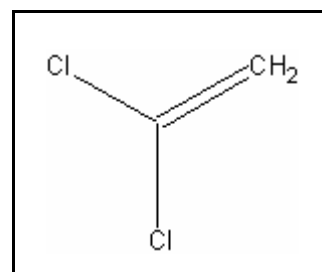




## TIER I HUMAN HEALTH NONCANCER CRITERIA

### 1,1-DICHLOROETHYLENE

CAS RN:	75-35-4
Water Solubility:	6,735 mg/L
Log $K_{ow}$ :	2.37 <sup>P</sup>
Reference Dose:	0.009 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class C; Possible human carcinogen



### Standard

The human health noncancer 1,1-dichloroethylene criterion for drinking water sources is 240  $\mu\text{g/L}$ . The human health noncancer criterion for nondrinking water sources is 4,100  $\mu\text{g/L}$ .

### Calculations

#### Bioaccumulation Factor:

BAF predicted based on Log  $K_{ow}$

$$\text{Log } K_{ow} = 2.37 \text{ (CLOGP)}, K_{ow} = 234.4$$

$$\text{Trophic level 3 FCM} = 1.023; \text{ trophic level 4 FCM} = 1.002$$

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 1.00$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (1.01)(234.4) = 236.8$$

$$\text{Baseline BAF}_{T4} = (1.002)(234.4) = 234.9$$

$$\text{Human health BAF}_{T3} = [(236.8)(0.0182)+1](1.00) = 5.309$$

$$\text{Human health BAF}_{T4} = [(234.9)(0.0310)+1](1.00) = 8.281$$

### Acceptable Daily Exposure:

From the IRIS database:

$$\text{ADE} = \frac{\text{LOAEL}}{\text{UF}} = \frac{9 \text{ mg/kg-day}}{1000} = 0.009 \text{ mg/kg/d}$$

### Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.009)(70)(0.8)]/0.01+[(0.0036)(5.309)+(0.0114)(8.281)] \\ &= \mathbf{4,100 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.009)(70)(0.8)]/2+[(0.0036)(5.309)+(0.0114)(8.281)] \\ &= \mathbf{240 \mu\text{g/L}} \end{aligned}$$

## References

1. USEPA 1989. Integrated Risk Information System (IRIS database) chemical file for 1,1-dichloroethylene (CASRN 75-35-4).
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

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ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor
CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
IRIS	Integrated Risk Information System
K <sub>ow</sub>	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

June 22, 1999 - Criteria first developed

April 17, 2000 – Fact sheet updated. No modifications to criteria.

## Contact Information

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