E+02 | n | 2.1E+01 | n | 8.8E+01 | n |
| 111-77-3 | 2.5E+03 | n | 3.3E+04 | n | | | | |
| 16672-87-0 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 563-12-2 | 3.2E+01 | n | 4.1E+02 | n | | | | |
| 111-15-9 | 2.6E+03 | n | 1.4E+04 | n | 6.3E+01 | n | 2.6E+02 | n |
| 110-80-5 | 5.2E+03 | n | 4.7E+04 | n | 2.1E+02 | n | 8.8E+02 | n |
| 141-78-6 | 6.2E+02 | n | 2.6E+03 | n | 7.3E+01 | n | 3.1E+02 | n |
| 140-88-5 | 4.7E+01 | n | 2.1E+02 | n | 8.3E+00 | n | 3.5E+01 | n |
| 75-00-3 | 1.4E+04 | ns | 5.7E+04 | ns | 1.0E+04 | n | 4.4E+04 | n |
| 60-29-7 | 1.6E+04 | ns | 2.3E+05 | nms | | | | |
| 97-63-2 | 1.8E+03 | ns | 7.6E+03 | ns | 3.1E+02 | n | 1.3E+03 | n |
| 2104-64-5 | 6.3E-01 | n | 8.2E+00 | n | | | | |
| 100-41-4 | 5.8E+00 | c | 2.5E+01 | c | 1.1E+00 | c | 4.9E+00 | c |
| 109-78-4 | 4.4E+03 | n | 5.7E+04 | n | | | | |
| 107-15-3 | 7.0E+03 | n | 1.1E+05 | nm | | | | |
| 107-21-1 | 1.3E+05 | nm | 1.6E+06 | nm | 4.2E+02 | n | 1.8E+03 | n |
| 111-76-2 | 6.3E+03 | n | 8.2E+04 | n | 1.7E+03 | n | 7.0E+03 | n |
| 75-21-8 | 1.8E-01 | c | 7.9E-01 | c | 3.2E-02 | c | 1.4E-01 | c |
| 96-45-7 | 5.1E+00 | n | 5.1E+01 | c** | 2.2E-01 | c | 9.4E-01 | c |
| 151-56-4 | 2.7E-03 | c | 1.2E-02 | c | 1.5E-04 | c | 6.5E-04 | c |
| 84-72-0 | 1.9E+05 | nm | 2.5E+06 | nm | | | | |
| 22224-92-6 | 1.6E+01 | n | 2.1E+02 | n | | | | |
| 39515-41-8 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 51630-58-1 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 2164-17-2 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 16984-48-8 | 3.1E+03 | n | 4.7E+04 | n | 1.4E+01 | n | 5.7E+01 | n |
| 7782-41-4 | 4.7E+03 | n | 7.0E+04 | n | 1.4E+01 | n | 5.7E+01 | n |
| 59756-60-4 | 5.1E+03 | n | 6.6E+04 | n | | | | |
| 56425-91-3 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 85509-19-9 | 4.4E+01 | n | 5.7E+02 | n | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 66332-96-5 | 3.8E+03 | n | 4.9E+04 | n | | | | |
| 69409-94-5 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 133-07-3 | 1.6E+02 | c* | 6.6E+02 | c | | | | |
| 72178-02-0 | 2.9E+00 | c | 1.2E+01 | c | | | | |
| 944-22-9 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 50-00-0 | 1.7E+01 | c* | 7.3E+01 | c* | 2.2E-01 | c* | 9.4E-01 | c* |
| 64-18-6 | 2.9E+01 | n | 1.2E+02 | n | 3.1E-01 | n | 1.3E+00 | n |
| 39148-24-8 | 1.9E+05 | nm | 2.5E+06 | nm | | | | |
| 132-64-9 | 7.3E+01 | n | 1.0E+03 | n | | | | |
| 110-00-9 | 7.3E+01 | n | 1.0E+03 | n | | | | |
| [illegible]-99-[illegible] | 1.8E+04 | n | 9.4E+04 | n | 2.1E+03 | n | 8.8E+03 | n |
| [illegible]7-45-8 | 1.4E-01 | c | 6.0E-01 | c | | | | |
| [illegible]8-01-1 | 2.1E+02 | n | 2.6E+03 | n | 2.2E+01 | n | 2.2E+02 | n |
| 531-82-8 | 3.6E-01 | c | 1.5E+00 | c | 6.5E-03 | c | 2.9E-02 | c |
| 60568-05-0 | 1.8E+01 | c | 7.7E+01 | c | 3.3E-01 | c | 1.4E+00 | c |
| 77182-82-2 | 2.5E+01 | n | 3.3E+02 | n | | | | |
| [illegible]11-30-[illegible] | 1.1E+05 | nm | 4.8E+05 | nm | 3.3E-02 | n | 3.5E-01 | n |
| [illegible]65-34-[illegible] | 2.3E+01 | n | 2.1E+02 | n | 1.0E+00 | n | 4.4E+00 | n |
| 1071-83-6 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 113-00-8 | 7.8E+02 | n | 1.2E+04 | n | | | | |
| 50-01-1 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 69806-40-2 | 3.2E+00 | n | 4.1E+01 | n | | | | |
| 76-44-8 | 1.3E-01 | c | 6.3E-01 | c | 2.2E-03 | c | 9.4E-03 | c |
| 1024-57-3 | 7.0E-02 | c* | 3.3E-01 | c* | 1.1E-03 | c | 4.7E-03 | c |
| 87-82-1 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 68631-49-2 | 1.3E+01 | n | 1.6E+02 | n | | | | |
| 118-74-1 | 2.1E-01 | c | 9.6E-01 | c | 6.1E-03 | c | 2.7E-02 | c |
| 87-68-3 | 1.2E+00 | c* | 5.3E+00 | c | 1.3E-01 | c | 5.6E-01 | c |
| 319-84-6 | 8.6E-02 | c | 3.6E-01 | c | 1.6E-03 | c | 6.8E-03 | c |
| 319-85-7 | 3.0E-01 | c | 1.3E+00 | c | 5.3E-03 | c | 2.3E-02 | c |
| 58-89-9 | 5.7E-01 | c* | 2.5E+00 | c | 9.1E-03 | c | 4.0E-02 | c |
| 608-73-1 | 3.0E-01 | c | 1.3E+00 | c | 5.5E-03 | c | 2.4E-02 | c |
| 77-47-4 | 1.8E+00 | n | 7.5E+00 | n | 2.1E-01 | n | 8.8E-01 | n |
| 67-72-1 | 1.8E+00 | c* | 8.0E+00 | c* | 2.6E-01 | c | 1.1E+00 | c |
| 70-30-4 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 121-82-4 | 6.1E+00 | c* | 2.8E+01 | c | | | | |
| 822-06-0 | 3.1E+00 | n | 1.3E+01 | n | 1.0E-02 | n | 4.4E-02 | n |
| 680-31-9 | 2.5E+01 | n | 3.3E+02 | n | | | | |
| 110-54-3 | 6.1E+02 | ns | 2.5E+03 | ns | 7.3E+02 | n | 3.1E+03 | n |
| 124-04-9 | 1.3E+05 | nm | 1.6E+06 | nm | | | | |
| 591-78-6 | 2.0E+02 | n | 1.3E+03 | n | 3.1E+01 | n | 1.3E+02 | n |

TR = 1 E-06

THQ = 1.0

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 51235-04-2 | 2.1E+03 | n | 2.7E+04 | n | | | | |
| 78587-05-0 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 67485-29-4 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 302-01-2 | 2.3E-01 | c | 1.1E+00 | c | 5.7E-04 | c* | 2.5E-03 | c* |
| 10034-93-2 | 2.3E-01 | c | 1.1E+00 | c | 5.7E-04 | c | 2.5E-03 | c |
| 7647-01-0 | 2.8E+07 | nm | 1.2E+08 | nm | 2.1E+01 | n | 8.8E+01 | n |
| 7664-39-3 | 3.1E+03 | n | 4.7E+04 | n | 1.5E+01 | n | 6.1E+01 | n |
| 7783-06-4 | 2.8E+06 | nm | 1.2E+07 | nm | 2.1E+00 | n | 8.8E+00 | n |
| 123-31-9 | 9.0E+00 | c | 3.8E+01 | c | | | | |
| 35554-44-0 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 81335-37-7 | 1.6E+04 | n | 2.1E+05 | nm | | | | |
| 81335-77-5 | 1.6E+04 | n | 2.1E+05 | nm | | | | |
| 7553-56-2 | 7.8E+02 | n | 1.2E+04 | n | | | | |
| 36734-19-7 | 2.5E+03 | n | 3.3E+04 | n | | | | |
| 7439-89-6 | 5.5E+04 | n | 8.2E+05 | nm | | | | |
| 78-83-1 | 2.3E+04 | ns | 3.5E+05 | nms | | | | |
| 78-59-1 | 5.7E+02 | c* | 2.4E+03 | c* | 2.1E+03 | n | 8.8E+03 | n |
| 33820-53-0 | 1.2E+03 | n | 1.8E+04 | n | | | | |
| 67-63-0 | 5.6E+03 | n | 2.4E+04 | n | 2.1E+02 | n | 8.8E+02 | n |
| 1832-54-8 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 82558-50-7 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| NA | 4.3E+08 | nm | 1.8E+09 | nm | 3.1E+02 | n | 1.3E+03 | n |
| 77501-63-4 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 7758-97-6 | 3.0E-01 | c | 6.2E+00 | c | 6.8E-06 | c | 8.2E-05 | c |
| 7446-27-7 | 8.2E+01 | c | 3.8E+02 | c | 2.3E-01 | c | 1.0E+00 | c |
| 301-04-2 | 6.4E+01 | c | 2.7E+02 | c | 2.3E-01 | c | 1.0E+00 | c |
| 7439-92-1 | 4.0E+02 | L | 8.0E+02 | L | 1.5E-01 | L | | |
| 1335-32-6 | 6.4E+01 | c | 2.7E+02 | c | 2.3E-01 | c | 1.0E+00 | c |
| 78-00-2 | 7.8E-03 | n | 1.2E-01 | n | | | | |
| 541-25-3 | 3.9E-01 | n | 5.8E+00 | n | | | | |
| 330-55-2 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 7439-93-2 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 94-74-6 | 3.2E+01 | n | 4.1E+02 | n | | | | |
| 94-81-5 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 93-65-2 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 121-75-5 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 108-31-6 | 6.3E+03 | n | 8.0E+04 | n | 7.3E-01 | n | 3.1E+00 | n |
| 123-33-1 | 3.2E+04 | n | 4.1E+05 | nm | | | | |
| 109-77-3 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 8018-01-7 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 12427-38-2 | 3.2E+02 | n | 4.1E+03 | n | | | | |

