Symbol	Definition (units)	Default	Reference
Resident SLs			
$SL_{res\text{-}sol\text{-}ingnc}$	Resident Soil Noncarcinogenic Child Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}dernc}$	Resident Soil Noncarcinogenic Child Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhnc}$	Resident Soil Noncarcinogenic Child Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}totnc}$	Resident Soil Noncarcinogenic Child Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}ingna}$	Resident Soil Noncarcinogenic Adult Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}derna}$	Resident Soil Noncarcinogenic Adult Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhna}$	Resident Soil Noncarcinogenic Adult Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}totna}$	Resident Soil Noncarcinogenic Adult Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}ingc}$	Resident Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}derc}$	Resident Soil Carcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhc}$	Resident Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}totc}$	Resident Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}ingmu}$	Resident Soil Mutagenic Ingestion (mg/kg)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}dermu}$	Resident Soil Mutagenic Dermal (mg/kg)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhmu}$	Resident Soil Mutagenic Inhalation (mg/kg)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}totmu}$	Resident Soil Mutagenic Total (mg/kg)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}ingvc}$	Resident Soil Carcinogenic Vinyl Chloride Ingestion (mg/kg)	Vinyl Chloride -specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}dervc}$	Resident Soil Carcinogenic Vinyl Chloride Dermal (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhvc}$	Resident Soil Carcinogenic Vinyl Chloride Inhalation (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}totvc}$	Resident Soil Carcinogenic Vinyl Chloride Total (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}ingtce}$	Resident Soil Trichloroethylene Ingestion (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}dertce}$	Resident Soil Trichloroethylene Dermal (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}inhtce}$	Resident Soil Trichloroethylene Inhalation (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}sol\text{-}tottce}$	Resident Soil Trichloroethylene Total (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingnc}$	Resident Tapwater Noncarcinogenic Child Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}dernc}$	Resident Tapwater Noncarcinogenic Child Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhnc}$	Resident Tapwater Noncarcinogenic Child Inhalation (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}totnc}$	Resident Tapwater Noncarcinogenic Child Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingna}$	Resident Tapwater Noncarcinogenic Adult Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}derna}$	Resident Tapwater Noncarcinogenic Adult Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhna}$	Resident Tapwater Noncarcinogenic Adult Inhalation (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}totna}$	Resident Tapwater Noncarcinogenic Adult Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingc}$	Resident Tapwater Carcinogenic Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}derc}$	Resident Tapwater Carcinogenic Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhc}$	Resident Tapwater Carcinogenic Inhalation (µg/L)	Contaminant-specific	Determined in this calculator

Symbol	Definition (units)	Default	Reference
$SL_{res\text{-}wat\text{-}totc}$	Resident Tapwater Carcinogenic Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingmu}$	Resident Tapwater Mutagenic Ingestion (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}dermu}$	Resident Tapwater Mutagenic Dermal (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhmu}$	Resident Tapwater Mutagenic Inhalation (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}totmu}$	Resident Tapwater Mutagenic Total (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingvc}$	Resident Tapwater Carcinogenic Vinyl Chloride Ingestion (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}dervc}$	Resident Tapwater Carcinogenic Vinyl Chloride Dermal (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhvc}$	Resident Tapwater Carcinogenic Vinyl Chloride Inhalation (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}totvc}$	Resident Tapwater Carcinogenic Vinyl Chloride Total (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}ingtce}$	Resident Tapwater Trichloroethylene Ingestion (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}dertce}$	Resident Tapwater Trichloroethylene Dermal (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}inhtce}$	Resident Tapwater Trichloroethylene Inhalation (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}wat\text{-}tottce}$	Resident Tapwater Trichloroethylene Total (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{res\text{-}air\text{-}inhn}$	Resident Air Noncarcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}air\text{-}inhc}$	Resident Air Carcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}air\text{-}inhmu}$	Resident Air Mutagenic (µg/m^3)	Mutagen-specific	Determined in this calculator
$SL_{res\text{-}air\text{-}inhvc}$	Resident Air Carcinogenic Vinyl Chloride (µg/m^3)	Vinyl Chloride-specific	Determined in this calculator
$SL_{res\text{-}air\text{-}inhtce}$	Resident Air Trichloroethylene (µg/m^3)	Trichloroethylene-specific	Determined in this calculator
Worker SLs			
$SL_{com\text{-}sol\text{-}ingn}$	Composite Worker Soil Noncarcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}dern}$	Composite Worker Soil Noncarcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}inhn}$	Composite Worker Soil Noncarcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}totn}$	Composite Worker Soil Noncarcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}ingc}$	Composite Worker Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}derc}$	Composite Worker Soil Carcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}inhc}$	Composite Worker Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}sol\text{-}totc}$	Composite Worker Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}air\text{-}inhn}$	Composite Worker Air Noncarcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{com\text{-}air\text{-}inhc}$	Composite Worker Air Carcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}ingn}$	Outdoor Worker Soil Noncarcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}dern}$	Outdoor Worker Soil Noncarcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}inhn}$	Outdoor Worker Soil Noncarcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}totn}$	Outdoor Worker Soil Noncarcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}ingc}$	Outdoor Worker Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}derc}$	Outdoor Worker Soil Carcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}sol\text{-}inhc}$	Outdoor Worker Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator

Symbol	Definition (units)	Default	Reference
$SL_{out\text{-}sol\text{-}totc}$	Outdoor Worker Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}air\text{-}inhn}$	Outdoor Worker Air Noncarcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{out\text{-}air\text{-}inhc}$	Outdoor Worker Air Carcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}ingn}$	Indoor Worker Soil Noncarcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}inhn}$	Indoor Worker Soil Noncarcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}totn}$	Indoor Worker Soil Noncarcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}ingc}$	Indoor Worker Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}inhc}$	Indoor Worker Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}sol\text{-}totc}$	Indoor Worker Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}air\text{-}inhn}$	Indoor Worker Air Noncarcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{ind\text{-}air\text{-}inhc}$	Indoor Worker Air Carcinogenic (µg/m^3)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}ingn}$	Construction Worker Soil Noncarcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}dern}$	Construction Worker Soil Noncarcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}inhn}$	Construction Worker Soil Noncarcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}totn}$	Construction Worker Soil Noncarcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}ingc}$	Construction Worker Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}derc}$	Construction Worker Soil Carcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}inhc}$	Construction Worker Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{con\text{-}sol\text{-}totc}$	Construction Worker Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
Recreator SLs			
$SL_{rec\text{-}sol\text{-}ingnc}$	Recreator Soil Noncarcinogenic Child Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}dernc}$	Recreator Soil Noncarcinogenic Child Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhnc}$	Recreator Soil Noncarcinogenic Child Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}totnc}$	Recreator Soil Noncarcinogenic Child Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}ingna}$	Recreator Soil Noncarcinogenic Adult Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}derna}$	Recreator Soil Noncarcinogenic Adult Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhna}$	Recreator Soil Noncarcinogenic Adult Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}totna}$	Recreator Soil Noncarcinogenic Adult Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}ingc}$	Recreator Soil Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}derc}$	Recreator Soil Carcinogenic Dermal (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhc}$	Recreator Soil Carcinogenic Inhalation (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}totc}$	Recreator Soil Carcinogenic Total (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}ingmu}$	Recreator Soil Mutagenic Ingestion (mg/kg)	Mutagenic-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}dermu}$	Recreator Soil Mutagenic Dermal (mg/kg)	Mutagenic-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhmu}$	Recreator Soil Mutagenic Inhalation (mg/kg)	Mutagenic-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}totmu}$	Recreator Soil Mutagenic Total (mg/kg)	Mutagenic-specific	Determined in this calculator

