

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
HUMAN & WILDLIFE TOXICITY SUMMARY**

Chemical Name: 1,1-Dichloroethylene
Derived By: A. Perbeck
Reviewed By: D. Bush

CAS No.: 75-35-4
Literature Review Date: 07/26/07
Verification Date: 9/11/07

	Drinking Water	Nondrinking Water
Surface Water		
HNV (Tier 1)	<u>1200 ug/L</u>	<u>33000 ug/L</u>
HCV (Tier ___)	<u>NA</u>	<u>NA</u>
Screening Level	<u></u>	<u></u>

Ground Water

GW Noncancer

GW Cancer

HUMAN HEALTH INTERMEDIATE VALUES:

RfD	<u>0.046 mg/kg/d</u>
POTENCY	<u>NA</u>
HH-BAF-TL ₃	<u>3.4 L/kg</u>
HH-BAF-TL ₄	<u>5. L/kg</u>

WV

WV-BAF-TL₃

WV-BAF-TL₄

Comments:

A literature search conducted in July 2007 revealed no new studies for use in criteria development.

A literature search conducted on August 27, 2012 revealed no new studies that would affect the current human health values.

D. Bush (9/7/2012)

HUMAN NONCANCER VALUE WORKSHEET

Chemical Name: 1,1-Dichloroethylene

CAS No. 75-35-4

Developed By: D. Bush

Reviewed By:

S. Briggs

Verification Date:

9/20/02

Key Study: The HNV is based on a benchmark dose of 4.6 mg/kg/d based on midzonal fatty change in female rats used in the Quast et al. (1983) study. The benchmark dose was divided by 10x for each intraspecies and interspecies extrapolation.

$$ADE = 0.046 \text{ mg/kg/d}$$

$$ADE = \frac{4.6 \text{ mg/kg/d}}{100}$$

Where UF = 10x for each interspecies and intraspecies extrapolation.

drinking water

$$\text{HNV} = \frac{0.046 \text{ mg/kg/d} \cdot (70 \text{ kg}) \cdot (0.8)}{(2 \text{ L/d}) + (0.0036 \text{ kg/d} \cdot 3.4 \text{ L/kg}) + (0.0114 \text{ kg/d} \cdot 5.0 \text{ L/kg})} = 1.24 \text{ mg/L}$$

Human Noncancer Value for drinking water = 1,200 ug/L

non-drinking water

$$\text{HNV} = \frac{0.046 \text{ mg/kg/d} \cdot (70 \text{ kg}) \cdot (0.8)}{(0.01 \text{ L/d}) + (0.0036 \text{ kg/d} \cdot 3.4 \text{ L/kg}) + (0.0114 \text{ kg/d} \cdot 5.0 \text{ L/kg})} = 32.5 \text{ mg/L}$$

Human Noncancer Value for non-drinking water = 33,000 ug/L

BIOACCUMULATION FACTOR WORKSHEET

Chemical Name: 1,1-Dichloroethylene CAS No. 75-35-4
 BAF Derived By: D. Bush Literature Review Date: 07/30/02
 BAF Reviewed By: S. Briggs Verification Date: 7/20/02
 HH-BAF-TL3: 3.4 L/kg WL-BAF-TL3: _____
 HH-BAF-TL4: 5.0 L/kg WL-BAF-TL4: _____

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.	Water or Sed. (BSAF) Conc.
.)								
.)								
.)								
.)								
.)								
.)								
.)								

Final BAF, BSAF, or BCF: _____

Justification:

II. LOG Kow VALUES

Ref #	Meas./Calc. Log Kow	Method	Value	Meas./Calc. Log Kow	Method	Value
1	calc	clogp	2.11			

Final Log Kow: _____

Justification: The final log Kow value

Food Chain Multipliers

FCM-TL3: 1.0061

FCM-TL4: 1.00044

BIOACCUMULATION FACTOR WORKSHEET

Assessment/Calculations:

Final log Kow 2.11

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

$$f_{fd} = 0.99999976$$

$$\text{Baseline BAF}_{TLn} = \text{FCM}_{TLn} * (\text{Kow})$$

$$\text{Baseline BAF}_{TL3} = \text{FCM}_{TL3} * \text{Kow}$$

$$\text{Baseline BAF}_{TL3} = 1.0061 * 128.82496$$

$$\text{Baseline BAF}_{TL3} = 129.6108$$

$$\text{Baseline BAF}_{TL4} = \text{FCM}_{TL4} * \text{Kow}$$

$$\text{Baseline BAF}_{TL4} = 1.00044 * 128.82496$$

$$\text{Baseline BAF}_{TL4} = 128.8816$$

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

$$\text{HH BAF}_{TL3} = (129.6108 * 0.0182 + 1) * 0.99999976$$

$$\text{HH BAF}_{TL3} = 3.358916 = \text{L/kg}$$

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

$$\text{HH BAF}_{TL4} = (128.8816 * 0.031 + 1) * 0.99999976$$

$$\text{HH BAF}_{TL4} = 4.99533 = \text{L/kg}$$

References:

- 1 EPA. 1997. Aster Ecotoxicity Profile. On-line database.