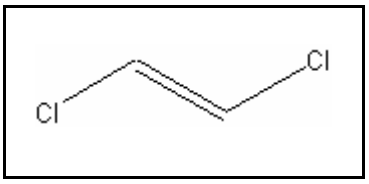
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH NONCANCER CRITERIA

TRANS-1,2-DICHLOROETHYLENE

CAS RN:	156-60-5
Water Solubility:	6,300 mg/L
Log K_{ow}:	1.514^{P}
Reference Dose:	0.017 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	none



Standard

The human health noncancer *trans*-1,2-dichloroethylene criterion for drinking water sources is 470 µg/L. The human health noncancer criterion for nondrinking water sources is 25,000 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}

Log K_{ow} = 1.514 (CLOGP program), K_{ow} = 32.659
Trophic level 3 FCM = 1.0; trophic level 4 FCM = 1.0

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

Baseline $BAF_{T3} = (FCM)(K_{ow}) = (32.659)(1.0) = 32.66$

Baseline $BAF_{T4} = (32.659)(1.0) = 32.66$

Human health BAF_{T3} = [(32.66)(0.0182)+1](1.0) = 1.594

Human health BAF_{T4} = [(32.66)(0.0310)+1](1.0) = 2.012

Acceptable Daily Exposure:

From the IRIS database:

$$ADE = \frac{NOAEL}{UF} = \frac{17\ mg/kg\text{-}day}{1000} = 0.017\ mg/kg/d$$

Calculation of Criteria:

Non Drinking Water HNC = [(0.017)(70)(0.8)]/0.01+[(0.0036)(1.594)+(0.0114)(2.012)]

= **470 μg/L**

Drinking Water HNC = [(0.017)(70)(0.8)]/2+[(0.0036)(1.594)+(0.0114)(2.012)]

= **25,000 μg/L**

References

1. USEPA 1989. Integrated Risk Information System (IRIS database) chemical file for trans-1,2-dichloroethylene (CAS # 156-60-5).

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

September 8, 1998 - Criteria first developed
April 17, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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