Symbol	Definition (units)	Default	Reference
$SL_{rec\text{-}sol\text{-}ingvc}$	Recreator Soil Carcinogenic Vinyl Chloride Ingestion (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}dervc}$	Recreator Soil Carcinogenic Vinyl Chloride Dermal (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhvc}$	Recreator Soil Carcinogenic Vinyl Chloride Inhalation (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}totvc}$	Recreator Soil Carcinogenic Vinyl Chloride Total (mg/kg)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}ingtce}$	Recreator Soil Trichloroethylene Ingestion (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}dertce}$	Recreator Soil Trichloroethylene Dermal (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}inhtce}$	Recreator Soil Trichloroethylene Inhalation (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}sol\text{-}tottce}$	Recreator Soil Trichloroethylene Total (mg/kg)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingnc}$	Recreator Surface Water Noncarcinogenic Child Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}dernc}$	Recreator Surface Water Noncarcinogenic Child Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}totnc}$	Recreator Surface Water Noncarcinogenic Child Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingna}$	Recreator Surface Water Noncarcinogenic Adult Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}derna}$	Recreator Surface Water Noncarcinogenic Adult Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}totna}$	Recreator Surface Water Noncarcinogenic Adult Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingc}$	Recreator Surface Water Carcinogenic Ingestion (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}derc}$	Recreator Surface Water Carcinogenic Dermal (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}totc}$	Recreator Surface Water Carcinogenic Total (µg/L)	Contaminant-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingmu}$	Recreator Surface Water Mutagenic Ingestion (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}dermu}$	Recreator Surface Water Mutagenic Dermal (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}totmu}$	Recreator Surface Water Mutagenic Total (µg/L)	Mutagen-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingvc}$	Recreator Surface Water Carcinogenic Vinyl Chloride Ingestion (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}dervc}$	Recreator Surface Water Carcinogenic Vinyl Chloride Dermal (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}totvc}$	Recreator Surface Water Carcinogenic Vinyl Chloride Total (µg/L)	Vinyl Chloride-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}ingtce}$	Recreator Surface Water Trichloroethylene Ingestion (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}dertce}$	Recreator Surface Water Trichloroethylene Dermal (µg/L)	Trichloroethylene-specific	Determined in this calculator
$SL_{rec\text{-}wat\text{-}tottce}$	Recreator Surface Water Trichloroethylene Total (µg/L)	Trichloroethylene-specific	Determined in this calculator
Fish SLs			
$SL_{res\text{-}fsh\text{-}ingn}$	Resident Fish Noncarcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator
$SL_{res\text{-}fsh\text{-}ingc}$	Resident Fish Carcinogenic Ingestion (mg/kg)	Contaminant-specific	Determined in this calculator

Symbol	Definition (units)	Default	Reference
Miscellaneous Variables			
TR	target risk	1×10^{-6}	Selected by user
THQ	target hazard quotient	0.1	Selected by user
RBA	relative bioavailability factor	Arsenic = 0.6 All Others = 1	U.S. EPA 2012
K	Andelman Volatilization Factor (L/m^3)	0.5	U.S. EPA 1991b (pg. 20)
K_p	Dermal Permeability Constant (cm/hour)	Contaminant-specific Inorganic default = 0.001	U.S. EPA 2004 Exhibit 3-1 and Section 3.1.2.1
$K_{p,ve}$	Steady-state Permeability Coefficient (cm/hour)	Contaminant-specific $K_{p,ve} = K_{ew}D_e/L_e$, $K_{ew} = 1$ assuming the viable epidermis (ve) (cm/hr) behaves essentially as water; $L_e = 10^{-2}$ cm, De = 7.1×10^{-6}/MW cm^2/s assuming $D_e=10^{-6}$ cm^2/s when MW = 50 (Bunge and Cleek, 1995)	U.S. EPA 2004
K_{ew}	Equilibrium Partition Coefficient between epidermis and water for the absorbing chemical (unitless)	Contaminant-specific	U.S. EPA 2004
D_{sc}	Effective diffusion coefficient for chemical transfer through the stratum corneum (cm2/hr)	Contaminant-specific	U.S. EPA 2004
B	Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (ve) (unitless)	Contaminant-specific	U.S. EPA 2004
t^*	Time to reach steady-state (hr)	Contaminant-specific	U.S. EPA 2004
τ_{event}	Lag time per event (hr/event)	Contaminant-specific	U.S. EPA 2004
D_e	Effective Diffusivity of absorbing chemical in the epidermis (cm^2/sec)	$(7.1 \times 10^{-6}) / (\sqrt{MW})$	U.S. EPA 2004
l_{sc}	Apparent thickness of stratum corneum (cm)	0.001	U.S. EPA 2004
b,c	Correlation coefficients	Contaminant-specific see User's Guide section 4.9.8	U.S. EPA 2004
L_e	Effective Thickness of the Epidermis (cm)	0.01	U.S. EPA 2004
AT_{res-c}	Averaging time - resident child (days)	365 x ED_{res-c} = 2190	U.S. EPA 1989 (pg. 6-23)
AT_{res-a}	Averaging time - resident adult (days)	365 x ED_{res} = 9490	U.S. EPA 1989 (pg. 6-23)
AT_{res}	Averaging time - resident age adjusted (days)	365 x LT = 25550	U.S. EPA 1989 (pg. 6-23)
AT_{com-a}	Averaging time - composite worker (days)	365 x ED_{com} = 9125 (non-carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{com}	Averaging time - composite worker (days)	365 x LT = 25550 (carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{ind-a}	Averaging time - indoor worker (days)	365 x ED_{ind} = 9125 (non-carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{ind}	Averaging time - indoor worker soil (days)	365 x LT = 25550 (carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{out-a}	Averaging time - outdoor worker (days)	365 x ED_{out} = 9125 (non-carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{out}	Averaging time - outdoor worker (days)	365 x LT = 25550 (carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{con-a}	Averaging time - construction worker (days)	EW_{con} x 7 (d/wk) x ED_{con} = 350 (non-carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{con}	Averaging time - construction worker (days)	365 x LT = 25550 (carcinogenic)	U.S. EPA 1989 (pg. 6-23)
AT_{rec-c}	Averaging time - recreator child (days)	365 x ED_{rec-c}	U.S. EPA 1989 (pg. 6-23)
AT_{rec-a}	Averaging time - recreator adult (days)	365 x ED_{rec-a}	U.S. EPA 1989 (pg. 6-23)
AT_{rec}	Averaging time - recreator (days)	365 x LT	U.S. EPA 1989 (pg. 6-23)
LT	Lifetime (years)	70	U.S. EPA 1989 (pg. 6-22)
$\Delta H_{v,b}$	Enthalpy of vaporization at the normal boiling point (cal/mol)	Contaminant-specific	See Chemical-specific hierarchy
$\Delta H_{v,gw}$	Enthalpy of vaporization at temperature of groundwater (cal/mol)	Contaminant-specific	Determined in this calculator
HLC	Henry's Law Constant at specified groundwater temperature ($atm\text{-}m^3/mol$)	Contaminant-specific	See Chemical-specific hierarchy
T_{gw}	Groundwater Temperatures (Kelvin)	Site-Specific	Site-Specific
T_C	Critical Temperatures (Kelvin)	Contaminant-specific	See Chemical-specific hierarchy
T_b	Normal Boiling Point (Kelvin)	Contaminant-specific	See Chemical-specific hierarchy
n	If (T_b/T_C < 0.57)	n = 0.3	U.S. EPA Fact Sheet
	If (T_b/T_C > 0.71)	n = 0.41	Unitless exponent values used to determine $\Delta H_{v,gw}$