TR = 1E-06

THQ = 1.0

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7439-96-5 | | | | | | | | |
| 7439-96-5 | 1.8E+03 | n | 2.6E+04 | n | 5.2E-02 | n | 2.2E-01 | n |
| 950-10-7 | 5.7E+00 | n | 7.4E+01 | n | | | | |
| 24307-26-4 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 7487-94-7 | 2.8E+01 | n | 3.5E+02 | n | 1.1E-01 | n | 1.3E+00 | n |
| 7439-97-6 | 1.1E+01 | ns | 4.6E+01 | ns | 3.1E-01 | n | 1.3E+00 | n |
| 22967-92-6 | 7.8E+00 | n | 1.2E+02 | n | | | | |
| 62-38-4 | 5.1E+00 | n | 6.6E+01 | n | | | | |
| 150-50-5 | 2.3E+00 | n | 3.5E+01 | n | | | | |
| 78-48-8 | 1.9E+00 | n | 2.5E+01 | n | | | | |
| 57837-19-1 | 3.8E+03 | n | 4.9E+04 | n | | | | |
| 126-98-7 | 7.5E+00 | n | 1.0E+02 | n | 3.1E+01 | n | 1.3E+02 | n |
| 10265-92-6 | 3.2E+00 | n | 4.1E+01 | n | | | | |
| 67-56-1 | 1.2E+05 | nms | 1.2E+06 | nms | 2.1E+04 | n | 8.8E+04 | n |
| 950-37-8 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 16752-77-5 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 99-59-2 | 1.1E+01 | c | 4.7E+01 | c | 2.0E-01 | c | 8.8E-01 | c |
| 72-43-5 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 110-49-6 | 1.1E+02 | n | 5.1E+02 | n | 1.0E+00 | n | 4.4E+00 | n |
| 109-86-4 | 3.3E+02 | n | 3.5E+03 | n | 2.1E+01 | n | 8.8E+01 | n |
| 79-20-9 | 7.8E+04 | ns | 1.2E+06 | nms | | | | |
| 96-33-3 | 1.5E+02 | n | 6.1E+02 | n | 2.1E+01 | n | 8.8E+01 | n |
| 78-93-3 | 2.7E+04 | n | 1.9E+05 | nms | 5.2E+03 | n | 2.2E+04 | n |
| 60-34-4 | 1.4E-01 | c** | 6.2E-01 | c** | 2.8E-03 | c** | 1.2E-02 | c** |
| 108-10-1 | 3.3E+04 | ns | 1.4E+05 | nms | 3.1E+03 | n | 1.3E+04 | n |
| 624-83-9 | 4.6E+00 | n | 1.9E+01 | n | 1.0E+00 | n | 4.4E+00 | n |
| 80-62-6 | 4.4E+03 | ns | 1.9E+04 | ns | 7.3E+02 | n | 3.1E+03 | n |
| 298-00-0 | 1.6E+01 | n | 2.1E+02 | n | | | | |
| 993-13-5 | 3.8E+03 | n | 4.9E+04 | n | | | | |
| 25013-15-4 | 3.2E+02 | n | 2.6E+03 | ns | 4.2E+01 | n | 1.8E+02 | n |
| 66-27-3 | 5.5E+00 | c | 2.3E+01 | c | 1.0E-01 | c | 4.4E-01 | c |
| 1634-04-4 | 4.7E+01 | c | 2.1E+02 | c | 1.1E+01 | c | 4.7E+01 | c |
| 615-45-2 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 99-55-8 | 6.0E+01 | c* | 2.6E+02 | c* | | | | |
| 70-25-7 | 6.5E-02 | c | 2.8E-01 | c | 1.2E-03 | c | 5.1E-03 | c |
| 636-21-5 | 4.2E+00 | c | 1.8E+01 | c | 7.6E-02 | c | 3.3E-01 | c |
| 124-58-3 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 74612-12-7 | 1.3E+01 | n | 1.6E+02 | n | | | | |
| 615-50-9 | 5.4E+00 | c** | 2.3E+01 | c* | | | | |
| 56-49-5 | 5.5E-03 | c | 1.0E-01 | c | 1.6E-04 | c | 1.9E-03 | c |
| 75-09-2 | 5.7E+01 | c** | 1.0E+03 | c** | 1.0E+02 | c** | 1.2E+03 | c** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 101-14-4 | 1.2E+00 | c | 2.3E+01 | c* | 2.4E-03 | c | 2.9E-02 | c |
| 101-61-1 | 1.2E+01 | c | 5.0E+01 | c | 2.2E-01 | c | 9.4E-01 | c |
| 101-77-9 | 3.4E-01 | c | 1.4E+00 | c | 6.1E-03 | c | 2.7E-02 | c |
| 101-68-8 | 8.5E+05 | nm | 3.6E+06 | nm | 6.3E-01 | n | 2.6E+00 | n |
| 98-83-9 | 5.5E+03 | ns | 8.2E+04 | ns | | | | |
| 51218-45-2 | 9.5E+03 | n | 1.2E+05 | nm | | | | |
| 21087-64-9 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 74223-64-6 | 1.6E+04 | n | 2.1E+05 | nm | | | | |
| 8012-95-1 | 2.3E+05 | nms | 3.5E+06 | nms | | | | |
| 2385-85-5 | 3.6E-02 | c | 1.7E-01 | c | 5.5E-04 | c | 2.4E-03 | c |
| 2212-67-1 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 7439-98-7 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 10599-90-3 | 7.8E+03 | n | 1.2E+05 | nm | | | | |
| 100-61-8 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 88671-89-0 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 74-31-7 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 300-76-5 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 64742-95-6 | 2.3E+03 | n | 3.5E+04 | n | 1.0E+02 | n | 4.4E+02 | n |
| 91-59-8 | 3.0E-01 | c | 1.3E+00 | c | | | | |
| 15299-99-7 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 373-02-4 | 6.7E+02 | n | 8.1E+03 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 3333-67-3 | 6.7E+02 | n | 8.1E+03 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 13463-39-3 | 8.2E+02 | n | 1.1E+04 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 12054-48-7 | 8.2E+02 | n | 1.1E+04 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 1313-99-1 | 8.4E+02 | n | 1.2E+04 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| NA | 8.2E+02 | n | 1.1E+04 | n | 1.2E-02 | c** | 5.1E-02 | c** |
| 7440-02-0 | 1.5E+03 | n | 2.2E+04 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 12035-72-2 | 4.1E-01 | c | 1.9E+00 | c | 5.8E-03 | c** | 2.6E-02 | c** |
| 1271-28-9 | 6.7E+02 | n | 8.1E+03 | n | 1.1E-02 | c** | 4.7E-02 | c** |
| 14797-55-8 | 1.3E+05 | nm | 1.9E+06 | nm | | | | |
| NA | | | | | | | | |
| 14797-65-0 | 7.8E+03 | n | 1.2E+05 | nm | | | | |
| 88-74-4 | 6.3E+02 | n | 8.0E+03 | n | 5.2E-02 | n | 2.2E-01 | n |
| 100-01-6 | 2.7E+01 | c** | 1.1E+02 | c* | 6.3E+00 | n | 2.6E+01 | n |
| 98-95-3 | 5.1E+00 | c* | 2.2E+01 | c* | 7.0E-02 | c | 3.1E-01 | c |
| 9004-70-0 | 1.9E+08 | nm | 2.5E+09 | nm | | | | |
| 67-20-9 | 4.4E+03 | n | 5.7E+04 | n | | | | |
| 59-87-0 | 4.2E-01 | c | 1.8E+00 | c | 7.6E-03 | c | 3.3E-02 | c |
| 55-63-0 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 56-88-7 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 7[illegible]-52-5 | 5.4E+00 | c* | 2.1E+01 | c* | 3.2E-01 | c* | 1.4E+00 | c* |
| 79-46-9 | 1.4E-02 | c | 6.0E-02 | c | 1.0E-03 | c | 4.5E-03 | c |

TR = 1 E-06

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|---|---|---|---|---|---|---|---|---|
| 759-73-9 | 4.5E-03 | c | 8.5E-02 | c | 1.3E-04 | c | 1.6E-03 | c |
| 684-93-5 | 1.0E-03 | c | 1.9E-02 | c | 3.0E-05 | c | 3.6E-04 | c |
| 924-16-3 | 9.9E-02 | c | 4.6E-01 | c | 1.8E-03 | c | 7.7E-03 | c |
| 621-64-7 | 7.8E-02 | c | 3.3E-01 | c | 1.4E-03 | c | 6.1E-03 | c |
| 1116-54-7 | 1.9E-01 | c | 8.2E-01 | c | 3.5E-03 | c | 1.5E-02 | c |
| 55-18-5 | 8.1E-04 | c | 1.5E-02 | c | 2.4E-05 | c | 2.9E-04 | c |
| 62-75-9 | 2.0E-03 | c | 3.4E-02 | c | 7.2E-05 | c | 8.8E-04 | c |
| 86-30-6 | 1.1E+02 | c | 4.7E+02 | c | 1.1E+00 | c | 4.7E+00 | c |
| 10595-95-6 | 2.0E-02 | c | 9.1E-02 | c | 4.5E-04 | c | 1.9E-03 | c |
| 59-89-2 | 8.1E-02 | c | 3.4E-01 | c | 1.5E-03 | c | 6.5E-03 | c |
| 100-75-4 | 5.8E-02 | c | 2.4E-01 | c | 1.0E-03 | c | 4.5E-03 | c |
| 930-55-2 | 2.6E-01 | c | 1.1E+00 | c | 4.6E-03 | c | 2.0E-02 | c |
| 99-08-1 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 88-72-2 | 3.2E+00 | c* | 1.5E+01 | c* | | | | |
| 99-99-0 | 3.4E+01 | c** | 1.4E+02 | c* | | | | |
| 111-84-2 | 1.1E+01 | ns | 7.2E+01 | ns | 2.1E+01 | n | 8.8E+01 | n |
| 27314-13-2 | 2.5E+03 | n | 3.3E+04 | n | | | | |
| 32536-52-0 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 2691-41-0 | 3.9E+03 | n | 5.7E+04 | n | | | | |
| 152-16-9 | 1.3E+02 | n | 1.6E+03 | n | | | | |
| 19044-88-3 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 19666-30-9 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 23135-22-0 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 42874-03-3 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 76738-62-0 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 1910-42-5 | 2.8E+02 | n | 3.7E+03 | n | | | | |
| 56-38-2 | 3.8E+02 | n | 4.9E+03 | n | | | | |
| 1114-71-2 | 3.9E+03 | n | 5.8E+04 | n | | | | |
| 40487-42-1 | 2.5E+03 | n | 3.3E+04 | n | | | | |
| 32534-81-9 | 1.6E+02 | ns | 2.3E+03 | ns | | | | |
| 60348-60-9 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 608-93-5 | 6.3E+01 | n | 9.3E+02 | n | | | | |
| 76-01-7 | 7.7E+00 | c | 3.6E+01 | c | | | | |
| 82-68-8 | 2.7E+00 | c* | 1.3E+01 | c | | | | |
| 87-86-5 | 1.0E+00 | c | 4.0E+00 | c | 5.5E-01 | c | 2.4E+00 | c |
| 78-11-5 | 1.3E+02 | n | 5.7E+02 | c** | | | | |
| 109-66-0 | 8.1E+02 | ns | 3.4E+03 | ns | 1.0E+03 | n | 4.4E+03 | n |
| | | | | | | | | |
| 7790-98-9 | 5.5E+01 | n | 8.2E+02 | n | | | | |
| 7791-03-9 | 5.5E+01 | n | 8.2E+02 | n | | | | |
| 14797-73-0 | 5.5E+01 | n | 8.2E+02 | n | | | | |
| 7778-74-7 | 5.5E+01 | n | 8.2E+02 | n | | | | |

THQ=1.0

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|---|---|---|---|---|---|---|---|---|
| 7601-89-0 | 5.5E+01 | n | 8.2E+02 | n | | | | |
| 375-73-5 | 1.6E+03 | n | 2.3E+04 | n | | | | |
| 52645-53-1 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 62-44-2 | 2.5E+02 | c | 1.0E+03 | c | 4.5E+00 | c | 1.9E+01 | c |
| 13684-63-4 | 1.6E+04 | n | 2.1E+05 | nm | | | | |
| 108-95-2 | 1.9E+04 | n | 2.5E+05 | nm | 2.1E+02 | n | 8.8E+02 | n |
| 114-26-1 | 2.5E+02 | n | 3.3E+03 | n | | | | |
| 92-84-2 | 3.2E+01 | n | 4.1E+02 | n | | | | |
| 108-45-2 | 3.8E+02 | n | 4.9E+03 | n | | | | |
| 95-54-5 | 1.2E+01 | c | 4.9E+01 | c | | | | |
| 106-50-3 | 1.2E+04 | n | 1.6E+05 | nm | | | | |
| 90-43-7 | 2.8E+02 | c | 1.2E+03 | c | | | | |
| 298-02-2 | 1.3E+01 | n | 1.6E+02 | n | | | | |
| 75-44-5 | 3.1E-01 | n | 1.3E+00 | n | 3.1E-01 | n | 1.3E+00 | n |
| 732-11-6 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| | | | | | | | | |
| 13776-88-0 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 68333-79-9 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7790-76-3 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7783-28-0 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7757-93-9 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7782-75-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7758-11-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7558-79-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 13530-50-2 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7722-76-1 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7758-23-8 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7757-86-0 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7778-77-0 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7558-80-7 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 8017-16-1 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 13845-36-8 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7758-16-9 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7785-88-8 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 10279-59-1 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 18905-76-7 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 10124-56-8 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 68515-31-1 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7785-84-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7758-29-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7320-34-5 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7722-88-5 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |

TR=1E-06

THQ=1.0

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|---|---|---|---|---|---|---|---|---|
| 15136-87-5 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7758-87-4 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7757-87-1 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7778-53-2 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7601-54-9 | 3.8E+06 | nm | 5.7E+07 | nm | | | | |
| 7803-51-2 | 2.3E+01 | n | 3.5E+02 | n | 3.1E-01 | n | 1.3E+00 | n |
| 7664-38-2 | 3.0E+06 | nm | 2.9E+07 | nm | 1.0E+01 | n | 4.4E+01 | n |
| 7723-14-0 | 1.6E+00 | n | 2.3E+01 | n | | | | |
| 117-81-7 | 3.9E+01 | c* | 1.6E+02 | c | 1.2E+00 | c | 5.1E+00 | c |
| 85-68-7 | 2.9E+02 | c* | 1.2E+03 | c | | | | |
| 85-70-1 | 6.3E+04 | n | 8.2E+05 | nm | | | | |
| 84-74-2 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 84-66-2 | 5.1E+04 | n | 6.6E+05 | nm | | | | |
| 120-61-6 | 7.8E+03 | n | 1.2E+05 | nm | | | | |
| 117-84-0 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 100-21-0 | 6.3E+04 | n | 8.2E+05 | nm | | | | |
| 85-44-9 | 1.3E+05 | nm | 1.6E+06 | nm | 2.1E+01 | n | 8.8E+01 | n |
| 1918-02-1 | 4.4E+03 | n | 5.7E+04 | n | | | | |
| 96-91-3 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 88-89-1 | 5.7E+01 | n | 7.4E+02 | n | | | | |
| 29232-93-7 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 59536-65-1 | 1.8E-02 | c* | 7.7E-02 | c* | 3.3E-04 | c | 1.4E-03 | c |
| 12674-11-2 | 4.1E+00 | n | 2.7E+01 | c** | 1.4E-01 | c | 6.1E-01 | c |
| 11104-28-2 | 2.0E-01 | c | 8.3E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 11141-16-5 | 1.7E-01 | c | 7.2E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 53469-21-9 | 2.3E-01 | c | 9.5E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 12672-29-6 | 2.3E-01 | c | 9.5E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 11097-69-1 | 2.4E-01 | c** | 9.7E-01 | c* | 4.9E-03 | c | 2.1E-02 | c |
| 11096-82-5 | 2.4E-01 | c | 9.9E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 11126-42-4 | 3.5E+01 | n | 4.4E+02 | n | | | | |
| 11097-69-1 | 2.4E-01 | c** | 9.7E-01 | c* | 4.9E-03 | c | 2.1E-02 | c |
| 39635-31-9 | 1.3E-01 | c* | 5.2E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 52663-72-6 | 1.2E-01 | c* | 5.1E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 69782-90-7 | 1.2E-01 | c* | 5.0E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 38380-08-4 | 1.2E-01 | c* | 5.0E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 32774-16-6 | 1.2E-04 | c* | 5.1E-04 | c* | 2.5E-06 | c | 1.1E-05 | c |
| 65510-44-3 | 1.2E-01 | c* | 4.9E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 31508-00-6 | 1.2E-01 | c* | 4.9E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 32598-14-4 | 1.2E-01 | c* | 4.9E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |
| 74472-37-0 | 1.2E-01 | c* | 5.0E-01 | c* | 2.5E-03 | c | 1.1E-02 | c |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 57465-28-8 | 3.6E-05 | c* | 1.5E-04 | c* | 7.4E-07 | c | 3.2E-06 | c |
| 1336-36-3 | 2.3E-01 | c | 9.4E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 1336-36-3 | 2.3E-01 | c | 9.4E-01 | c | 4.9E-03 | c | 2.1E-02 | c |
| 1336-36-3 | | | | | 2.8E-02 | c | 1.2E-01 | c |
| 1336-36-3 | | | | | 1.4E-01 | c | 6.1E-01 | c |
| 32598-13-3 | 3.8E-02 | c* | 1.6E-01 | c* | 7.4E-04 | c | 3.2E-03 | c |
| 70362-50-4 | 1.2E-02 | c* | 4.8E-02 | c* | 2.5E-04 | c | 1.1E-03 | c |
| 9016-87-9 | 8.5E+05 | nm | 3.6E+06 | nm | 6.3E-01 | n | 2.6E+00 | n |
| | | | | | | | | |
| 83-32-9 | 3.6E+03 | n | 4.5E+04 | n | | | | |
| 83-32-9 | 3.6E+03 | n | 4.5E+04 | n | | | | |
| 120-12-7 | 1.8E+04 | n | 2.3E+05 | nm | | | | |
| 56-55-3 | 1.6E-01 | c | 2.9E+00 | c | 9.2E-03 | c | 1.1E-01 | c |
| 205-82-3 | 4.2E-01 | c | 1.8E+00 | c | 2.6E-02 | c | 1.1E-01 | c |
| 50-32-8 | 1.6E-02 | c | 2.9E-01 | c | 9.2E-04 | c | 1.1E-02 | c |
| 50-32-8 | 1.6E-02 | c | 2.9E-01 | c | 9.2E-04 | c | 1.1E-02 | c |
| 205-99-2 | 1.6E-01 | c | 2.9E+00 | c | 9.2E-03 | c | 1.1E-01 | c |
| 129-00-0 | 1.8E+03 | n | 2.3E+04 | n | | | | |
| 207-08-9 | 1.6E+00 | c | 2.9E+01 | c | 9.2E-03 | c | 1.1E-01 | c |
| 91-58-7 | 4.8E+03 | n | 6.0E+04 | n | | | | |
| 218-01-9 | 1.6E+01 | c | 2.9E+02 | c | 9.2E-02 | c | 1.1E+00 | c |
| 53-70-3 | 1.6E-02 | c | 2.9E-01 | c | 8.4E-04 | c | 1.0E-02 | c |
| 192-65-4 | 4.2E-02 | c | 1.8E-01 | c | 2.6E-03 | c | 1.1E-02 | c |
| 57-97-6 | 4.6E-04 | c | 8.4E-03 | c | 1.4E-05 | c | 1.7E-04 | c |
| 206-44-0 | 2.4E+03 | n | 3.0E+04 | n | | | | |
| 86-73-7 | 2.4E+03 | n | 3.0E+04 | n | | | | |
| 193-39-5 | 1.6E-01 | c | 2.9E+00 | c | 9.2E-03 | c | 1.1E-01 | c |
| 90-12-0 | 1.8E+01 | c | 7.[illegible]E+01 | c | | | | |
| 91-57-6 | 2.4E+02 | n | 3.[illegible]E+03 | n | | | | |
| 91-20-3 | 3.8E+00 | c | 1.[illegible]E+01 | c* | 8.3E-02 | c* | 3.6E-01 | c* |
| 57835-92-4 | 4.2E-01 | c | 1.8E+00 | c | 2.6E-02 | c | 1.1E-01 | c |
| 129-00-0 | 1.8E+03 | n | 2.3E+04 | n | | | | |
| 129-00-0 | 1.8E+03 | n | 2.3E+04 | n | | | | |
| 29420-49-3 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 67747-09-5 | 3.6E+00 | c | 1.5E+01 | c | | | | |
| 26399-36-0 | 4.7E+02 | n | 7.0E+03 | n | | | | |
| 1610-18-0 | 9.5E+02 | n | 1.2E+04 | n | | | | |
| 7287-19-6 | 2.5E+02 | n | 3.3E+03 | n | | | | |
| 1918-16-7 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 709-98-8 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 2312-35-8 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 107-19-7 | 1.6E+02 | n | 2.3E+03 | n | | | | |

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|---|---|---|---|---|---|---|---|---|
| 139-40-2 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 122-42-9 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 60207-90-1 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 123-38-6 | 7.5E+01 | n | 3.1E+02 | n | 8.3E+00 | n | 3.5E+01 | n |
| 103-65-1 | 3.8E+03 | ns | 2.4E+04 | ns | 1.0E+03 | n | 4.4E+03 | n |
| 115-07-1 | 2.2E+03 | ns | 9.3E+03 | ns | 3.1E+03 | n | 1.3E+04 | n |
| 57-55-6 | 1.3E+06 | nm | 1.6E+07 | nm | | | | |
| 6423-43-4 | 3.9E+05 | nm | 1.6E+06 | nm | 2.8E-01 | n | 1.2E+00 | n |
| 107-98-2 | 4.1E+04 | n | 3.7E+05 | nms | 2.1E+03 | n | 8.8E+03 | n |
| 75-56-9 | 2.1E+00 | c | 9.7E+00 | c | 7.6E-01 | c* | 3.3E+00 | c* |
| 23950-58-5 | 4.7E+03 | n | 6.2E+04 | n | | | | |
| 110-86-1 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 13593-03-8 | 3.2E+01 | n | 4.1E+02 | n | | | | |
| 91-22-5 | 1.8E-01 | c | 7.7E-01 | c | | | | |
| 76578-14-8 | 5.7E+02 | n | 7.4E+03 | n | | | | |
| NA | 4.3E+07 | nm | 1.8E+08 | nm | 3.1E+01 | n | 1.3E+02 | n |
| 10453-86-8 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 299-84-3 | 3.9E+03 | n | 5.8E+04 | n | | | | |
| 83-79-4 | 2.5E+02 | n | 3.3E+03 | n | | | | |
| 94-59-7 | 5.5E-01 | c | 1.0E+01 | c | 1.6E-02 | c | 1.9E-01 | c |
| 7783-00-8 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 7782-49-2 | 3.9E+02 | n | 5.8E+03 | n | 2.1E+01 | n | 8.8E+01 | n |
| 7446-34-6 | 3.9E+02 | n | 5.8E+03 | n | 2.1E+01 | n | 8.8E+01 | n |
| 74051-80-2 | 5.7E+03 | n | 7.4E+04 | n | | | | |
| 7631-86-9 | 4.3E+06 | nm | 1.8E+07 | nm | 3.1E+00 | n | 1.3E+01 | n |
| 7440-22-4 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 122-34-9 | 4.5E+00 | c* | 1.9E+01 | c | | | | |
| 62476-59-9 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 26628-22-8 | 3.1E+02 | n | 4.7E+03 | n | | | | |
| 10588-01-9 | 3.0E-01 | c | 6.2E+00 | c | 6.8E-06 | c | 8.2E-05 | c |
| 148-18-5 | 2.0E+00 | c | 8.5E+00 | c | | | | |
| 7681-49-4 | 3.9E+03 | n | 5.8E+04 | n | 1.4E+01 | n | 5.7E+01 | n |
| 62-74-8 | 1.3E+00 | n | 1.6E+01 | n | | | | |
| 13718-26-8 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 13472-45-2 | 6.3E+01 | n | 9.3E+02 | n | | | | |
| 10213-10-2 | 6.3E+01 | n | 9.3E+02 | n | | | | |
| 961-11-5 | 2.3E+01 | c* | 9.6E+01 | c | | | | |
| 7789-06-2 | 3.0E-01 | c | 6.2E+00 | c | 6.8E-06 | c | 8.2E-05 | c |
| 7440-24-6 | 4.7E+04 | n | 7.0E+05 | nm | | | | |
| 57-24-9 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 100-42-5 | 6.0E+03 | ns | 3.5E+04 | ns | 1.0E+03 | n | 4.4E+03 | n |
| NA | 1.9E+02 | n | 2.5E+03 | n | | | | |

