FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6)

Conc =	0.001	mg/cm3 (default value for purpose of illustration)
SA=	18000	cm2
t_event =	0.58	hr/event (35 minutes/event)
EV =	1	event/day
EF =	350	days/yr
ED =	30	years
BW =	70	kg
AT =	25550	days

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV
Drinking (mg/day) = Conc * IR * ABSIG

IR: Ingestion rate of drinking water	IR =	2000	(cm3/day = L/day * 1000 cm3/L)
ABSIG: Absorption fraction in GI tract	Chemical specific		

Condition for screening: "Y" when Dermal is 10% of Drinking

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

Total dose (mg/day) = Q * T_event * EV

Q: Shower flow rate (5-15 gal/min; here using 5 gal/ı Q = 1135500 (cm3/hr = gal/min * 3.785 gal/l * 60 min/hr *1000 cm3/hr)

Refer to Appendix A for equations to evaluate DA_event and DAD

CHEMICAL	Kp (cm/hr)	Source of Kp (exp or default)	Conc (mg/cm3)	DA_event (mg/cm2-event)	DAD (mg/kg-day)	ABSGI (chemical specific)	Screening	Chemicals to be assessed	Derm/ Total Dose
Antimony	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	15%	3.50%	N	0.00%
Arsenic (arsenite)	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	95%	0.55%	N	0.00%
Barium	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	7%	7.50%	N	0.00%
Beryllium	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	0.7%	75.00%	Y	0.00%
Cadmium	1.0E-03	experimental	1.0E-03	5.8E-07	6.2E-05	2.5%	21.00%	Y	0.00%
	1.0E-03	experimental	1.0E-03	5.8E-07	6.2E-05	5%	10.50%	Y	0.00%
Chromium (III)	1.0E-03	experimental	1.0E-03	5.8E-07	6.2E-05	1.3%	40.38%	Y	0.00%
Chromium (VI)	2.0E-03	experimental	1.0E-03	1.2E-06	1.2E-04	2.5%	42.00%	Y	0.00%
Copper	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	57%	0.92%	N	0.00%
Cyanate	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	47%	1.12%	N	0.00%
Manganese	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	6%	8.75%	N	0.00%
Mercuric chloride (other soluble salts)	1.0E-03	experimental	1.0E-03	5.8E-07	6.2E-05	7%	7.50%	N	0.00%
Insoluble or metallic mercury	1.0E-03	experimental	1.0E-03	5.8E-07	6.2E-05	7%	7.50%	N	0.00%
Nickel	2.0E-04	experimental	1.0E-03	1.2E-07	1.2E-05	4%	2.63%	N	0.00%
Selenium	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	30%	1.75%	N	0.00%
Silver	6.0E-04	experimental	1.0E-03	3.5E-07	3.7E-05	4%	7.88%	N	0.00%
Thallium	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	100%	0.53%	N	0.00%
Vanadium	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	2.6%	20.19%	Y	0.00%
Zinc	6.0E-04	experimental	1.0E-03	3.5E-07	3.7E-05	highly variable			