Symbol	Definition (units)	Default	Reference
	Miscellaneous Variables		
	If ($0.57 < T_b/T_C \leq 0.71$)	n = ($0.74 \times T_b/T_C - 0.116$)	
VPT_{gw}	Vapor Pressure at Groundwater Temperature (mmHg)	Contaminant-specific	Determined in this calculator
VP	Vapor Pressure at 25°C (mmHg)	Contaminant-specific	Contaminant-specific

Symbol	Definition (units)	Default	Reference
Toxicity Values			
RfD_o or RFDOC	Chronic Oral Reference Dose (mg/kg-day)	Contaminant-specific	EPA Superfund hierarchy
RfC or RFCIC	Chronic Inhalation Reference Concentration (mg/m^3)	Contaminant-specific	EPA Superfund hierarchy
$SRfD_o$ or RFDOS	Subhronic Oral Reference Dose (mg/kg-day)	Contaminant-specific	EPA Superfund hierarchy
SRfC or RFCIS	Subchronic Inhalation Reference Concentration (mg/m^3)	Contaminant-specific	EPA Superfund hierarchy
CSF_o or SFO	Oral Slope Factor $(mg/kg\text{-}day)^{-1}$	Contaminant-specific	EPA Superfund hierarchy
IUR	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Contaminant-specific	EPA Superfund hierarchy

Symbol	Definition (units)	Default	Reference
Ingestion and Dermal Contact Rates			
$IRW_{res\text{-}c}$	Resident Drinking Water Ingestion Rate - Child (L/day)	0.78	U.S. EPA 2011, Tables 3-15 and 3-33; weighted average of 90th percentile consumer-only ingestion of drinking water (birth to <6 years)
$IRW_{res\text{-}a}$	Resident Drinking Water Ingestion Rate - Adult (L/day)	2.5	U.S. EPA 2011, Table 3-33; 90th percentile of consumer-only ingestion of drinking water (>= 21 years)
$IFW_{res\text{-}adj}$	Resident Drinking Water Ingestion Rate - Age-adjusted (L/kg)	327.95	Calculated using the age adjusted intake factors equation
$IFWM_{res\text{-}adj}$	Resident Mutagenic Drinking Water Ingestion Rate - Age-adjusted (L/kg)	1019.9	Calculated using the age adjusted intake factors equation
$IRS_{res\text{-}c}$	Resident Soil Ingestion Rate - Child (mg/day)	200	U.S. EPA 1991a (pg. 15)
$IRS_{res\text{-}a}$	Resident Soil Ingestion Rate - Adult (mg/day)	100	U.S. EPA 1991a (pg. 15)
$IFS_{res\text{-}adj}$	Resident Soil Ingestion Rate - Age-adjusted (mg/kg)	36750	Calculated using the age adjusted intake factors equation
$IFSM_{res\text{-}adj}$	Resident Mutagenic Soil Ingestion Rate - Age-adjusted (mg/kg)	166833.33	Calculated using the age adjusted intake factors equation
IR_{ind}	Indoor Worker Soil Ingestion Rate (mg/day)	50	U.S. EPA 1991a (pg. 15)
IR_{out}	Outdoor Worker Soil Ingestion Rate (mg/day)	100	U.S. EPA 1991a (pg. 15)
IR_{con}	Construction Worker Soil Ingestion Rate (mg/day)	330	U.S. EPA 2002 Exhibit 5-1
IR_{com}	Composite Worker Soil Ingestion Rate (mg/day)	100	U.S. EPA 1991a (pg. 15)
$IRW_{rec\text{-}c}$	Recreator Surface Water Ingestion Rate - Child (L/hour)	0.12	U.S. EPA 2011, Table 3.5
$IRW_{rec\text{-}a}$	Recreator Surface Water Ingestion Rate - Adult (L/hour)	0.11	Time weighted average was calculated based on the upper percentile from U.S. EPA 2019, Table 3.7
$IFW_{rec\text{-}adj}$	Recreator Surface Water Ingestion Rate - Age-adjusted (L/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$IRW_{0\text{-}2}$	Surface Water Ingestion Rate - Age Segment 0-2 (L/hour)	0.12	U.S. EPA 2011, Table 3.5
$IRW_{2\text{-}6}$	Surface Water Ingestion Rate - Age Segment 2-6 (L/hour)	0.12	U.S. EPA 2011, Table 3.5
$IRW_{6\text{-}16}$	Surface Water Ingestion Rate - Age Segment 6-16 (L/hour)	0.124	Time weighted average was calculated based on the upper percentile from U.S. EPA 2019, Table 3.7
$IRW_{16\text{-}26}$	Surface Water Ingestion Rate - Age Segment 16-26 (L/hour)	0.0985	Time weighted average was calculated based on the upper percentile from U.S. EPA 2019, Table 3.7
$IFWM_{rec\text{-}adj}$	Recreator Mutagenic Surface Water Ingestion Rate - Age-adjusted (L/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$IRS_{rec\text{-}c}$	Recreator Soil Ingestion Rate - Child (mg/day)	Site-Specific	U.S. EPA 1991a (pg. 15)
$IRS_{rec\text{-}a}$	Recreator Soil Ingestion Rate - Adult (mg/day)	Site-Specific	U.S. EPA 1991a (pg. 15)
$IFS_{rec\text{-}adj}$	Recreator Soil Ingestion Rate - Age-adjusted (mg/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$IRS_{0\text{-}2}$	Soil Ingestion Rate - Age-segment 0-2 (mg/day)	200	U.S. EPA 1991a (pg. 15)
$IRS_{2\text{-}6}$	Soil Ingestion Rate - Age-segment 2-6 (mg/day)	200	U.S. EPA 1991a (pg. 15)
$IRS_{6\text{-}16}$	Soil Ingestion Rate - Age-segment 6-16 (mg/day)	100	U.S. EPA 1991a (pg. 15)
$IRS_{16\text{-}26}$	Soil Ingestion Rate - Age-segment 16-26 (mg/day)	100	U.S. EPA 1991a (pg. 15)