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|---|---|---|---|---|---|---|---|---|
| 126-33-0 | 6.3E+01 | n | 8.2E+02 | n | 2.1E+00 | n | 8.8E+00 | n |
| 80-07-9 | 5.1E+01 | n | 6.6E+02 | n | | | | |
| 7446-11-9 | 1.4E+06 | nm | 6.0E+06 | nm | 1.0E+00 | n | 4.4E+00 | n |
| 7664-93-9 | 1.4E+06 | nm | 6.0E+06 | nm | 1.0E+00 | n | 4.4E+00 | n |
| 140-57-8 | 2.2E+01 | c | 9.2E+01 | c | 4.0E-01 | c | 1.7E+00 | c |
| 21564-17-0 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 34014-18-1 | 4.4E+03 | n | 5.7E+04 | n | | | | |
| 3383-96-8 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 5902-51-2 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 13071-79-9 | 2.0E+00 | n | 2.9E+01 | n | | | | |
| 886-50-0 | 6.3E+01 | n | 8.2E+02 | n | | | | |
| 5436-43-1 | 6.3E+00 | n | 8.2E+01 | n | | | | |
| 95-94-3 | 2.3E+01 | n | 3.5E+02 | n | | | | |
| 630-20-6 | 2.0E+00 | c | 8.8E+00 | c | 3.8E-01 | c | 1.7E+00 | c |
| 79-34-5 | 6.0E-01 | c | 2.7E+00 | c | 4.8E-02 | c | 2.1E-01 | c |
| 127-18-4 | 2.4E+01 | c** | 1.0E+02 | c** | 1.1E+01 | c** | 4.7E+01 | c** |
| 58-90-2 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 5216-25-1 | 3.5E-02 | c | 1.6E-01 | c | | | | |
| 3689-24-5 | 3.2E+01 | n | 4.1E+02 | n | | | | |
| 811-97-2 | 1.0E+05 | nms | 4.3E+05 | nms | 8.3E+04 | n | 3.5E+05 | n |
| 470-45-8 | 1.6E+02 | n | 2.3E+03 | n | | | | |
| 134-32-5 | 1.6E+00 | n | 2.3E+01 | n | | | | |
| 10102-45-[illegible] | 7.8E-01 | n | 1.2E+01 | n | | | | |
| 7440-28-0 | 7.8E-01 | n | 1.2E+01 | n | | | | |
| 563-68-8 | 7.8E-01 | n | 1.2E+01 | n | | | | |
| 6533-73-9 | 1.6E+00 | n | 2.3E+01 | n | | | | |
| 7791-12-0 | 7.8E-01 | n | 1.2E+01 | n | | | | |
| 12039-52-[illegible] | 7.8E-01 | n | 1.2E+01 | n | | | | |
| 7446-18-6 | 1.6E+00 | n | 2.3E+01 | n | | | | |
| 79277-27-3 | 8.2E+02 | n | 1.1E+04 | n | | | | |
| 28249-77-6 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 111-48-8 | 5.4E+03 | n | 7.9E+04 | n | | | | |
| 39196-18-4 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 23564-05-8 | 5.1E+03 | n | 6.6E+04 | n | | | | |
| 137-26-8 | 3.2E+02 | n | 4.1E+03 | n | | | | |
| 7440-31-5 | 4.7E+04 | n | 7.0E+05 | nm | | | | |
| 7550-45-0 | 1.4E+05 | nm | 6.0E+05 | nm | 1.0E-01 | n | 4.4E-01 | n |
| 108-88-3 | 4.9E+03 | ns | 4.7E+04 | ns | 5.2E+03 | n | 2.2E+04 | n |
| 108-88-3 | 4.9E+03 | ns | 4.7E+04 | ns | 5.2E+03 | n | 2.2E+04 | n |
| 584-84-9 | 6.4E+00 | n | 2.7E+01 | n | 8.3E-03 | n | 3.5E-02 | n |
| 95-70-5 | 3.0E+00 | c** | 1.3E+01 | c* | | | | |
| 91-08-7 | 5.3E+00 | n | 2.2E+01 | n | 8.3E-03 | n | 3.5E-02 | n |

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THQ=1.0

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|---|---|---|---|---|---|---|---|---|
| 95-53-4 | 3.4E+01 | c | 1.4E+02 | c | 5.5E-02 | c | 2.4E-01 | c |
| 106-49-0 | 1.8E+01 | c* | 7.7E+01 | c* | | | | |
| NA | 2.3E+05 | nms | 3.5E+06 | nms | | | | |
| NA | 5.2E+02 | ns | 2.2E+03 | ns | 6.3E+02 | n | 2.6E+03 | n |
| NA | 9.6E+01 | ns | 4.4E+02 | ns | 1.0E+02 | n | 4.4E+02 | n |
| NA | 2.5E+03 | n | 3.3E+04 | n | | | | |
| NA | 8.2E+01 | n | 4.2E+02 | n | 3.1E+01 | n | 1.3E+02 | n |
| NA | 1.1E+02 | n | 6.0E+02 | n | 3.1E+00 | n | 1.3E+01 | n |
| 8001-35-2 | 4.9E-01 | c | 2.1E+00 | c | 8.8E-03 | c | 3.8E-02 | c |
| 66841-25-6 | 4.7E+02 | n | 6.2E+03 | n | | | | |
| 688-73-3 | 2.3E+01 | n | 3.5E+02 | n | | | | |
| 102-76-1 | 5.1E+06 | nm | 6.6E+07 | nm | | | | |
| 43121-43-3 | 1.9E+03 | n | 2.5E+04 | n | | | | |
| 2303-17-5 | 1.0E+03 | n | 1.5E+04 | n | | | | |
| 82097-50-5 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 101200-48-0 | 5.1E+02 | n | 6.6E+03 | n | | | | |
| 615-54-3 | 3.9E+02 | n | 5.8E+03 | n | | | | |
| 126-73-8 | 6.0E+01 | c* | 2.6E+02 | c* | | | | |
| NA | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 56-35-9 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 76-13-1 | 4.0E+04 | ns | 1.7E+05 | nms | 3.1E+04 | n | 1.3E+05 | n |
| 76-03-9 | 7.8E+00 | c | 3.3E+01 | c | | | | |
| 33663-50-2 | 1.9E+01 | c | 7.9E+01 | c | | | | |
| 634-93-5 | 1.9E+00 | n | 2.5E+01 | n | | | | |
| 87-61-6 | 6.3E+01 | n | 9.3E+02 | n | | | | |
| 120-82-1 | 2.4E+01 | c** | 1.1E+02 | c** | 2.1E+00 | n | 8.8E+00 | n |
| 71-55-6 | 8.1E+03 | ns | 3.6E+04 | ns | 5.2E+03 | n | 2.2E+04 | n |
| 79-00-5 | 1.1E+00 | c** | 5.0E+00 | c** | 1.8E-01 | c** | 7.7E-01 | c** |
| 79-01-6 | 9.4E-01 | c** | 6.0E+00 | c** | 4.8E-01 | c** | 3.0E+00 | c** |
| 75-69-4 | 2.3E+04 | ns | 3.5E+05 | nms | | | | |
| 95-95-4 | 6.3E+03 | n | 8.2E+04 | n | | | | |
| 88-06-2 | 4.9E+01 | c** | 2.1E+02 | c** | 9.1E-01 | c | 4.0E+00 | c |
| 93-76-5 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 93-72-1 | 5.1E+02 | n | 6.6E+03 | n | | | | |
| 598-77-6 | 3.9E+02 | n | 5.8E+03 | ns | | | | |
| 96-18-4 | 5.1E-03 | c | 1.1E-01 | c | 3.1E-01 | n | 1.3E+00 | n |
| 96-19-5 | 7.3E-01 | n | 3.1E+00 | n | 3.1E-01 | n | 1.3E+00 | n |
| 1330-78-5 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 58138-08-2 | 1.9E+02 | n | 2.5E+03 | n | | | | |
| 121-44-8 | 1.2E+02 | n | 4.8E+02 | n | 7.3E+00 | n | 3.1E+01 | n |
| 112-27-6 | 1.3E+05 | nm | 1.6E+06 | nm | | | | |
| 420-46-2 | 1.5E+04 | ns | 6.2E+04 | ns | 2.1E+04 | n | 8.8E+04 | n |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1582-09-8 | 9.0E+01 | c** | 4.2E+02 | c* | | | | |
| 512-56-1 | 2.7E+01 | c* | 1.1E+02 | c* | | | | |
| 526-73-8 | 4.9E+01 | n | 2.1E+02 | n | 5.2E+00 | n | 2.2E+01 | n |
| 95-63-6 | 5.8E+01 | n | 2.4E+02 | ns | 7.3E+00 | n | 3.1E+01 | n |
| 108-67-8 | 7.8E+02 | ns | 1.2E+04 | ns | | | | |
| 25167-70-8 | 7.8E+02 | ns | 1.2E+04 | ns | | | | |
| 99-35-4 | 2.2E+03 | n | 3.2E+04 | n | | | | |
| 118-96-7 | 2.1E+01 | c** | 9.6E+01 | c** | | | | |
| 791-28-6 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 13674-87-8 | 1.3E+03 | n | 1.6E+04 | n | | | | |
| 13674-84-5 | 6.3E+02 | n | 8.2E+03 | n | | | | |
| 126-72-7 | 2.8E-01 | c | 1.3E+00 | c | 4.3E-03 | c | 1.9E-02 | c |
| 115-96-8 | 2.7E+01 | c* | 1.1E+02 | c* | | | | |
| 78-42-2 | 1.7E+02 | c* | 7.2E+02 | c | | | | |
| 7440-33-7 | 6.3E+01 | n | 9.3E+02 | n | | | | |
| NA | 2.3E+02 | n | 3.5E+03 | n | 4.2E-02 | n | 1.8E-01 | n |
| 51-79-6 | 1.2E-01 | c | 2.3E+00 | c | 3.5E-03 | c | 4.2E-02 | c |
| 1314-62-1 | 4.6E+02 | c** | 2.0E+03 | c** | 3.4E-04 | c* | 1.5E-03 | c* |
| 7440-62-2 | 3.9E+02 | n | 5.8E+03 | n | 1.0E-01 | n | 4.4E-01 | n |
| 1929-77-7 | 7.8E+01 | n | 1.2E+03 | n | | | | |
| 50471-44-8 | 1.6E+03 | n | 2.1E+04 | n | | | | |
| 108-05-4 | 9.1E+02 | n | 3.8E+03 | ns | 2.1E+02 | n | 8.8E+02 | n |
| 593-60-2 | 1.2E-01 | c* | 5.2E-01 | c* | 8.8E-02 | c* | 3.8E-01 | c* |
| 75-01-4 | 5.9E-02 | c | 1.7E+00 | c | 1.7E-01 | c | 2.8E+00 | c |
| 81-81-2 | 1.9E+01 | n | 2.5E+02 | n | | | | |
| 106-42-3 | 5.6E+02 | ns | 2.4E+03 | ns | 1.0E+02 | n | 4.4E+02 | n |
| 103- | 5.5E+02 | ns | 2.4E+03 | ns | 1.0E+02 | n | 4.4E+02 | n |
| 95-47-6 | 6.5E+02 | ns | 2.8E+03 | ns | 1.0E+02 | n | 4.4E+02 | n |
| 1330-20-7 | 5.8E+02 | ns | 2.5E+03 | ns | 1.0E+02 | n | 4.4E+02 | n |
| 1314-84-7 | 2.3E+01 | n | 3.5E+02 | n | | | | |
| 7440-66-6 | 2.3E+04 | n | 3.5E+05 | nm | | | | |
| 12122-67-7 | 3.2E+03 | n | 4.1E+04 | n | | | | |
| 7440-67-7 | 6.3E+00 | n | 9.3E+01 | n | | | | |

| | | | Protection of Ground Water SSLs | | |
|---|---|---|---|---|---|
| (ug/L) | key | (ug/L) | (mg/kg) | key | (mg/kg) |
| 8.9E+00 | c** | | 2.0E-03 | c** | |
| 2.6E+00 | c** | | 5.2E-04 | c** | |
| 3.5E+02 | n | | 2.8E-01 | n | |
| 1.4E+04 | n | | 2.9E+00 | n | |
| 1.3E+02 | n | | 2.6E-02 | n | |
| 1.9E+03 | n | | 5.8E-01 | n | |
| 1.6E-02 | c | | 7.2E-05 | c | |
| 4.2E-02 | n | | 8.4E-06 | n | |
| 5.0E-02 | c | | 1.1E-05 | c | |
| 2.1E+00 | n | | 4.2E-04 | n | |
| 5.2E-02 | c* | | 1.1E-05 | c* | |
| 1.1E+00 | c | 2.0E+00 | 8.7E-04 | c | 1.6E-03 |
| 2.0E+01 | n | 3.0E+00 | 4.9E-03 | n | 7.5E-04 |
| 2.0E+01 | n | 2.0E+00 | 4.4E-03 | n | 4.4E-04 |
| | | 4.0E+00 | | | 8.8E-04 |
| 9.2E-04 | c | | 1.5E-04 | c | |
| 2.1E-01 | n | | 4.2E-05 | n | |
| 7.3E-01 | c** | | 2.3E-04 | c** | |
| 2.0E+04 | n | | 3.0E+04 | n | |
| 8.0E+00 | n | | | n | |
| 1.5E+02 | n | | 1.6E-01 | n | |
| 3.0E-03 | c | | 1.5E-05 | c | |
| 1.6E+03 | n | | 6.1E-01 | n | |
| 4.0E+02 | n | | 1.5E-01 | n | |
| 8.2E+00 | n | | 4.2E+00 | n | |
| 4.0E+03 | n | | | n | |
| 6.3E+00 | n | | 1.3E-03 | n | |
| 1.3E+01 | c* | | 4.6E-03 | c* | |
| 1.4E+00 | c* | | 1.4E-02 | c* | |
| 7.8E+00 | n | 6.0E+00 | 3.5E-01 | n | 2.7E-01 |
| 9.7E+00 | n | | | n | |
| 7.8E+00 | n | | | n | |
| 5.2E-02 | c | 1.0E+01 | 1.5E-03 | c | 2.9E-01 |
| 7.0E-02 | n | | | n | |

