

TERRESTRIAL TOXICITY AND AESTHETICS VALUES

Chemical Name:	1,1,2-trichloroethane	CAS No.	79-00-5
Literature Review Date:	8/3/2007		
Derived By:	S. Briggs		
Reviewed By:	D. Bush <i>DS</i>	Verification Date:	9/30/2007
HNH Tier Status:	1	WV Tier Status:	
HCV Tier Status:	1		

		Drinking Water	Non-Drinking Water
HUMAN HEALTH	HNH	110 ug/L	3,000 ug/L
	SCREENING LEVEL		
	HCV	12 ug/L	330 ug/L
	POTENCY	$0.0292061074 \text{ (mg/kg/d)}^{-1}$	
	HH-BAF-TL3	3.1 L/kg	
	HH-BAF-TL4	4.5 L/kg	
	RfD (ADE)	0.0039 mg/kg/d	
WILDLIFE HEALTH	WV		
	WV-BAF-TL3		
	WV-BAF-TL4		
	RfD		
AESTHETICS	TASTE THRESHOLD		
	ODOR THRESHOLD		

Comments:

HH BAF_{TL3} and BAF_{TL4} based on log Kow values.

A literature review conducted on 8/27/2012 revealed no new studies that would affect the human health values (D. Bush 9/7/2012).

HUMAN NONCANCER VALUE WORKSHEET

Chemical Name: 1,1,2-trichloroethane CAS No. 79-00-5
 Developed By: S. Briggs
 Reviewed By: D. Bush DB Verification Date: 9/30/2007

Key Study:

A NOAEL of 0.02 mg/ml (20 mg/L) was reported for female CD-1 mice that were exposed to 1,1,2-trichloroethane in drinking water for 90 days (White et al., 1985).

$$20 \text{ mg/L} \times 0.195 \text{ L/kg/d} = 3.9 \text{ mg/kg/d}$$

$$\text{ADE} = \frac{3.9 \text{ mg/kg/d}}{1000} = 0.0039 \text{ mg/kg/d}$$

Where UF = 10x each for interspecies, intraspecies, and subchronic to chronic extrapolation.

$$\text{HNV}_{\text{dw}} = \frac{(0.0039 \text{ mg/kg/d}) (70 \text{ kg}) (0.8)}{2.0 \text{ l/d} + [(0.0036 \text{ kg/d} \times 3.1 \text{ l/kg}) + (.0114 \text{ kg/d} \times 4.5 \text{ l/kg})]} = 0.105892962 \text{ mg/L}$$

110 ug/L

$$\text{HNV}_{\text{non-dw}} = \frac{(0.0039 \text{ mg/kg/d}) (70 \text{ kg}) (0.8)}{0.01 \text{ l/d} + [(0.0036 \text{ kg/d} \times 3.1 \text{ l/kg}) + (.0114 \text{ kg/d} \times 4.5 \text{ l/kg})]} = 3.014076732 \text{ mg/L}$$

3,000 ug/L

HUMAN CANCER VALUE WORKSHEET

Chemical Name: 1,1,2-trichloroethane CAS No. 79-00-5
 Developed By: S. Briggs
 Reviewed By: D. Bush DB Verification Date: 9/30/07

Key Study: NTP (1978) 50 male/female mice and rats were gavaged with 1,1,2-trichloroethane (in corn oil) 5 days per week for 78 weeks. The highest potency was generated by hepatocellular carcinomas in male mice.

Adjusted Ave Dose

<u>mg/kg/d</u>	<u>Tumors/animal at risk</u>	<u>Animal Weight</u>
0	2 / 20	0.033 kg
121	18 / 49	
239	37 / 49	

$$\text{Global 82 } q = \frac{0.0001359963}{0.031600899177} = 0.004303557$$

$q^* = (q)$ (species scaling factor)