Symbol	Definition (units)	Default	Reference
Ingestion and Dermal Contact Rates			
$IFSM_{rec-adj}$	Recreator Mutagenic Soil Ingestion Rate - Age-adjusted (mg/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$DFS_{res-adj}$	Resident soil dermal contact factor- age-adjusted (mg/kg)	103390	Calculated using the age adjusted intake factors equation
$DFSM_{res-adj}$	Resident Mutagenic soil dermal contact factor- age-adjusted (mg/kg)	428260	Calculated using the age adjusted intake factors equation
$DFS_{rec-adj}$	Recreator soil dermal contact factor- age-adjusted (mg/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$DFSM_{rec-adj}$	Recreator Mutagenic soil dermal contact factor- age-adjusted (mg/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$DFW_{res-adj}$	Resident water dermal contact factor- age-adjusted (cm_2 - event/kg)	2610650	Calculated using the age adjusted intake factors equation
$DFWM_{res-adj}$	Resident Mutagenic water dermal contact factor- age-adjusted (cm_2 - event/kg)	8191633	Calculated using the age adjusted intake factors equation
$DFW_{rec-adj}$	Recreator water dermal contact factor- age-adjusted (cm_2 - event/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
$DFWM_{rec-adj}$	Recreator Mutagenic water dermal contact factor- age-adjusted (cm^2 - event/kg)	Site-Specific	Calculated using the age adjusted intake factors equation
IRF_{res-a}	Fish Ingestion Rate (mg/day)	Site-Specific	Recommend using Site-Specific values
SA_{res-c}	Resident surface area soil - child (cm^2/day)	2373	U.S. EPA 2011a, Tables 7-2 and 7-8; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, birth to < 6 years)(forearm and lower leg-specific data used when available, ratios for nearest available age group used elsewhere)
SA_{res-a}	Resident surface area soil - adult (cm^2/day)	6032	U.S. EPA 2011, Tables 7-2 and 7-12; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, 21+ years)(forearm and lower leg-specific data used for males and female lower leg; ratio of male forearm to arm applied to female arm data.
SA_{res-c}	Resident surface area water - child (cm^2)	6365	U.S. EPA 2014, weighted average of mean values for children <6 years.
SA_{res-a}	Resident surface area water - adult (cm^2)	19652	U.S. EPA 2014, weighted average of mean values for adults, male and female 21+.
SA_{out}	Outdoor Worker soil surface area - adult (cm^2/day)	3527	US EPA 2011a, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female, 21+years)
SA_{con}	Construction Worker soil surface area - adult (cm^2/day)	3527	US EPA 2011a, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female, 21+years)
SA_{com}	Composite Worker soil surface area - adult (cm^2/day)	3527	US EPA 2011a, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female, 21+years)

Symbol	Definition (units)	Default	Reference
Ingestion and Dermal Contact Rates			
SA_{rec-c}	Recreator surface area soil - child (cm^2/day)	Site-Specific	Site-Specific
SA_{rec-a}	Recreator surface area soil - adult (cm^2/day)	Site-Specific	Site-Specific
SA_{rec-c}	Recreator surface area water - child (cm^2)	6365	U.S. EPA 2014, weighted average of mean values for children <6 years.
SA_{rec-a}	Recreator surface area water - adult (cm^2)	19652	U.S. EPA 2014, weighted average of mean values for adults, male and female 21+.
SA_{0-2}	Resident/Recreator surface area soil - age segment 0-2 (cm2/day)	Resident 2373	U.S. EPA 2011, Tables 7-2 and 7-12; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, 21+ years)(forearm and lower leg-specific data used for males and female lower leg; ratio of male forearm to arm applied to female arm data.
		Recreator - Site-Specific	Recreator - Site-Specific
SA_{2-6}	Resident/Recreator surface area soil - age segment 2-6 (cm^2/day)	Resident 2373	U.S. EPA 2011, Tables 7-2 and 7-12; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, 21+ years)(forearm and lower leg-specific data used for males and female lower leg; ratio of male forearm to arm applied to female arm data.
		Recreator - Site-Specific	Recreator - Site-Specific
SA_{6-16}	Resident/Recreator surface area soil - age segment 6-16 (cm^2/day)	Resident 6032	U.S. EPA 2011, Tables 7-2 and 7-12; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, 21+ years)(forearm and lower leg-specific data used for males and female lower leg; ratio of male forearm to arm applied to female arm data.
		Recreator - Site-Specific	Recreator - Site-Specific
SA_{16-26}	Resident/Recreator surface area soil - age segment 16-26 (cm^2/day)	Resident 6032	U.S. EPA 2011, Tables 7-2 and 7-12; weighted average of mean values for head, hands, forearms, lower legs, and feet (male and female, 21+ years)(forearm and lower leg-specific data used for males and female lower leg; ratio of male forearm to arm applied to female arm data.
		Recreator - Site-Specific	Recreator - Site-Specific
SA_{0-2}	Resident/Recreator surface area water - age segment 0-2 (cm^2)	6365	U.S. EPA 2014, weighted average of mean values for children <6 years.
SA_{2-6}	Resident/Recreator surface area water - age segment 2-6 (cm^2)	6365	U.S. EPA 2014, weighted average of mean values for children <6 years.

Symbol	Definition (units)	Default	Reference
Ingestion and Dermal Contact Rates			
SA_{6-16}	Resident/Recreator surface area water - age segment 6-16 (cm^2)	19652	U.S. EPA 2014, weighted average of mean values for adults, male and female 21+.
SA_{16-26}	Resident/Recreator surface area water - age segment 16-26 (cm^2)	19652	U.S. EPA 2014, weighted average of mean values for adults, male and female 21+.
AF_{res-c}	Resident soil adherence factor - child (mg/cm^2)	0.2	U.S. EPA 2002 (Exhibit 1-2)
AF_{res-a}	Resident soil adherence factor - adult (mg/cm^2)	0.07	U.S. EPA 2002 (Exhibit 1-2)
AF_{out}	Outdoor Worker soil adherence factor (mg/cm^2)	0.12	U.S. EPA 2011, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part- specific (hands, forearms, and face) mean adherence factors for adult commercial/industrial activities
AF_{com}	Composite Worker soil adherence factor (mg/cm^2)	0.12	U.S. EPA 2011, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part- specific (hands, forearms, and face) mean adherence factors for adult commercial/industrial activities
AF_{con}	Construction Worker soil adherence factor (mg/cm^2)	0.3	U.S. EPA 2002 (Exhibit 5-1)
AF_{rec-c}	Recreator soil adherence factor - child (mg/cm^2)	none	U.S. EPA 2004 Exhibit 3-3 presents options
AF_{rec-a}	Recreator soil adherence factor - adult (mg/cm^2)	none	U.S. EPA 2004 Exhibit 3-3 presents options
AF_{0-2}	Resident soil adherence factor - age segment 0-2 (mg/cm^2)	0.2	U.S. EPA 2002 (Exhibit 1-2)
AF_{2-6}	Resident soil adherence factor - age segment 2-6 (mg/cm^2)	0.2	U.S. EPA 2002 (Exhibit 1-2)
AF_{6-16}	Resident soil adherence factor - age segment 6-16 (mg/cm^2)	0.07	U.S. EPA 2002 (Exhibit 1-2)
AF_{16-26}	Resident soil adherence factor - age segment 16-26 (mg/cm^2)	0.07	U.S. EPA 2002 (Exhibit 1-2)
BW_{res-c}	Resident Body Weight - child (kg)	15	U.S. EPA 1991a (pg. 15)
BW_{res-a}	Resident Body Weight - adult (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{rec-c}	Recreator Body Weight - child (kg)	15	U.S. EPA 1991a (pg. 15)
BW_{rec-a}	Recreator Body Weight - adult (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{0-2}	Resident/Recreator Body Weight - age segment 0-2 (kg)	15	U.S. EPA 1991a (pg. 15)
BW_{2-6}	Resident/Recreator Body Weight - age segment 2-6 (kg)	15	U.S. EPA 1991a (pg. 15)
BW_{6-16}	Resident/Recreator Body Weight - age segment 6-16 (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{16-26}	Resident/Recreator Body Weight - age segment 16-26 (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{out}	Outdoor Worker Body Weight (kg)	80	U.S. EPA 1991a (pg. 15)
BW_{con}	Construction Worker Body Weight (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{ind}	Indoor Worker Body Weight (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
BW_{com}	Composite Worker Body Weight (kg)	80	U.S. EPA 2011, Table 8-3; weighted mean values for adults 21 - 78
ABS	Fraction of contaminant absorbed dermally from soil (unitless)	Contaminant-specific Inorganic default = none	U.S. EPA 2004 (Exhibit 3-4 and section 3.2.2.4)