| | | | | | |
|---|---|---|---|---|---|
| 1.0E+03 | n | | 2.6E-01 | n | |
| 3.0E-01 | c | 3.0E+00 | 2.0E-04 | c | 1.9E-03 |
| 6.7E-02 | c | | 6.1E-04 | c | |
| 8.0E+00 | n | | 1.4E+01 | n | |
| 5.6E+01 | n | | 1.7E-02 | n | |
| 1.2E-01 | c | | 9.3E-04 | c | |
| 2.0E+04 | n | | 6.8E+00 | n | |
| 3.8E+03 | n | 2.0E+03 | 1.6E+02 | n | 8.2E+01 |
| 4.1E-02 | c | | | c | |
| 1.7E+03 | n | | 5.6E+01 | n | |
| 9.7E+02 | n | | 8.5E-01 | n | |
| 3.9E+03 | n | | 1.0E+00 | n | |
| 5.7E+02 | n | | 1.2E-01 | n | |
| 1.9E+01 | c | | 4.1E-03 | c | |
| 4.6E-01 | c* | 5.0E+00 | 2.3E-04 | c* | 2.6E-03 |
| 7.8E-01 | c** | | 2.2E-04 | c** | |
| 1.7E+01 | n | | 1.1E-02 | n | |
| 1.1E-04 | c | | 2.8E-07 | c | |
| 7.5E+04 | n | | 1.5E+01 | n | |
| 3.0E-03 | c | | 6.6E-06 | c | |
| 2.0E+03 | n | | 4.8E-01 | n | |
| 8.9E-02 | c* | | 9.8E-05 | c* | |
| 2.5E+01 | n | 4.0E+00 | 1.9E+01 | n | 3.2E+00 |
| 1.0E+02 | n | | 7.6E-01 | n | |
| 3.0E+02 | n | | 1.4E+03 | n | |
| 8.3E-01 | n | | 8.7E-03 | n | |
| 7.1E+02 | n | | 2.6E-01 | n | |
| 5.9E+01 | n | | 1.3E-02 | n | |
| 1.4E-02 | c | | 3.6E-06 | c | |
| 7.2E-05 | c | | 1.7E-08 | c | |
| 7.7E+02 | n | | 5.8E+01 | n | |
| 4.0E+03 | n | | 1.3E+01 | n | |
| 4.2E+01 | n | | | n | |
| 2.6E+01 | n | | | n | |
| 1.1E-01 | c | 1.0E+01 | 8.5E-04 | c | 7.7E-02 |
| 7.4E-03 | c | | 2.1E-06 | c | |
| 6.2E+01 | n | | 4.2E-02 | n | |
| 8.3E+01 | n | | 2.1E-02 | n | |
| 1.3E-01 | c | 8.0E+01(F) | 3.6E-05 | c | 2.2E-02 |
| 3.3E+00 | c | 8.0E+01(F) | 8.7E-04 | c | 2.1E-02 |
| 7.5E+00 | n | | 1.9E-03 | n | |
| 3.5E+01 | n | | 1.5E-01 | n | |

| | | | | | |
|---|---|---|---|---|---|
| 3.3E+02 | n | | 2.8E-01 | n | |
| 1.4E+02 | n | | 1.2E+00 | n | |
| 1.8E-02 | c | | 9.9E-06 | c | |
| 2.0E+03 | n | | 4.1E-01 | n | |
| 2.4E+04 | n | | 5.0E+00 | n | |
| 4.6E+02 | n | | 4.5E-01 | n | |
| 1.5E+02 | c | | 2.9E-01 | c | |
| 3.4E+00 | c | | 1.0E-01 | c | |
| 1.0E+03 | n | | 3.2E+00 | n | |
| 2.0E+03 | n | | 5.9E+00 | n | |
| 6.9E+02 | n | | 1.6E+00 | n | |
| 4.0E+02 | n | | 1.1E-01 | n | |
| 9.2E+00 | n | 5.0E+00 | 6.9E-01 | n | 3.8E-01 |
| 4.1E-02 | c | | | c | |
| 9.9E+03 | n | | 2.5E+00 | n | |
| 4.0E-01 | c* | | 7.1E-04 | c* | |
| 3.1E+01 | c* | | 2.2E-02 | c* | |
| 1.8E+03 | n | | 1.7E+00 | n | |
| 9.4E+01 | n | 4.0E+01 | 3.7E-02 | n | 1.6E-02 |
| 8.1E+02 | n | | 2.4E-01 | n | |
| 4.6E-01 | c | 5.0E+00 | 1.8E-04 | c | 1.9E-03 |
| 2.1E+02 | n | | 5.1E-01 | n | |
| 5.1E+01 | n | | 1.2E+00 | n | |
| 1.9E+03 | n | | 1.0E+00 | n | |
| 2.0E+03 | n | | 4.0E-01 | n | |
| 2.9E+02 | n | | 7.0E-02 | n | |
| 1.8E-01 | c | | 1.5E-04 | c | |
| 2.0E-02 | c* | 2.0E+00 | 2.7E-03 | c* | 2.7E-01 |
| 2.0E-02 | c* | 2.0E+00 | 2.7E-03 | c* | 2.7E-01 |
| 2.0E-02 | c* | 2.0E+00 | 2.7E-03 | c* | 2.7E-01 |
| 3.5E-03 | c | | 1.2E-04 | c | |
| 1.1E+01 | n | | 3.1E-02 | n | |
| 3.9E+02 | n | | 1.3E-01 | n | |
| 3.0E-01 | n | | 1.4E-04 | n | |
| 4.2E-01 | n | | | n | |
| 6.0E+02 | n | 1.0E+03 | | n | |
| 1.0E+05 | n | | 5.2E+01 | n | |
| 1.9E-02 | c | | 9.8E-06 | c | |
| 1.7E-01 | c | | 1.5E-04 | c | |
| 7.0E-01 | c* | | 4.0E-04 | c* | |

| | | | | | |
|---|---|---|---|---|---|
| 2.9E-01 | c | 6.0E+01 | 5.8E-05 | c | 1.2E-02 |
| 3.7E-01 | c | 1.0E+02 | 1.6E-04 | c | 6.8E-02 |
| 7.8E+01 | n | | 5.3E-02 | n | |
| 3.1E-01 | c | | 1.0E-03 | c | |
| 5.1E+02 | n | | 1.3E-01 | n | |
| 3.5E+01 | n | | 1.2E-01 | n | |
| 6.4E+02 | n | | 2.6E-01 | n | |
| 1.0E+05 | n | 8.0E+01(F) | 4.3E+01 | n | 2.2E-02 |
| 4.0E+02 | n | | 8.1E-02 | n | |
| 2.2E-01 | c | | 6.1E-05 | c | |
| 1.9E+02 | n | | 4.9E-02 | n | |
| 6.5E-03 | c | | 1.4E-06 | c | |
| 2.4E-01 | c | | 2.2E-04 | c | |
| 1.2E+00 | c* | | 1.1E-03 | c* | |
| 9.1E+01 | n | | 8.9E-02 | n | |
| 8.3E-01 | n | | 2.5E-04 | n | |
| 2.2E+01 | c* | | 5.0E-02 | c* | |
| 2.4E+02 | n | | 2.3E-01 | n | |
| 2.5E+02 | n | | 2.4E-01 | n | |
| 3.2E-04 | c | | 7.1E-08 | c | |
| 2.8E+03 | n | | 2.6E+00 | n | |
| 8.4E+00 | n | | 1.2E-01 | n | |
| 1.2E+02 | n | | 5.4E-01 | n | |
| 9.9E+02 | n | | 8.3E-01 | n | |
| 1.2E+02 | n | | 1.5E-01 | n | |
| 2.8E+00 | n | 1.0E+02 | 7.3E-02 | n | 1.8E+05 |
| 2.2E+04 | n | | 4.0E+07 | n | |
| 3.5E-02 | c | | 6.7E-04 | c | |
| | | 1.0E+02 | | | 1.8E+05 |
| 2.3E+02 | n | | 1.4E+01 | n | |
| 6.0E+00 | n | | 2.7E-01 | n | |
| 8.0E+02 | n | 1.3E+03 | 2.8E+01 | n | 4.6E+01 |
| 9.3E+02 | n | | 7.4E-01 | n | |
| 9.3E+02 | n | | 7.5E-01 | n | |
| 1.9E+03 | n | | 1.5E+00 | n | |
| 1.4E+03 | n | | 1.7E+00 | n | |
| 1.5E+03 | n | | 1.3E+00 | n | |
| 4.0E-02 | c | | 8.2E-06 | c | |
| 4.5E+02 | n | | 7.4E-01 | n | |

| | | | | | |
|---|---|---|---|---|---|
| 3.5E-01 | c | | 6.1E-04 | c | |
| 8.8E-02 | c | | 4.1E-05 | c | |
| 2.0E+01 | n | | | n | |
| 1.0E+02 | n | | | n | |
| 1.5E+00 | n | 2.0E+02 | 1.5E-02 | n | 2.0E+00 |
| 2.0E+01 | n | | | n | |
| 1.8E+03 | n | | | n | |
| 1.0E+03 | n | | | n | |
| 1.5E+00 | n | | 1.5E-02 | n | |
| 4.0E+01 | n | | | n | |
| 8.2E+01 | n | | | n | |
| 1.8E+03 | n | | | n | |
| 2.0E+01 | n | 2.0E+02 | | n | |
| 4.0E+00 | n | | | n | |
| 4.0E+00 | n | | | n | |
| 1.0E+03 | n | | | n | |
| 1.3E+04 | n | | 1.3E+01 | n | |
| 1.3E+04 | n | | 1.3E+01 | n | |
| 2.4E+00 | c | | 1.4E-02 | c | |
| 1.4E+03 | n | | 3.4E-01 | n | |
| 7.0E+01 | n | | 4.6E-02 | n | |
| 3.8E+03 | n | | 1.0E+00 | n | |
| 1.2E+02 | n | | 3.1E+01 | n | |
| 1.0E+02 | n | | 6.8E+01 | n | |
| 2.0E+02 | n | | 3.2E+01 | n | |
| 1.5E+02 | n | | 3.8E-02 | n | |
| 3.2E-02 | c | | 7.5E-03 | c | |
| 4.6E-02 | c | | 1.1E-02 | c | |
| 2.3E-01 | c* | | 7.7E-02 | c* | |
| 6.0E+02 | n | 2.0E+02 | 1.2E-01 | n | 4.1E-02 |
| 4.3E+00 | c | | 9.5E-04 | c | |
| 1.1E+02 | c** | | 6.2E+01 | c** | |
| 4.2E-01 | n | | | n | |
| 6.5E+01 | c | 4.0E+02 | 4.7E+00 | c | 2.9E+01 |
| 5.4E-01 | c | | 8.0E-04 | c | |
| 1.0E+01 | n | | 6.5E-02 | n | |
| 6.5E+01 | n | | 1.2E+00 | n | |
| 3.3E-04 | c | 2.0E-01 | 1.4E-07 | c | 8.6E-05 |
| 5.3E+00 | n | | 5.1E-03 | n | |
| 1.3E+02 | n | | 1.2E-01 | n | |
| 8.7E-01 | c | 8.0E+01(F) | 2.3E-04 | c | 2.1E-02 |

