

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
HUMAN CANCER VALUE WORKSHEET**

Chemical Name: 1,3-Dichloropropylene

CAS No.: 542-75-6

Developed By: D. Bush

Literature Search Date: 9/12/07

Reviewed By: Atervek

Verification Date: 9/26/07

Key Study: NTP (1985) administered Telone II (92% 1,3-dichloropropylene per EPA (2000)) via gavage to groups of 50 male and 50 female B6C3F1 mice at doses of 0, 50, or 100 mg/kg, three times per week, for 104 weeks. The study found a dose-related statistically significant increase in the incidence of transitional cell carcinomas of the urinary bladder in females in both treatment groups.

<u>HED (mg/kg/d)*</u>	<u>Tumors / Animals at Risk</u>
0	0/50
2.88	8/50
5.81	21/47

* Dose averaged over 7 days/week and adjusted to a Human Equivalent Dose (HED) by multiplying by (animal body weight/human body weight)^{1/4} and the % 1,3-dichloropropylene in the formulation (92%) (EPA, 2000).

GLOBAL 82 Results:

$$q^* = \frac{95\% \text{ Upper Confidence Limit}}{\text{MLE}}$$

$$q^* = \frac{5.17586E-05}{5.02778E-04} \qquad q^* = 0.1029453 \text{ (mg/kg/d)-1}$$

$$\text{RAD} = \frac{0.00001}{q^*} \qquad \text{RAD} = 0.000097139 \text{ mg/kg/d}$$

$$\text{HCV}_{\text{dw}} = \frac{0.000097139 \text{ mg/kg/d} \times 70 \text{ kg}}{2.0 \text{ L/d} + [(0.0036 \text{ kg/d} \times 2.0 \text{ L/kg}) + (0.0114 \text{ kg/d} \times 2.8 \text{ L/kg])}$$

$$\text{HCV}_{\text{dw}} = 0.003335 \text{ mg/kg} \qquad \text{HCV}_{\text{dw}} = 3.3 \text{ } \mu\text{g/L}$$

$$\text{HCV}_{\text{non-dw}} = \frac{0.000097139 \text{ mg/kg/d} \times 70 \text{ kg}}{0.01 \text{ L/d} + [(0.0036 \text{ kg/d} \times 2.0 \text{ L/kg}) + (0.0114 \text{ kg/d} \times 2.8 \text{ L/kg])}$$

$$\text{HCV}_{\text{non-dw}} = 0.1384 \text{ mg/kg} \qquad \text{HCV}_{\text{non-dw}} = 140 \text{ } \mu\text{g/L}$$

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
HUMAN NONCANCER VALUE WORKSHEET**

Chemical Name: 1,3-Dichloropropylene

CAS No.: 542-75-6

Developed By: D. Bush

Literature Review Date: 9/12/07

Reviewed By: A. Perbeck

Verification Date: 9/26/07

Key Study: A NOAEL of 2.5 mg/kg/d was found in a two year dietary study in rats (Stott et al., 1995). Statistically significant increases in the incidence of forestomach histopathology was observed at 12.5 and 25 mg/kg/d in both sexes. EPA (2000) derived an RfD of 0.034 mg/kg/d using a benchmark dose of 3.4 mg/kg/d and an uncertainty factor of 100.

ADE = **0.034 mg/kg/d**

ADE = $\frac{3.4}{100}$

Where UF = 10x each for inter- and intra-species extrapolation.

drinking water

$$\text{HNV} = \frac{0.034 \text{ mg/kg/d} \times (70 \text{ kg}) \times 0.8}{(2 \text{ L/d}) + (0.0036 \text{ kg/d} \times 2.0 \text{ L/kg}) + (0.0114 \text{ kg/d} \times 2.8 \text{ L/kg})} = 0.9337 \text{ mg/L}$$

HNV for drinking water = 930 ug/L

non-drinking water

$$\text{HNV} = \frac{0.034 \text{ mg/kg/d} \times (70 \text{ kg}) \times 0.8}{(0.01 \text{ L/d}) + (0.0036 \text{ kg/d} \times 2.0 \text{ L/kg}) + (0.0114 \text{ kg/d} \times 2.8 \text{ L/kg})} = 38.7622 \text{ mg/L}$$

HNV for non-drinking water = 39,000 ug/L

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
BIOACCUMULATION FACTOR WORKSHEET**

Chemical Name: 1,3-Dichloropropylene
 BAF Derived By: D. Bush
 BAF Reviewed By: [Signature]

CAS No.: 542-75-6
 Literature Review Date: 9/12/07
 Verification Date: 9/26/07

HH-BAF-TL.3: 2.0 L/Kg
 HH-BAF-TL.4: 2.8 L/Kg

WL-BAF-TL.3: _____
 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. ng/g	Water or Sed. (BSAF) Conc. µg/L

Final BAF: _____
Justification: _____

II. LOG Kow VALUES

Ref #	Meas./Calc. Log Kow	Method	Value	Meas./Calc. Log Kow	Method	Value
1.)	calculated	ClogP	1.76			

Final Log Kow: 1.76 **Food Chain Multipliers**
Justification: A calculated value of **FCM-TL.3:** 1.0
1.76 was reported for **FCM-TL.4:** 1.0
both the cis - and trans - isomers of 1,3-dichloropropylene.

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
BIOACCUMULATION FACTOR CALCULATIONS**

Assessment/Calculations:

$$\text{Baseline BAF} = (\text{FCM})(K_{ow})$$

$$\text{Baseline BAF}_{\text{TL3 \& TL4}} = (1.0)(57.54399373)$$

$$\text{Baseline BAF}_{\text{TL3 \& TL4}} = 57.54399373$$

NOTE: Since $\log K_{ow} < 4$, $f_{fd} = 1$.

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

$$\text{HH BAF}_{\text{TL3}} = [(57.54399373)(0.0182) + 1](1)$$

$$\text{HH BAF}_{\text{TL3}} = 2.0 \text{ L/kg}$$

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

$$\text{HH BAF}_{\text{TL4}} = [(57.54399373)(0.0310) + 1](1)$$

$$\text{HH BAF}_{\text{TL4}} = 2.8 \text{ L/kg}$$

References:

- 1.) EPA. 2007. Aster Ecotoxicity Profile. On-line database. Chemical file for *cis*- and *trans*-1,3-dichloropropylene.