Symbol	Definition (units)	Default	Reference
Ingestion and Dermal Contact Rates			
ABS_d	Fraction of contaminant absorbed dermally from soil (unitless)	VOC default = none	U.S. EPA 2004 (Exhibit 3-4 and section 3.2.2.4)
		SVOC default = 0.1	
GIABS	Fraction of contaminant absorbed in gastrointestinal tract (unitless) Note: if the GIABS is >50% then it is set to 100% for the calculation of dermal toxicity values.	Contaminant-specific	U.S. EPA 2004 (Exhibit 4-1 and section 4.2)
		Inorganic default = 1.0	
		VOC default = 1.0	
		SVOC default = 1.0	
DA_{event}	Absorbed dose per event (µg/cm^2 - event)	Contaminant-specific	U.S. EPA 2004 (Equation 3.2 and 3.3)

Symbol	Definition (units)	Default	Reference
Exposure Frequency, Exposure Duration, and Exposure Time Variables			
EF_{res}	Resident Exposure Frequency (days/year)	350	U.S. EPA 1991a (pg. 15)
EF_{res-a}	Resident Exposure Frequency - adult (days/year)	350	U.S. EPA 1991a (pg. 15)
EF_{res-c}	Resident Exposure Frequency - child (days/year)	350	U.S. EPA 1991a (pg. 15)
EF_{com}	Composite Worker Exposure Frequency (days/year)	250	U.S. EPA 1991a (pg. 15)
EF_{ind}	Indoor Worker Exposure Frequency (days/year)	250	U.S. EPA 1991a (pg. 15)
EF_{out}	Outdoor Worker Exposure Frequency (days/year)	225	U.S. EPA 2002 (Exhibit 1-2)
EF_{con}	Construction Worker Exposure Frequency (days/year)	250	U.S. EPA 2002 Exhibit 5-1
EF_{rec}	Recreator Exposure Frequency (days/year)	Site-Specific	Site-Specific
EF_{rec-c}	Recreator Exposure Frequency - child (days/year)	Site-Specific	Site-Specific
EF_{rec-a}	Recreator Exposure Frequency - adult (days/year)	Site-Specific	Site-Specific
EF_{0-2}	Resident/Recreator Exposure Frequency - age segment 0-2 (days/year)	Resident - 350	Resident - U.S. EPA 1991a (pg. 15)
		Recreator - Site-Specific	Recreator - Site-Specific
EF_{2-6}	Resident/Recreator Exposure Frequency - age segment 2-6 (days/year)	Resident - 350	Resident - U.S. EPA 1991a (pg. 15)
		Recreator - Site-Specific	Recreator - Site-Specific
EF_{6-16}	Resident/Recreator Exposure Frequency - age segment 6-16 (days/year)	Resident - 350	Resident - U.S. EPA 1991a (pg. 15)
		Recreator - Site-Specific	Recreator - Site-Specific
EF_{16-26}	Resident/Recreator Exposure Frequency - age segment 16-26 (days/year)	Resident - 350	Resident - U.S. EPA 1991a (pg. 15)
		Recreator - Site-Specific	Recreator - Site-Specific
ED_{res}	Resident Exposure Duration (years)	26	EPA 2011, Table 16-108; 90th percentile for current residence time.
ED_{res-c}	Resident Exposure Duration - child (years)	6	U.S. EPA 1991a (pg. 15)
ED_{res-a}	Resident Exposure Duration - adult (years)	20	ED_{res} (26 years) - ED_{res-c} (6 years)
ED_{com}	Composite Worker Exposure Duration - (years)	25	U.S. EPA 1991a (pg. 15)
ED_{ind}	Indoor Worker Exposure Duration - (years)	25	U.S. EPA 1991a (pg. 15)
ED_{out}	Outdoor Worker Exposure Duration (years)	25	U.S. EPA 1991a (pg. 15)
ED_{con}	Construction Worker Exposure Duration (years)	1	U.S. EPA 2002 Exhibit 5-1
ED_{rec}	Recreator Exposure Duration (years)	26	EPA 2011, Table 16-108; 90th percentile for current residence time.
ED_{rec-c}	Recreator Exposure Duration - child (years)	6	U.S. EPA 1991a (pg. 15)
ED_{rec-a}	Recreator Exposure Duration - adult (years)	20	ED_{rec} (26 years) - ED_{rec-c} (6 years)
ED_{0-2}	Resident/Recreator Exposure Duration - age segment 0-2 (years)	2	U.S. EPA 2005 (pg. 37)
ED_{2-6}	Resident/Recreator Exposure Duration - age segment 2-6 (years)	4	U.S. EPA 2005 (pg. 37)
ED_{6-16}	Resident/Recreator Exposure Duration - age segment 6-16 (years)	10	U.S. EPA 2005 (pg. 37)
ED_{16-26}	Resident/Recreator Exposure Duration - age segment 16-26 (years)	10	U.S. EPA 2005 (pg. 37)
ET_{res-a}	Resident Exposure Time (hours/day)	24	The whole day
ET_{res-c}	Resident Exposure Time (hours/day)	24	The whole day
ET_{res}	Resident Exposure Time (hours/day)	24	The whole day
ET_{com}	Composite Worker Exposure Time (hours/day)	8	The work day