$$q^* = (0.004303557) (70 \text{ kg}/0.033 \text{ kg})^{1/4}$$

$$q^* = 0.0292061074 (\text{mg/kg/d})^{-1}$$

$$\text{RAD} = \frac{0.00001}{q^*} = 0.00034239414 \text{ mg/kg/d}$$

$$\text{HCV}_{\text{dw}} = \frac{(0.00034239414 \text{ mg/kg/d}) (70 \text{ kg})}{2.0 \text{ l/d} + [(0.0036 \text{ kg/d} \times 3.1 \text{ l/kg}) + (0.0114 \text{ kg/d} \times 4.5 \text{ l/kg})]} = \frac{0.011620875 \text{ mg/L}}{12 \text{ ug/L}}$$

$$\text{HCV}_{\text{non-dw}} = \frac{(0.00034239414 \text{ mg/kg/d}) (70 \text{ kg})}{0.01 \text{ l/d} + [(0.0036 \text{ kg/d} \times 3.1 \text{ l/kg}) + (0.0114 \text{ kg/d} \times 4.5 \text{ l/kg})]} = \frac{0.330769939 \text{ mg/L}}{330 \text{ ug/L}}$$

BIOACCUMULATION FACTOR WORKSHEET

Chemical Name: 1,1,2-trichloroethane CAS No. 79-00-5
 BAF Derived By: S. Briggs Literature Review Date: 8/3/2007
 BAF Reviewed By: D. Bush DB Verification Date: 9/30/2007

HH-BAF-TL.3: 3.1 L/kg WL-BAF-TL.3: _____
 HH-BAF-TL.4: 4.5 L/kg WL-BAF-TL.4: _____

I. FIELD BAFs, BSAFs, or LABORATORY BCFs

Ref #	BAF, BSAF, or BCF	Value	Species	Exposure Duration (Days)	Tissue Type	Tissue Lipid (%)	Steady State Tissue Conc.

Final BAF, BSAF, or BCF: N/A
 Justification: No measured BCF or BAF available.

II. LOG Kow VALUES

Ref #	Meas./Calc. Log Kow	Method	Value	Ref #	Meas./Calc. Log Kow	Method
1.)	calculated	C log P	2.05			

Final Log Kow: 2.05 Food Chain Multipliers
 Justification: The only log Kow value available is a calculated value. FCM-TL.3: 1.0055
 FCM-TL.4: 1.0002

BIOACCUMULATION FACTOR WORKSHEET

Assessment/Calculations:

$$f_{\text{fd ambient}} = 1 / [1 + (2.4 \times 10^{-7})(10^{2.05})]$$

$$f_{\text{fd ambient}} = 0.999973072$$

$$\text{Baseline BAF}_{\text{TL3/TL4}} = (\text{FCM}_{\text{TL3/TL4}})(\log K_{\text{ow}})$$

$$\text{Baseline BAF}_{\text{TL3}} = (1.0055)(112.2018454)$$

$$\text{Baseline BAF}_{\text{TL3}} = 112.8189556$$

$$\text{Baseline BAF}_{\text{TL4}} = (1.0002)(112.2018454)$$

$$\text{Baseline BAF}_{\text{TL4}} = 112.2242858$$

$$\text{HH BAF}_{\text{TL3}} = [(\text{Baseline BAF}_{\text{TL3}})(0.0182) + 1] (f_{\text{fd ambient}})$$

$$\begin{aligned} \text{HH BAF}_{\text{TL3}} &= [(112.8189556)(0.0182) + 1] (0.999973072) \\ &= 3.053222773 = 3.1 \text{ L/Kg} \end{aligned}$$

$$\text{HH BAF}_{\text{TL4}} = [(\text{Baseline BAF}_{\text{TL4}})(0.0310) + 1] (f_{\text{fd ambient}})$$

$$\begin{aligned} \text{HH BAF}_{\text{TL4}} &= [(112.2242858)(0.0310) + 1] (0.999973072) \\ &= 4.478832252 = 4.5 \text{ L/Kg} \end{aligned}$$

References:

- 1.) ASTER Ecotoxicity Profile. 1997. 1,1,2-trichloroethane. U.S. EPA, Office of Research and Development, National Health and Environmental Effects Research Laboratory, Mid-Continent Ecology Division.