| | | | | | |
|---|---|---|---|---|---|
| 7.5E-03 | c | 5.0E-02 | 2.1E-06 | c | 1.4E-05 |
| 8.3E+00 | n | | 2.1E-03 | n | |
| 6.0E+00 | n | | | n | |
| 5.7E+02 | n | | 1.5E-01 | n | |
| 1.3E-03 | c | | 6.6E-07 | c | |
| 1.3E-03 | c | | 6.2E-07 | c | |
| 1.3E-03 | c | | 6.2E-07 | c | |
| 1.5E+00 | c* | 6.0E+01 | 3.1E-04 | c* | 1.2E-02 |
| 3.0E+02 | n | 6.0E+02 | 3.0E-01 | n | 5.8E-01 |
| 4.8E-01 | c | 7.5E+01 | 4.6E-04 | c | 7.2E-02 |
| 1.3E-01 | c | | 8.2E-04 | c | |
| 7.8E+01 | n | | 4.7E-01 | n | |
| 2.0E+02 | n | | 3.0E-01 | n | |
| 2.8E+00 | c | | 7.8E-04 | c | |
| 1.7E-01 | c* | 5.0E+00 | 4.8E-05 | c* | 1.4E-03 |
| 2.8E+02 | n | 7.0E+00 | 1.0E-01 | n | 2.5E-03 |
| 3.6E+01 | n | 7.0E+01 | 1.1E-02 | n | 2.1E-02 |
| 3.6E+02 | n | 1.0E+02 | 1.1E-01 | n | 3.1E-02 |
| 4.6E+01 | n | | 2.3E-02 | n | |
| 1.7E+02 | n | 7.0E+01 | 4.5E-02 | n | 1.8E-02 |
| 1.2E+02 | n | | 1.1E-01 | n | |
| 4.4E-01 | c* | 5.0E+00 | 1.5E-04 | c* | 1.7E-03 |
| 3.7E+02 | n | | 1.3E-01 | n | |
| 5.9E+01 | n | | 1.3E-02 | n | |
| 4.7E-01 | c* | | 1.7E-04 | c* | |
| 2.6E-01 | c* | | 8.1E-05 | c* | |
| 2.0E+00 | n | | 4.7E-04 | n | |
| 6.3E-01 | n | | 2.2E-03 | n | |
| 1.8E-03 | c | | 7.1E-05 | c | |
| | | | | | |
| 4.0E+01 | n | | 8.1E-03 | n | |
| 6.0E+02 | n | | 1.3E-01 | n | |
| 1.2E+03 | n | | 2.4E-01 | n | |
| 2.0E+01 | n | | 4.1E-03 | n | |
| 5.1E-05 | c | | 2.8E-05 | c | |
| 1.6E+03 | n | | 2.5E+02 | n | |
| 2.9E+02 | n | | 3.3E-01 | n | |
| 8.3E+04 | n | | 2.8E+01 | n | |
| 3.0E-01 | c | | 1.9E-04 | c | |
| 1.5E+03 | n | | 3.7E-01 | n | |
| 1.6E+03 | n | | 4.5E-01 | n | |
| 4.0E+02 | n | | 8.8E-02 | n | |

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|---|---|---|---|---|---|
| 4.0E+00 | n | | 9.0E-04 | n | |
| 4.7E-02 | c | | 5.8E-05 | c | |
| 4.6E+01 | c* | | 9.6E-03 | c* | |
| 5.0E-03 | c | | 2.1E-05 | c | |
| 1.3E-01 | c | | 1.2E-04 | c | |
| 3.7E-01 | c | | 2.1E-04 | c | |
| 3.5E+01 | n | | 1.3E-02 | n | |
| 6.5E-03 | c | | 4.3E-05 | c | |
| 6.1E+01 | n | | 1.2E-02 | n | |
| 4.2E-03 | n | | 9.3E-07 | n | |
| 2.8E-05 | c | | 6.5E-09 | c | |
| 3.6E+02 | n | | 4.2E-01 | n | |
| 1.1E+01 | n | | 1.3E-02 | n | |
| 1.8E+01 | n | | 2.1E-02 | n | |
| 3.3E-01 | c | | 1.1E-04 | c | |
| 1.5E+00 | n | | 2.6E-03 | n | |
| 2.3E+01 | n | | 7.7E-01 | n | |
| 1.9E+00 | n | | 1.8E-03 | n | |
| 2.0E+00 | n | | 1.8E-03 | n | |
| 2.0E+00 | n | | 1.8E-03 | n | |
| 3.9E+01 | n | | 4.4E-02 | n | |
| 1.1E-01 | c | | 1.5E-04 | c | |
| 2.4E-01 | c | | 3.2E-04 | c | |
| 4.9E-02 | c | | 6.7E-05 | c | |
| 3.9E+01 | n | | 3.0E-02 | n | |
| 3.9E+01 | n | | 3.0E-02 | n | |
| 1.0E-01 | c | | 1.4E-04 | c | |
| 1.5E+01 | n | 7.0E+00 | 1.3E-01 | n | 6.2E-02 |
| 4.6E-01 | c | | 9.4E-05 | c | |
| 1.3E-05 | c | | 1.7E-05 | c | |
| 1.2E-07 | c | 3.0E-05 | 5.9E-08 | c | 1.5E-05 |
| 1.2E-07 | c | 3.0E-05 | 5.9E-08 | c | 1.5E-05 |
| 5.3E+02 | n | | 5.2E+00 | n | |
| 1.5E+01 | n | | 3.6E-02 | n | |
| 3.1E+02 | n | | 5.8E-01 | n | |
| 7.8E-02 | c | | 2.5E-04 | c | |
| 4.4E+01 | n | 2.0E+01 | 8.3E-01 | n | 3.7E-01 |
| 1.1E-02 | c | | 5.3E+00 | c | |
| 1.1E-02 | c | | 1.7E+01 | c | |
| 1.2E-02 | c | | 1.6E-01 | c | |
| 5.0E-01 | n | | 9.4E-04 | n | |

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|---|---|---|---|---|---|
| 2.0E+02 | n | | 9.7E-02 | n | |
| 3.6E+01 | n | | 1.5E-02 | n | |
| 8.0E+01 | n | | 4.1E-01 | n | |
| 3.8E+02 | n | | 2.0E-01 | n | |
| 1.0E+02 | n | | 1.4E+00 | n | |
| 1.0E+02 | n | | 1.4E+00 | n | |
| 1.0E+02 | n | | 1.4E+00 | n | |
| 3.8E+02 | n | 1.0E+02 | 9.1E-02 | n | 2.4E-02 |
| 2.3E+00 | n | 2.0E+00 | 9.2E-02 | n | 8.1E-02 |
| 2.3E+00 | n | 2.0E+00 | 9.2E-02 | n | 8.1E-02 |
| 2.3E+00 | n | 2.0E+00 | 9.2E-02 | n | 8.1E-02 |
| 2.0E+00 | n | | 4.5E-04 | n | |
| 4.2E+01 | n | | 9.2E-03 | n | |
| 8.0E+02 | n | | 1.6E-01 | n | |
| 1.0E+02 | n | | 2.1E-02 | n | |
| 4.3E+00 | n | | 8.5E-03 | n | |
| 1.2E+02 | n | | 2.5E-02 | n | |
| 3.4E+02 | n | | 6.8E-02 | n | |
| 1.4E+02 | n | | 3.1E-02 | n | |
| 1.4E+01 | n | | 3.2E-03 | n | |
| 2.1E+04 | n | | 5.9E+00 | n | |
| 3.9E+03 | n | | 8.8E-01 | n | |
| 6.3E+02 | n | | 1.5E-01 | n | |
| 8.9E-02 | n | | 2.8E-03 | n | |
| 1.5E+00 | c | 7.0E+02 | 1.7E-03 | c | 7.8E-01 |
| 1.4E+03 | n | | 2.8E-01 | n | |
| 1.8E+03 | n | | 4.1E-01 | n | |
| 4.0E+04 | n | | 8.1E+00 | n | |
| 2.0E+03 | n | | 4.1E-01 | n | |
| 5.1E-02 | c | | 1.1E-05 | c | |
| 1.6E+00 | n | | 3.6E-04 | n | |
| 2.4E-04 | c | | 5.2E-08 | c | |
| 5.8E+04 | n | | 1.3E+02 | n | |
| 4.4E+00 | n | | 4.3E-03 | n | |
| 6.4E+01 | n | | 2.9E+00 | n | |
| 5.0E+02 | n | | 3.2E+02 | n | |
| 2.4E+02 | n | | 1.9E-01 | n | |
| 8.0E+02 | n | | 1.2E+02 | n | |
| 1.2E+03 | n | 4.0E+03 | 1.8E+02 | n | 6.0E+02 |
| 1.4E+03 | n | | 1.6E+02 | n | |
| 3.4E+02 | n | | 1.6E+00 | n | |
| 1.1E+01 | n | | 1.8E+00 | n | |

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|---|---|---|---|---|---|
| 9.5E+02 | n | | 5.0E+00 | n | |
| 2.0E+02 | n | | 2.9E+02 | n | |
| 2.0E+01 | c* | | 4.7E-03 | c* | |
| 3.9E-01 | c | | 1.3E-03 | c | |
| 2.4E+01 | n | | 4.7E-02 | n | |
| 4.3E-01 | c* | | 8.7E-05 | c* | |
| 6.3E-01 | n | | 1.3E-04 | n | |
| 6.0E+04 | n | | 7.9E+02 | n | |
| 7.9E+00 | n | | 1.5E-01 | n | |
| 1.9E+01 | n | | 7.3E-03 | n | |
| 3.4E+03 | n | | 7.5E-01 | n | |
| 2.0E-02 | c | | 3.9E-05 | c | |
| 3.8E+01 | n | | 8.1E-03 | n | |
| 5.1E-02 | c | | 6.8E-05 | c | |
| 1.1E+00 | c | | 1.2E-03 | c | |
| 8.0E+00 | n | | 1.8E-03 | n | |
| 1.7E+00 | n | | 3.3E-04 | n | |
| 2.0E+03 | n | 7.0E+02 | 8.8E+00 | n | 3.1E+00 |
| 2.0E+02 | n | | 4.5E-02 | n | |
| 4.0E+02 | n | | | n | |
| 7.6E-01 | n | | 8.4E-03 | n | |
| 1.4E-03 | c | 4.0E-01 | 1.2E-04 | c | 3.3E-02 |
| 1.4E-03 | c* | 2.0E-01 | 2.8E-05 | c* | 4.1E-03 |
| 4.0E+01 | n | | 2.3E-01 | n | |
| 4.0E+00 | n | | | n | |
| 9.8E-03 | c | 1.0E+00 | 1.2E-04 | c | 1.3E-02 |
| 1.4E-01 | c* | | 2.7E-04 | c* | |
| 7.2E-03 | c | | 4.2E-05 | c | |
| 2.5E-02 | c | | 1.5E-04 | c | |
| 4.2E-02 | c* | 2.0E-01 | 2.4E-04 | c* | 1.2E-03 |
| 2.5E-02 | c | | 1.5E-04 | c | |
| 4.1E-01 | n | 5.0E+01 | 1.3E-03 | n | 1.6E-01 |
| 3.3E-01 | c* | | 2.0E-04 | c* | |
| 6.0E+00 | n | | 8.0E+00 | n | |
| 7.0E-01 | c* | | 2.7E-04 | c* | |
| 2.1E-02 | n | | 2.1E-04 | n | |
| 8.0E+00 | n | | 1.8E-03 | n | |
| 1.5E+03 | n | | 1.0E+01 | n | |
| 4.0E+04 | n | | 9.9E+00 | n | |
| 3.8E+01 | n | | 8.8E-03 | n | |

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|---|---|---|---|---|---|
| 6.4E+02 | n | | 3.0E-01 | n | |
| 1.1E+02 | n | | 5.0E-01 | n | |
| 5.9E+00 | n | | 2.1E+03 | n | |
| 1.1E-03 | c* | | | c* | |
| 2.6E-02 | c | | | c | |
| 4.2E+01 | n | | | n | |
| 2.8E+01 | n | | | n | |
| 4.2E+00 | n | | | n | |
| 1.3E+00 | c | | 8.7E-04 | c | |
| 1.9E+02 | n | | 3.2E+00 | n | |
| 4.9E+03 | n | | 2.4E+01 | n | |
| 4.7E+03 | n | | 4.1E+00 | n | |
| 2.0E+02 | n | | 1.2E+01 | n | |
| 7.4E+02 | n | | 2.2E-01 | n | |
| 1.4E+04 | n | | 3.5E+02 | n | |
| 5.9E+03 | n | | 1.2E+00 | n | |
| 7.8E+01 | c* | | 2.6E-02 | c* | |
| 4.0E+01 | n | | 9.2E-01 | n | |
| 4.1E+02 | n | | 8.4E-02 | n | |
| 2.0E+03 | n | | 4.3E-01 | n | |
| 7.3E+02 | n | | 2.0E+00 | n | |
| 6.3E+02 | n | | | n | |
| 2.5E+01 | n | | 1.2E+00 | n | |
| 4.1E-02 | c | | | c | |
| 9.1E+00 | c | | | c | |
| 9.2E+00 | c | | 1.8E-03 | c | |
| 1.5E+01 | L | 1.5E+01 | | L | 1.4E+01 |
| 9.2E+00 | c | | 2.0E-03 | c | |
| 1.3E-03 | n | | 4.7E-06 | n | |
| 9.0E-02 | n | | 3.8E-05 | n | |
| 3.3E+01 | n | | 2.9E-02 | n | |
| 4.0E+01 | n | | 1.2E+01 | n | |
| 7.5E+00 | n | | 2.0E-03 | n | |
| 1.5E+02 | n | | 5.8E-02 | n | |
| 1.6E+01 | n | | 4.7E-03 | n | |
| 3.9E+02 | n | | 1.0E-01 | n | |
| 1.9E+03 | n | | 3.8E-01 | n | |
| 1.0E+04 | n | | 2.1E+00 | n | |
| 2.0E+00 | n | | 4.1E-04 | n | |
| 5.4E+02 | n | | 7.6E-01 | n | |
| 9.8E+01 | n | | 1.4E-01 | n | |