Symbol	Definition (units)	Default	Reference
Exposure Frequency, Exposure Duration, and Exposure Time Variables			
ET_{ind}	Indoor Worker Exposure Time (hours/day)	8	The work day
ET_{out}	Outdoor Worker Exposure Time (hours/day)	8	The work day
ET_{con}	Construction Worker Exposure Time (hours/day)	8	The work day
ET_{rec}	Recreator Exposure Time (hours/day)	Site-Specific	Site-Specific
ET_{rec-c}	Recreator Exposure Time - child (hours/day)	Site-Specific	Site-Specific
ET_{rec-a}	Recreator Exposure Time - adult (hours/day)	Site-Specific	Site-Specific
$ET_{event-res-c}$	Resident Water Exposure Time - child (hours/event)	0.54	U.S. EPA 2011, Table 16-28; weighted average of 90th percentile time spent bathing (birth to <6 years)
$ET_{event-res-a}$	Resident Water Exposure Time - adult (hours/event)	0.71	U.S. EPA 2011, Tables 16-30 and 16-31; weighted average of adult (21 to 78) 90^{th} percentile of time spent bathing/ showering in a day, divided by mean number of baths/showers taken in a day.
$ET_{event-res-adj}$	Resident Water Exposure Time - age-adjusted (hours/event)	0.6708	Calculated using the age adjusted intake factors equation
$ET_{event-res-madj}$	Resident Exposure Time - age-adjusted (hours/event)	0.6708	Calculated using the age adjusted intake factors equation
$ET_{event-rec-c}$	Recreator Surface Water Exposure Time - child (hours/event)	Site-Specific	Site-Specific
$ET_{event-rec-a}$	Recreator Surface Water Exposure Time - adult (hours/event)	Site-Specific	Site-Specific
ET_{0-2}	Resident/Recreator Exposure Time - age segment 0-2 (hours/day)	Resident - 24	Resident - The whole day
		Recreator - Site-Specific	Recreator - Site-Specific
ET_{2-6}	Resident/Recreator Exposure Time - age segment 2-6 (hours/day)	Resident - 24	Resident - The whole day
		Recreator - Site-Specific	Recreator - Site-Specific
ET_{6-16}	Resident/Recreator Exposure Time - age segment 6-16 (hours/day)	Resident - 24	Resident - The whole day
		Recreator - Site-Specific	Recreator - Site-Specific
ET_{16-26}	Resident/Recreator Exposure Time - age segment 16-26 (hours/day)	Resident - 24	Resident - The whole day
		Recreator - Site-Specific	Recreator - Site-Specific
$ET_{event-rec-adj}$	Recreator Exposure Time - age-adjusted (hours/event)	Site-Specific	Calculated using the age adjusted intake factors equation
$ET_{event-rec(0-2)}$	Recreator Exposure Time - age segment 0-2 (hours/event)	Site-Specific	Site-Specific
$ET_{event-rec(2-6)}$	Recreator Exposure Time - age segment 2-6 (hours/event)	Site-Specific	Site-Specific
$ET_{event-rec(6-16)}$	Recreator Exposure Time - age segment 6-16 (hours/event)	Site-Specific	Site-Specific
$ET_{event-rec(16-26)}$	Recreator Exposure Time - age segment 16-26 (hours/event)	Site-Specific	Site-Specific
$ET_{event-res(0-2)}$	Resident Exposure Time - age segment 0-2 (hours/event)	0.54	Calculated based on the ET given for ETevent-res-c
$ET_{event-res(2-6)}$	Resident Exposure Time - age segment 2-6 (hours/event)	0.54	Calculated based on the ET given for ETevent-res-c
$ET_{event-res(6-16)}$	Resident Exposure Time - age segment 6-16 (hours/event)	0.71	Calculated based on the ET given for ETevent-res-a
$ET_{event-res(16-26)}$	Resident Exposure Time - age segment 16-26 (hours/event)	0.71	Calculated based on the ET given for ETevent-res-a
$ET_{event-rec-madj}$	Recreator Exposure Time - age-adjusted (hours/event)	Site-Specific	Calculated using the age adjusted intake factors equation
EV_{rec-c}	Recreator Events - child (events/day)	Site-Specific	Site-Specific

Symbol	Definition (units)	Default	Reference
Exposure Frequency, Exposure Duration, and Exposure Time Variables			
EV_{rec-a}	Recreator Events - adult (events/day)	Site-Specific	Site-Specific
EV_{res-c}	Resident Events - child (events/day)	1	U.S. EPA 2004; Exhibit 3-2
EV_{res-a}	Resident Events - adult (events/day)	1	U.S. EPA 2004; Exhibit 3-2
EV_{0-2}	Resident/Recreator Events - age segment 0-2 (events/day)	Resident - 1 Recreator - Site-Specific	U.S. EPA 2004; Exhibit 3-2
EV_{2-6}	Resident/Recreator Events - age segment 2-6 (events/day)	Resident - 1 Recreator - Site-Specific	U.S. EPA 2004; Exhibit 3-2
EV_{6-16}	Resident/Recreator Events - age segment 6-16 (events/day)	Resident - 1 Recreator - Site-Specific	U.S. EPA 2004; Exhibit 3-2
EV_{16-26}	Resident/Recreator Events - age segment 16-26 (events/day)	Resident - 1 Recreator - Site-Specific	U.S. EPA 2004; Exhibit 3-2

Symbol	Definition (units)	Default	Reference
Soil to Groundwater SSL Factor Variables			
C_w	Target soil leachate concentration (mg/L)	nonzero MCL or RSL × DAF	U.S. EPA. 2002 Equation 4-14
DAF	Dilution attenuation factor (unitless)	1 (or Site-Specific)	U.S. EPA. 2002 Equation 4-11
ED	Exposure duration	70	U.S. EPA. 2002 Equation 4-14
I	Infiltration Rate (m/year)	0.18	U.S. EPA. 2002 Equation 4-11
L	source length parallel to ground water flow (m)	Site-Specific	U.S. EPA. 2002 Equation 4-11
i	hydraulic gradient (m/m)	Site-Specific	U.S. EPA. 2002 Equation 4-11
K	aquifer hydraulic conductivity (m/year)	Site-Specific	U.S. EPA. 2002 Equation 4-11
θ_w	water-filled soil porosity (L_{water}/L_{soil})	0.3	U.S. EPA. 2002 Equation 4-10
θ_a	air-filled soil porosity (L_{air}/L_{soil})	= $n-\theta_w$	U.S. EPA. 2002 Equation 4-10
n	total soil porosity(L_{pore}/L_{soil})	= $1-(\rho_b/\rho_s)$	U.S. EPA. 2002 Equation 4-10
ρ_s	soil particle density (kg/L)	2.65	U.S. EPA. 2002 Equation 4-10
ρ_b	dry soil bulk density (kg/L)	1.5	U.S. EPA. 2002 Equation 4-10
H'	Dimensionless Henry Law Constant (unitless)	Contaminant-specific	See Chemical-specific hierarchy
K_d	soil-water partition coefficient (L/kg)	= $K_{oc} \times f_{oc}$ for organics	U.S. EPA. 2002 Equation 4-10
K_{oc}	soil organic carbon/water partition coefficient (L/kg)	Contaminant-specific	See Chemical-specific hierarchy
f_{oc}	fraction organic carbon in soil (g/g)	0.002	U.S. EPA. 2002 Equation 4-10
d_a	aquifer thickness (m)	Site-Specific	U.S. EPA. 2002 Equation 4-10
d_s	depth of source (m)	Site-Specific	U.S. EPA. 2002 Equation 4-10
d	mixing zone depth (m)	Site-Specific	U.S. EPA. 2002 Equation 4-12

