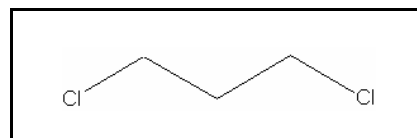




TIER I HUMAN HEALTH NONCANCER CRITERIA

1,3-DICHLOROPROPENE

CAS RN:	542-75-6
Water Solubility:	4,500 mg/L
Log K_{ow} :	1.60 ^P
Reference Dose:	0.034 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human carcinogen



Standard

The human health noncancer 1,3-dichloropropene criterion for drinking water sources is 940 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 46,000 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}

Log K_{ow} = 1.60 (CLOGP program), K_{ow} = 39.81

Trophic level 3 FCM = 1.0; trophic level 4 FCM = 1.0

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 1.0$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (39.81)(1.0) = 39.81$$

$$\text{Baseline BAF}_{T4} = (39.81)(1.0) = 39.81$$

$$\text{Human health BAF}_{T3} = [(32.66)(0.0182)+1](1.0) = 1.725$$

$$\text{Human health BAF}_{T4} = [(32.66)(0.0310)+1](1.0) = 2.234$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: chronic irritation

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{3.4 \text{ mg/kg-day}}{100} = 0.034 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{NonDrinking Water HNC} &= [(0.034)(70)(0.8)]/0.01+[(0.0036)(1.725)+(0.0114)(2.234)] \\ &= \mathbf{46,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.034)(70)(0.8)]/2+[(0.0036)(1.725)+(0.0114)(2.234)] \\ &= \mathbf{940 \mu\text{g/L}} \end{aligned}$$

References

1. USEPA 2000. Integrated Risk Information System (IRIS database) chemical file for 1,3-dichloropropene (CAS # 542-75-6).
2. Leo, A. and D. Weininger 1997. Daylight Software CLogP Version 3.15+ for Unix Pomona Medical Chemistry Project, Pomona College, Claremont, CA. Distributed by Daylight Chemical Information Systems, Inc., 3952 Claremont St., Irving, CA 92714 (Reference for the Log K_{ow}).

Acronyms

ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk Information System
K _{ow}	Octanol-Water Partition Coefficient
LOAEL	Lowest observed adverse effect level
NOAEL	No observed adverse effect level
P (superscript)	Predicted value
RPLC	Reverse-phase Liquid Chromatography
UF	Uncertainty factor

Revision History

December 1, 1998 - Criteria first developed

April 18, 2000 – Fact sheet updated. No modifications to criteria.

September 12, 2000 – RfD updated based on new number from EPA. New criteria derived.

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