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|---|---|---|---|---|---|
| 4.3E+02 | n | | 2.8E+01 | n | |
| 1.8E+00 | n | | 2.6E-03 | n | |
| 6.0E+02 | n | | 2.0E-01 | n | |
| 5.7E+00 | n | 2.0E+00 | | n | |
| 6.3E-01 | n | 2.0E+00 | 3.3E-02 | n | 1.0E-01 |
| 2.0E+00 | n | | | n | |
| 1.6E+00 | n | | 5.0E-04 | n | |
| 6.0E-01 | n | | 5.9E-02 | n | |
| 8.5E-02 | n | | 4.2E-04 | n | |
| 1.2E+03 | n | | 3.3E-01 | n | |
| 1.9E+00 | n | | 4.3E-04 | n | |
| 1.0E+00 | n | | 2.1E-04 | n | |
| 2.0E+04 | n | | 4.1E+00 | n | |
| 1.9E+01 | n | | 4.7E-03 | n | |
| 5.0E+02 | n | | 1.1E-01 | n | |
| 1.5E+00 | c | | 5.3E-04 | c | |
| 3.7E+01 | n | 4.0E+01 | 2.0E+00 | n | 2.2E+00 |
| 2.1E+00 | n | | 4.2E-04 | n | |
| 2.9E+01 | n | | 5.9E-03 | n | |
| 2.0E+04 | n | | 4.1E+00 | n | |
| 4.2E+01 | n | | 8.9E-03 | n | |
| 5.6E+03 | n | | 1.2E+00 | n | |
| 5.6E-03 | c** | | 1.3E-06 | c** | |
| 6.3E+03 | n | | 1.4E+00 | n | |
| 2.1E+00 | n | | 5.9E-04 | n | |
| 1.4E+03 | n | | 3.0E-01 | n | |
| 4.5E+00 | n | | 7.4E-03 | n | |
| 1.2E+03 | n | | 2.4E-01 | n | |
| 2.3E+01 | n | | 3.8E-02 | n | |
| 7.9E-01 | c | | 1.6E-04 | c | |
| 1.4E+01 | c | | 3.2E-03 | c | |
| 6.0E+00 | n | | 3.6E-03 | n | |
| 8.2E+00 | c* | | 4.6E-03 | c* | |
| 9.4E-03 | c | | 3.2E-06 | c | |
| 6.0E-01 | c | | 2.6E-04 | c | |
| 2.0E+02 | n | | 5.8E-02 | n | |
| 4.0E+00 | n | | | n | |
| 7.8E-01 | c** | | | c** | |
| 1.1E-03 | c | | 2.2E-03 | c | |
| 1.1E+01 | c** | 5.0E+00 | 2.9E-03 | c** | 1.3E-03 |

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|---|---|---|---|---|
| 1.6E-01 | c | | 1.8E-03 | c |
| 4.8E-01 | c | | 2.6E-03 | c |
| 4.7E-02 | c | | 2.1E-04 | c |
| | | | | |
| 7.8E+02 | n | | 1.2E+00 | n |
| 2.7E+03 | n | | 3.2E+00 | n |
| 4.9E+02 | n | | 1.5E-01 | n |
| 4.9E+03 | n | | 1.9E+00 | n |
| 6.0E+04 | n | | 2.4E+03 | n |
| 8.8E-04 | c | | 6.3E-04 | c |
| 3.0E+01 | n | | 1.7E-02 | n |
| 1.0E+02 | n | | 2.0E+00 | n |
| 2.0E+03 | n | 4.0E+03 | | n |
| 3.8E+01 | n | | 1.4E-02 | n |
| 4.5E+02 | n | | 5.6E+00 | n |
| 3.6E+00 | n | | 3.7E-01 | n |
| 4.0E+01 | n | | 1.8E-02 | n |
| 1.5E+02 | n | | | n |
| 3.9E-02 | c | | 2.0E-04 | c |
| 1.6E+03 | n | | 1.1E+01 | n |
| 2.2E+02 | n | | 4.5E-02 | n |
| 2.2E+02 | n | | | n |
| 2.2E-02 | c** | | | c** |
| 2.0E+02 | n | | | n |
| 2.0E+02 | n | | | n |
| 2.2E+02 | n | | 3.2E+01 | n |
| 3.9E+02 | n | | 2.6E+01 | n |
| 4.5E-02 | c | | | c |
| 2.2E+02 | n | | | n |
| 3.2E+04 | n | 1.0E+04 | | n |
| | | 1.0E+04 | | |
| 2.0E+03 | n | 1.0E+03 | | n |
| 1.9E+02 | n | | 8.0E-02 | n |
| 3.8E+00 | c* | | 1.6E-03 | c* |
| 1.4E-01 | c* | | 9.2E-05 | c* |
| 6.0E+07 | n | | 1.3E+04 | n |
| 1.4E+03 | n | | 6.1E-01 | n |
| 6.0E-02 | c | | 5.4E-05 | c |
| 2.0E+00 | n | | 8.5E-04 | n |
| 2.0E+03 | n | | 4.8E-01 | n |
| 6.4E-01 | c* | | 1.4E-04 | c* |
| 2.1E-03 | c | | 5.4E-07 | c |

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|---|---|---|---|---|---|
| 9.2E-04 | c | | 2.2E-07 | c | |
| 2.1E-04 | c | | 4.6E-08 | c | |
| 2.7E-03 | c | | 5.5E-06 | c | |
| 1.1E-02 | c | | 8.1E-06 | c | |
| 2.8E-02 | c | | 5.6E-06 | c | |
| 1.7E-04 | c | | 6.1E-08 | c | |
| 1.1E-04 | c | | 2.7E-08 | c | |
| 1.2E+01 | c | | 6.7E-02 | c | |
| 7.1E-04 | c | | 2.0E-07 | c | |
| 1.2E-02 | c | | 2.8E-06 | c | |
| 8.2E-03 | c | | 4.4E-06 | c | |
| 3.7E-02 | c | | 1.4E-05 | c | |
| 1.7E+00 | n | | 1.6E-03 | n | |
| 3.1E-01 | c* | | 3.0E-04 | c* | |
| 4.3E+00 | c* | | 4.0E-03 | c* | |
| 5.3E+00 | n | | 7.5E-02 | n | |
| 7.7E+02 | n | | 5.0E+00 | n | |
| 6.0E+01 | n | | 1.2E+01 | n | |
| 1.0E+03 | n | | 1.3E+00 | n | |
| 4.0E+01 | n | | 9.6E-03 | n | |
| 8.1E+02 | n | | 1.5E+00 | n | |
| 4.7E+01 | n | | 4.8E-01 | n | |
| 5.0E+02 | n | 2.0E+02 | 1.1E-01 | n | 4.4E-02 |
| 3.2E+01 | n | | 2.5E+00 | n | |
| 2.3E+02 | n | | 4.6E-01 | n | |
| 9.0E+01 | n | | 1.2E+00 | n | |
| 8.6E+01 | n | | 4.3E-01 | n | |
| 5.6E+02 | n | | 4.5E-01 | n | |
| 1.8E+02 | n | | 2.1E+00 | n | |
| 4.0E+01 | n | | 1.7E+00 | n | |
| 2.0E+00 | n | | 8.7E-02 | n | |
| 3.2E+00 | n | | 2.4E-02 | n | |
| 6.5E-01 | c | | 3.1E-04 | c | |
| 1.2E-01 | c | | 1.5E-03 | c | |
| 4.1E-02 | c | 1.0E+00 | 5.7E-05 | c | 1.4E-03 |
| 1.9E+01 | c** | | 2.8E-02 | c** | |
| 2.1E+03 | n | | 1.0E+01 | n | |
| 1.4E+01 | n | | | n | |
| 1.4E+01 | n | | | n | |
| 1.4E+01 | n | 1.5E+01(F) | | n | |
| 1.4E+01 | n | | | n | |

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|---|---|---|---|---|
| 1.4E+01 | n | | | n |
| 3.8E+02 | n | | 2.1E-01 | n |
| 1.0E+03 | n | | 2.4E+02 | n |
| 3.4E+01 | c | | 9.7E-03 | c |
| 4.0E+03 | n | | 2.1E+01 | n |
| 5.8E+03 | n | | 3.3E+00 | n |
| 7.8E+01 | n | | 2.5E-02 | n |
| 4.3E+00 | n | | 1.4E-02 | n |
| 1.2E+02 | n | | 3.2E-02 | n |
| 1.6E+00 | c | | 4.4E-04 | c |
| 3.8E+03 | n | | 1.0E+00 | n |
| 3.0E+01 | c | | 4.1E-01 | c |
| 3.0E+00 | n | | 3.4E-03 | n |
| | | | | |
| 3.7E+02 | n | | 8.2E-02 | n |
| | | | | |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |
| 9.7E+05 | n | | | n |

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|---|---|---|---|---|---|
| 9.7E+05 | n | | | n | |
| 9.7E+05 | n | | | n | |
| 9.7E+05 | n | | | n | |
| 9.7E+05 | n | | | n | |
| 9.7E+05 | n | | | n | |
| 5.7E-01 | n | | | n | |
| 9.7E+05 | n | | | n | |
| 4.0E-01 | n | | 1.5E-03 | n | |
| 5.6E+00 | c* | 6.0E+00 | 1.3E+00 | c* | 1.4E+00 |
| 1.6E+01 | c | | 2.4E-01 | c | |
| 1.3E+04 | n | | 3.1E+02 | n | |
| 9.0E+02 | n | | 2.3E+00 | n | |
| 1.5E+04 | n | | 6.1E+00 | n | |
| 1.9E+03 | n | | 4.9E-01 | n | |
| 2.0E+02 | n | | 5.7E+01 | n | |
| 1.9E+04 | n | | 6.8E+00 | n | |
| 3.9E+04 | n | | 8.5E+00 | n | |
| 1.4E+03 | n | 5.0E+02 | 3.8E-01 | n | 1.4E-01 |
| 2.0E+00 | n | | 1.3E-03 | n | |
| 1.8E+01 | n | | 8.4E-02 | n | |
| 1.2E+02 | n | | 1.2E-01 | n | |
| 2.6E-03 | c* | | | c* | |
| 2.2E-01 | c** | | 2.1E-02 | c** | |
| 4.7E-03 | c | | 8.0E-05 | c | |
| 4.7E-03 | c | | 8.0E-05 | c | |
| 7.8E-03 | c | | 1.2E-03 | c | |
| 7.8E-03 | c | | 1.2E-03 | c | |
| 7.8E-03 | c* | | 2.0E-03 | c* | |
| 7.8E-03 | c | | 5.5E-03 | c | |
| 1.2E+01 | n | | 2.0E+00 | n | |
| 7.8E-03 | c* | | 2.0E-03 | c* | |
| 4.0E-03 | c | | 2.8E-03 | c | |
| 4.0E-03 | c | | 1.7E-03 | c | |
| 4.0E-03 | c | | 1.7E-03 | c | |
| 4.0E-03 | c | | 1.7E-03 | c | |
| 4.0E-06 | c | | 1.7E-06 | c | |
| 4.0E-03 | c | | 1.0E-03 | c | |
| 4.0E-03 | c | | 1.0E-03 | c | |
| 4.0E-03 | c | | 1.0E-03 | c | |
| 4.0E-03 | c | | 1.0E-03 | c | |