Symbol	Definition (units)	Default	Reference
Wind Particulate Emission Factor Variables			
PEF	Particulate Emission Factor - Minneapolis (m^3/kg)	1.36 x 10^9(region-specific)	U.S. EPA 2002 Exhibit D-2
Q/C_{wind}	Inverse of the Mean Concentration at the Center of a 0.5-Acre-Square Source (g/m^2-s per kg/m^3)	93.77 (region-specific)	U.S. EPA 2002 Exhibit D-2
V	Fraction of Vegetative Cover (unitless)	0.5	U.S. EPA. 2002 Equation 4-5
U_m	Mean Annual Wind Speed (m/s)	4.69	U.S. EPA. 2002 Equation 4-5
U_t	Equivalent Threshold Value of Wind Speed at 7m (m/s)	11.32	U.S. EPA. 2002 Equation 4-5
F(x)	Function Dependent on U_m /U_t (unitless)	0.194	U.S. EPA. 2002 Equation 4-5
A	Dispersion constant unitless	PEF and region-specific	U.S. EPA 2002 Exhibit D-2
A_s	Areal extent of the site or contamination (acres)	0.5 (range 0.5 to 500)	U.S. EPA 2002 Exhibit D-2
B	Dispersion constant unitless	PEF and region-specific	U.S. EPA 2002 Exhibit D-2
C	Dispersion constant unitless	PEF and region-specific	U.S. EPA 2002 Exhibit D-2

Symbol	Definition (units)	Default	Reference
Mechanical Particulate Emission Factor Variables from Vehicle Traffic			
PEF_{sc}	Particulate Emission Factor - subchronic (m^3/kg)	Site-Specific	U.S. EPA 2002 Equation 5-5
Q/C_{sr}	Inverse of the ratio of the 1-h geometric mean concentration to the emission flux along a straight road segment bisecting a square site (g/m^2-s per kg/m^3)	23.02 (for 0.5 acre site)	U.S. EPA 2002 Equation 5-5
F_D	Dispersion correction factor (unitless)	0.185	U.S. EPA 2002 Equation E-16
T	Total time over which construction occurs (s)	Site-Specific	U.S. EPA 2002 Equation 5-5
A_R	Surface area of contaminated road segment (m^2)	($A_R = L_R \times W_R \times 0.092903 m^2/ft^2$)	U.S. EPA 2002 Equation 5-5
L_R	Length of road segment (ft)	Site-Specific	U.S. EPA 2002 Equation 5-5
W_R	Width of road segment (ft)	20	U.S. EPA 2002 Equation E-18
W	Mean vehicle weight (tons)	(number of cars x tons/car + number of trucks x tons/truck) / total vehicles)	U.S. EPA 2002 Equation 5-5
p	Number of days with at least 0.01 inches of precipitation (days/year)	Site-Specific	U.S. EPA 2002 Exhibit 5-2
∑VKT	Sum of fleet vehicle kilometers traveled during the exposure duration (km)	∑VKT = total vehicles x distance (km/day) x frequency (weeks/year) x (days/year)	U.S. EPA 2002 Equation 5-5
A	Dispersion constant unitless	12.9351	U.S. EPA 2002 Equation 5-6
A_s	Areal extent of site surface soil contamination (acres)	0.5 (range 0.5 to 500)	U.S. EPA 2002 Equation 5-6
B	Dispersion constant unitless	5.7383	U.S. EPA 2002 Equation 5-6
C	Dispersion constant unitless	71.7711	U.S. EPA 2002 Equation 5-6

Symbol	Definition (units)	Default	Reference
Mechanical Particulate Emission Factor Variables from other than Vehicle Traffic			
PEF'_{sc}	Particulate Emission Factor - subchronic (m^3/kg)	Site-Specific	U.S. EPA 2002 Equation E-26
Q/C_{sa}	Inverse of the ratio of the 1-h. geometric mean air concentration and the emission flux at the center of the square emission source (g/m^2-s per kg/m^3)	Site-Specific	U.S. EPA 2002 Equation E-15
F_D	Dispersion correction factor (unitless)	Site-Specific	U.S. EPA 2002 Equation E-16
A	Dispersion constant unitless	2.4538	U.S. EPA 2002 Equation E-15
B	Dispersion constant unitless	17.566	U.S. EPA 2002 Equation E-15
C	Dispersion constant unitless	189.0426	U.S. EPA 2002 Equation E-15
A_s	Areal extent of site surface soil contamination (acres)	(range 0.5 to 500)	U.S. EPA 2002 Equation E-15
J'_T	Total time-averaged PM_{10} unit emission flux for construction activities other than traffic on unpaved roads (g/m^2-s)	Site-Specific	U.S. EPA 2002 Equation E-25
M^{PC}_{wind}	Unit mass emitted from wind erosion (g)	Site-Specific	U.S. EPA 2002 Equation E-20
V	Fraction of Vegetative Cover (unitless)	0	U.S. EPA 2002 Equation E-20
U_m	Mean Annual Wind Speed (m/s)	4.69	U.S. EPA 2002 Equation E-20
U_t	Equivalent Threshold Value of Wind Speed at 7m (m/s)	11.32	U.S. EPA 2002 Equation E-20
F(x)	Function Dependent on U_m/U_t (unitless)	0.194	U.S. EPA 2002 Equation E-20
A_{surf}	Areal extent of site surface soil contamination ($m2$)	(range 0.5 to 500)	U.S. EPA 2002 Equation E-20
ED	Exposure duration (years)	Site-Specific	U.S. EPA 2002 Equation E-20
M_{excav}	Unit mass emitted from excavation soil dumping (g)	Site-Specific	U.S. EPA 2002 Equation E-21
0.35	PM_{10} particle size multiplier (unitless)	0.35	U.S. EPA 2002 Equation E-21
U_m	Mean annual wind speed during construction (m/s)	4.69	U.S. EPA 2002 Equation E-21
$M_{m\text{-}excav}$	Gravimetric soil moisture content (%)	12 (mean value for municipal landfill cover)	U.S. EPA 2002 Equation E-21
ρ_{soil}	In situ soil density (includes water) (mg/m^3)	1.68	U.S. EPA 2002 Equation E-21
A_{excav}	Areal extent of excavation (m^2)	(range 0.5 to 500)	U.S. EPA 2002 Equation E-21
d_{excav}	Average depth of excavation (m)	Site-Specific	U.S. EPA 2002 Equation E-21
$N_{A\text{-}dump}$	Number of times soil is dumped (unitless)	2	U.S. EPA 2002 Equation E-21
M_{doz}	Unit mass emitted from dozing operations (g)	Site-Specific	U.S. EPA 2002 Equation E-22
0.75	PM_{10} scaling factor (unitless)	0.75	U.S. EPA 2002 Equation E-22
s_{doz}	Soil silt content (%)	6.9	U.S. EPA 2002 Equation E-22
$M_{m\text{-}doz}$	Gravimetric soil moisture content (%)	7.9 (mean value for overburden)	U.S. EPA 2002 Equation E-22
$\sum VKT_{doz}$	Sum of dozing kilometers traveled (km)	Site-Specific	U.S. EPA 2002 Equation E-22
S_{doz}	Average dozing speed (kph)	11.4 (mean value for graders)	U.S. EPA 2002 Equation E-22
$N_{A\text{-}doz}$	Number of times site is dozed (unitless)	Site-Specific	U.S. EPA 2002 Equation E-22
B_d	Dozer blade length (m)	Site-Specific	U.S. EPA 2002 Page E-28
M_{grade}	Unit mass emitted from grading operations (g)	Site-Specific	U.S. EPA 2002 Equation E-23
0.6	PM10 scaling factor (unitless)	0.6	U.S. EPA 2002 Equation E-23
$\sum VKT_{grade}$	Sum of grading kilometers traveled (km)		U.S. EPA 2002 Equation E-23
S_{grade}	Average grading speed (kph)	11.4 (mean value for graders)	U.S. EPA 2002 Equation E-23
$N_{A\text{-}grade}$	Number of times site is graded (unitless)	Site-Specific	U.S. EPA 2002 Equation E-23
B_g	Grader blade length (m)	Site-Specific	U.S. EPA 2002 Page E-28
M_{till}	Unit mass emitted from tilling operations (g)	Site-Specific	U.S. EPA 2002 Equation E-24
s_{till}	Soil silt content (%)	18	U.S. EPA 2002 Equation E-24
$A_{c\text{-}till}$	Areal extent of tilling (acres)	Site-Specific	U.S. EPA 2002 Equation E-24
$A_{c\text{-}grade}$	Areal extent of grading (acres)	Site-Specific	Necessary to solve $\sum_{VKTgrade}$ in U.S. EPA 2002 Equation E-23
$A_{c\text{-}doz}$	Areal extent of dozinging (acres)	Site-Specific	Necessary to solve $\sum_{VKTgrade}$ in U.S. EPA 2002 Equation E-22
$N_{A\text{-}till}$	Number of times soil is tilled (unitless)	2	U.S. EPA 2002 Equation E-24

Symbol	Definition (units)	Default	Reference
Chronic Volatilization Factor and Soil Saturation Limit Variables			
VF_{ulim}	Volatilization Factor - Los Angeles (m^3/kg)	Contaminant-specific	U.S. EPA. 2002 Equation 4-8
C_{sat}	Soil saturation concentration (mg/kg)	Contaminant-specific	U.S. EPA. 2002 Equation 4-9
Q/C_{vol}	Inverse of the Mean Concentration at the Center of a 0.5-Acre-Square Source (g/m^2-s per kg/m^3)	68.18	U.S. EPA. 2002 Equation 4-8
A_s	Areal extent of the site contamination (acres)	0.5 (range 0.5 to 500)	U.S. EPA 2002 Equation 4-8
B	Dispersion constant unitless	18.4385 (region-specific)	U.S. EPA 2002 Exhibit D-3
C	Dispersion constant unitless	209.7845 (region-specific)	U.S. EPA 2002 Exhibit D-3
D_A	Apparent Diffusivity (cm^2/s)	Contaminant-specific	U.S. EPA. 2002 Equation 4-8
T	Exposure interval (s)	8.2×10^8 (used for unlimited source model) = 26 years	U.S. EPA. 2002 Equation 4-8
T	Exposure interval (years)	26 (used for mass-limit model)	U.S. EPA. 2002 Equation 4-13
ρ_b	Dry soil bulk density (g/cm^3)	1.5	U.S. EPA. 2002 Equation 4-8
θ_a	Air-filled soil porosity (L_{air}/L_{soil}) ($n-\theta_w$)	0.28	U.S. EPA. 2002 Equation 4-8
n	Total soil porosity (L_{pore}/L_{soil}) ($1-(\rho_b/\rho_s)$)	0.43	U.S. EPA. 2002 Equation 4-8
θ_w	Water-filled soil porosity (L_{water}/L_{soil})	0.15	U.S. EPA. 2002 Equation 4-8
ρ_s	Soil particle density (g/cm^3)	2.65	U.S. EPA. 2002 Equation 4-8
S	Water Solubility Limit (mg/L)	Contaminant-specific	See Chemical-specific hierarchy
R	Universal Gas Constant (L-atm/mole-K)	0.082057	U.S. EPAFact Sheet
R_c	Universal Gas Constant (cal/mole-K)	1.9872	U.S. EPA Fact Sheet
D_{ia}	Diffusivity in air (cm^2/s)	Contaminant-specific	U.S. EPA. 2001
H'	Dimensionless Henry's Law Constant	Contaminant-specific	See Chemical-specific hierarchy
D_{iw}	Diffusivity in water (cm^2/s)	Contaminant-specific	U.S. EPA. 2001
K_d	Soil-water partition coefficient (L/kg) (Koc×foc)	Contaminant-specific	U.S. EPA. 2002 Equation 4-8
K_{oc}	Soil organic carbon-water partition coefficient (L/kg)	$= K_{oc} \times f_{oc}$ for organics	See Chemical-specific hierarchy
f_{oc}	Organic carbon content of soil (g/g)	0.006	U.S. EPA. 2002 Equation 4-8
d_s	Average source depth (m)	Site-Specific	U.S. EPA 2002 Equation 4-13

Symbol	Definition (units)	Default	Reference
Subchronic Volatilization Factor for Unlimited Source and Mass-limit Equations			
$VF_{ulim-sc}$	Subchronic Volatilization Factor (m^3/kg)	Contaminant-specific	U.S. EPA 2002 Equation 5-14
Q/C_{sa}	Inverse of the ratio of the 1-h geometric mean air concentration to the volatilization flux at the center of a square source (g/m^2-s per kg/m^3)	14.31 (for 0.5 acre site)	U.S. EPA 2002 Equation 5-14
A	Dispersion constant unitless	2.4538	U.S. EPA 2002 Equation 5-15
A_c	Areal extent of the site soil contamination (acres)	0.5 (range 0.5 to 500)	U.S. EPA 2002 Equation 5-15
B	Dispersion constant unitless	17.566	U.S. EPA 2002 Equation 5-15
C	Dispersion constant unitless	189.0426	U.S. EPA 2002 Equation 5-15
D_A	Apparent Diffusivity (cm^2/s)	Contaminant-specific	U.S. EPA 2002 Equation 5-14
T	Total time over which construction occurs (s)	Site-Specific	U.S. EPA 2002 Equation 5-14
ρ_b	Dry soil bulk density (g/cm^3)	1.5	U.S. EPA 2002 Equation 5-14
F_D	Dispersion correction factor (unitless)	0.185	U.S. EPA 2002 Equation 5-14
θ_a	Air-filled soil porosity (L_{air}/L_{soil}) ($n-\theta_w$)	0.28	U.S. EPA 2002 Equation 5-14
n	Total soil porosity (L_{pore}/L_{soil}) ($1-(\rho_b/\rho_s)$	0.43	U.S. EPA 2002 Equation 5-14
θ_w	Water-filled soil porosity (L_{water}/L_{soil})	0.15	U.S. EPA 2002 Equation 5-14
ρ_s	Soil particle density (g/cm^3)	2.65	U.S. EPA 2002 Equation 5-14
D_{ia}	Diffusivity in air (cm^2/s)	Contaminant-specific	U.S. EPA 2001
H'	Dimensionless Henry's Law Constant	Contaminant-specific	See Chemical-specific hierarchy
D_{iw}	Diffusivity in water (cm^2/s)	Contaminant-specific	U.S. EPA 2001
K_d	Soil-water partition coefficient (L/kg) (Koc×foc)	= $K_{oc} \times f_{oc}$ for organics	See Chemical-specific hierarchy
K_{oc}	Soil organic carbon-water partition coefficient (L/kg)	Contaminant-specific	See Chemical-specific hierarchy
f_{oc}	Organic carbon content of soil (g/g)	0.006 (0.6%)	U.S. EPA 2002 Equation 5-14
T	Total time over which construction occurs (year)	Site-Specific (T=ED)	U.S. EPA 2002 Equation 5-17
d_s	Average source depth (m)	Site-Specific	U.S. EPA 2002 Equation 5-17

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