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|---|---|---|---|---|---|
| 1.2E-06 | c | | 3.0E-07 | c | |
| 4.4E-02 | c | 5.0E-01 | 6.8E-03 | c | 7.8E-02 |
| 6.0E-03 | c* | | 9.4E-04 | c* | |
| 4.0E-04 | c | | 6.2E-05 | c | |
| 5.3E+02 | n | | 5.5E+00 | n | |
| 5.3E+02 | n | | 5.5E+00 | n | |
| 1.8E+03 | n | | 5.8E+01 | n | |
| 1.2E-02 | c | | 4.2E-03 | c | |
| 6.5E-02 | c | | 7.8E-02 | c | |
| 3.4E-03 | c | 2.0E-01 | 4.0E-03 | c | 2.4E-01 |
| 3.4E-03 | c | 2.0E-01 | 4.0E-03 | c | 2.4E-01 |
| 3.4E-02 | c | | 4.1E-02 | c | |
| 1.2E+02 | n | | 1.3E+01 | n | |
| 3.4E-01 | c | | 4.0E-01 | c | |
| 7.5E+02 | n | | 3.9E+00 | n | |
| 3.4E+00 | c | | 1.2E+00 | c | |
| 3.4E-03 | c | | 1.3E-02 | c | |
| 6.5E-03 | c | | 8.4E-02 | c | |
| 1.0E-04 | c | | 9.9E-05 | c | |
| 8.0E+02 | n | | 8.9E+01 | n | |
| 2.9E+02 | n | | 5.4E+00 | n | |
| 3.4E-02 | c | | 1.3E-01 | c | |
| 1.1E+00 | c | | 6.0E-03 | c | |
| 3.6E+01 | n | | 1.9E-01 | n | |
| 1.7E-01 | c* | | 5.4E-04 | c* | |
| 1.9E-02 | c | | 3.3E-03 | c | |
| 1.2E+02 | n | | 1.3E+01 | n | |
| 1.2E+02 | n | | 1.3E+01 | n | |
| 4.0E+02 | n | | 2.2E-01 | n | |
| 3.8E-01 | c | | 1.9E-03 | c | |
| 2.6E+01 | n | | 1.6E+00 | n | |
| 2.5E+02 | n | | 1.2E-01 | n | |
| 6.0E+01 | n | | 9.0E-02 | n | |
| 2.5E+02 | n | | 1.5E-01 | n | |
| 8.2E+01 | n | | 4.5E-02 | n | |
| 1.6E+02 | n | | 1.2E+01 | n | |
| 4.0E+01 | n | | 8.1E-03 | n | |

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|---|---|---|---|---|---|
| 3.4E+02 | n | | 3.0E-01 | n | |
| 3.5E+02 | n | | 2.2E-01 | n | |
| 2.1E+02 | n | | 6.9E-01 | n | |
| 1.7E+01 | n | | 3.4E-03 | n | |
| 6.6E+02 | n | | 1.2E+00 | n | |
| 6.3E+03 | n | | 6.0E+00 | n | |
| 4.0E+05 | n | | 8.1E+01 | n | |
| 3.2E+03 | n | | 6.5E-01 | n | |
| 2.7E-01 | c | | 5.6E-05 | c | |
| 1.2E+03 | n | | 1.2E+00 | n | |
| 2.0E+01 | n | | 6.8E-03 | n | |
| 5.1E+00 | n | | 4.3E-02 | n | |
| 2.4E-02 | c | | 7.8E-05 | c | |
| 1.2E+02 | n | | 1.9E+00 | n | |
| 6.7E+01 | n | | 4.2E+01 | n | |
| 4.1E+02 | n | | 3.7E+00 | n | |
| 6.1E+01 | n | | 3.2E+01 | n | |
| 9.6E-02 | c | | 5.9E-05 | c | |
| 1.0E+02 | n | | | n | |
| 1.0E+02 | n | 5.0E+01 | 5.2E-01 | n | 2.6E-01 |
| 1.0E+02 | n | | | n | |
| 1.0E+03 | n | | 9.3E+00 | n | |
| 9.4E+01 | n | | 8.0E-01 | n | |
| 6.1E-01 | c | 4.0E+00 | 3.0E-04 | c | 2.0E-03 |
| 2.6E+02 | n | | 2.1E+00 | n | |
| 8.0E+01 | n | | | n | |
| 4.1E-02 | c | | | c | |
| 2.9E-01 | c | | 1.8E-04 | c | |
| 1.0E+03 | n | | | n | |
| 4.0E-01 | n | | 8.1E-05 | n | |
| 2.0E+01 | n | | | n | |
| 1.6E+01 | n | | | n | |
| 1.6E+01 | n | | | n | |
| 2.8E+00 | c | | 8.2E-03 | c | |
| 4.1E-02 | c | | | c | |
| 1.2E+04 | n | | 4.2E+02 | n | |
| 5.9E+00 | n | | 6.5E-02 | n | |
| 1.2E+03 | n | 1.0E+02 | 1.3E+00 | n | 1.1E-01 |
| 4.8E+01 | n | | | n | |

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|---|---|---|---|---|---|
| 2.0E+01 | n | | 4.4E-03 | n | |
| 1.1E+01 | n | | 6.5E-02 | n | |
| 2.1E+00 | n | | | n | |
| | | | | | |
| 1.3E+00 | c | | 1.5E-02 | c | |
| 4.8E+02 | n | | 3.3E+00 | n | |
| 1.4E+03 | n | | 3.9E-01 | n | |
| 4.0E+02 | n | | 7.6E+01 | n | |
| 2.5E+02 | n | | 7.5E-02 | n | |
| 2.4E-01 | n | | 5.2E-04 | n | |
| 1.3E+01 | n | | 1.9E-02 | n | |
| 2.0E+00 | n | | 5.3E-02 | n | |
| 1.7E+00 | n | | 7.9E-03 | n | |
| 5.7E-01 | c | | 2.2E-04 | c | |
| 7.6E-02 | c | | 3.0E-05 | c | |
| 1.1E+01 | c** | 5.0E+00 | 5.1E-03 | c** | 2.3E-03 |
| 2.4E+02 | n | | 1.8E-01 | n | |
| 1.3E-03 | c | | 4.5E-06 | c | |
| 7.1E+00 | n | | 5.2E-03 | n | |
| 1.7E+05 | n | | 9.3E+01 | n | |
| 3.9E+01 | n | | 3.7E-01 | n | |
| 4.0E-01 | n | | | n | |
| 2.0E-01 | n | | | n | |
| 2.0E-01 | n | 2.0E+00 | 1.4E-02 | n | 1.4E-01 |
| 2.0E-01 | n | | 4.1E-05 | n | |
| 4.0E-01 | n | | 8.3E-05 | n | |
| 2.0E-01 | n | | | n | |
| 2.0E-01 | n | | | n | |
| 4.0E-01 | n | | | n | |
| 2.6E+02 | n | | 7.8E-02 | n | |
| 1.6E+02 | n | | 5.5E-01 | n | |
| 1.4E+03 | n | | 2.8E-01 | n | |
| 5.3E+00 | n | | 1.8E-03 | n | |
| 1.6E+03 | n | | 1.4E+00 | n | |
| 9.8E+01 | n | | 1.4E-01 | n | |
| 1.2E+04 | n | | 3.0E+03 | n | |
| 2.1E-01 | n | | | n | |
| 1.1E+03 | n | 1.0E+03 | 7.6E-01 | n | 6.9E-01 |
| 1.1E+03 | n | 1.0E+03 | 7.6E-01 | n | 6.9E-01 |
| 1.7E-02 | n | | 2.5E-04 | n | |
| 4.3E-01 | c** | | 1.3E-04 | c** | |
| 1.7E-02 | n | | 2.6E-04 | n | |

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|---|---|---|---|---|---|
| 4.7E+00 | c | | 2.0E-03 | c | |
| 2.5E+00 | c* | | 1.1E-03 | c* | |
| 6.0E+04 | n | | 2.4E+03 | n | |
| 1.3E+03 | n | | 8.8E+00 | n | |
| 1.0E+02 | n | | 1.5E+00 | n | |
| 8.0E+02 | n | | 8.9E+01 | n | |
| 3.3E+01 | n | | 1.7E-02 | n | |
| 5.5E+00 | n | | 2.3E-02 | n | |
| 7.1E-02 | c | 3.0E+00 | 1.1E-02 | c | 4.6E-01 |
| 1.5E+02 | n | | 5.8E+01 | n | |
| 3.7E+00 | n | | 8.2E-02 | n | |
| 1.6E+06 | n | | 4.5E+02 | n | |
| 5.5E+02 | n | | 4.4E-01 | n | |
| 1.2E+02 | n | | 2.6E-01 | n | |
| 2.0E+02 | n | | 2.1E-01 | n | |
| 1.6E+02 | n | | 6.1E-02 | n | |
| 4.5E+01 | n | | 6.4E-02 | n | |
| 5.2E+00 | c* | | 2.5E-02 | c* | |
| 6.0E+00 | n | | | n | |
| 5.7E+00 | n | | 2.9E+02 | n | |
| 5.5E+04 | n | | 1.4E+02 | n | |
| 1.1E+00 | c | 6.0E+01 | 2.2E-04 | c | 1.2E-02 |
| 2.7E+00 | c | | 7.4E-03 | c | |
| 4.0E-01 | n | | 3.6E-03 | n | |
| 7.0E+00 | n | | 2.1E-02 | n | |
| 1.2E+00 | c** | 7.0E+01 | 3.4E-03 | c** | 2.0E-01 |
| 8.0E+03 | n | 2.0E+02 | 2.8E+00 | n | 7.0E-02 |
| 2.8E-01 | c** | 5.0E+00 | 8.9E-05 | c** | 1.6E-03 |
| 4.9E-01 | c** | 5.0E+00 | 1.8E-04 | c** | 1.8E-03 |
| 5.2E+03 | n | | 3.3E+00 | n | |
| 1.2E+03 | n | | 4.0E+00 | n | |
| 4.1E+00 | c** | | 4.0E-03 | c** | |
| 1.6E+02 | n | | 6.8E-02 | n | |
| 1.1E+02 | n | 5.0E+01 | 6.1E-02 | n | 2.8E-02 |
| 8.8E+01 | n | | 3.5E-02 | n | |
| 7.5E-04 | c | | 3.2E-07 | c | |
| 6.2E-01 | n | | 3.1E-04 | n | |
| 1.6E+02 | n | | 1.5E+01 | n | |
| 1.8E+01 | n | | 1.3E-01 | n | |
| 1.5E+01 | n | | 4.4E-03 | n | |
| 4.0E+04 | n | | 8.8E+00 | n | |
| 4.2E+04 | n | | 1.3E+02 | n | |

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|---|---|---|---|---|---|
| 2.6E+00 | c* | | 8.4E-02 | c* | |
| 3.9E+00 | c* | | 8.6E-04 | c* | |
| 1.0E+01 | n | | 1.5E-02 | n | |
| 1.5E+01 | n | | 2.1E-02 | n | |
| 1.2E+02 | n | | 1.7E-01 | n | |
| 6.5E+01 | n | | 2.2E-01 | n | |
| 5.9E+02 | n | | 2.1E+00 | n | |
| 2.5E+00 | c** | | 1.5E-02 | c** | |
| 3.6E+02 | n | | 1.5E+00 | n | |
| 3.6E+02 | n | | 8.0E+00 | n | |
| 1.9E+02 | n | | 6.5E-01 | n | |
| 6.8E-03 | c | | 1.3E-04 | c | |
| 3.8E+00 | c* | | 3.8E-03 | c* | |
| 2.4E+01 | c* | | 1.2E+02 | c* | |
| 1.6E+01 | n | | 2.4E+00 | n | |
| 6.0E+01 | n | 3.0E+01 | 2.7E+01 | n | 1.4E+01 |
| 2.5E-02 | c | | 5.6E-06 | c | |
| 1.5E+02 | n | | | n | |
| 8.6E+01 | n | | 8.6E+01 | n | |
| 1.1E+01 | n | | 8.9E-03 | n | |
| 4.4E+02 | n | | 3.4E-01 | n | |
| 4.1E+02 | n | | 8.7E-02 | n | |
| 1.8E-01 | c* | | 5.1E-05 | c* | |
| 1.9E-02 | c | 2.0E+00 | 6.5E-06 | c | 6.9E-04 |
| 5.6E+00 | n | | 5.9E-03 | n | |
| 1.9E+02 | n | | 1.9E-01 | n | |
| 1.9E+02 | n | | 1.9E-01 | n | |
| 1.9E+02 | n | | 1.9E-01 | n | |
| 1.9E+02 | n | 1.0E+04 | 1.9E-01 | n | 9.9E+00 |
| 6.0E+00 | n | | | n | |
| 6.0E+03 | n | | 3.7E+02 | n | |
| 9.9E+02 | n | | 2.9E+00 | n | |
| 1.6E+00 | n | | 4.8E+00 | n | |