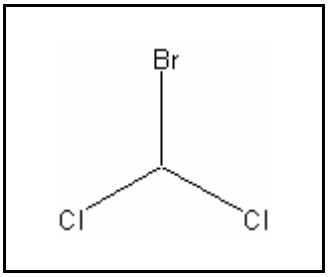
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH NONCANCER CRITERIA

DICHLOROBROMOMETHANE

CAS RN:	75-27-4
Water Solubility:	6,735 mg/L
Log K_{ow}:	2.092^{P}
Reference Dose:	0.017 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human carcinogen



Standard

The human health noncancer dichlorobromomethane criterion for drinking water sources is 480 µg/L. The human health noncancer criterion for nondrinking water sources is 13,000 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}

Log K_{ow} = 2.092 (CLOGP program), K_{ow} = 123.59

Trophic level 3 FCM = 1.005; trophic level 4 FCM = 1.000

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

Baseline $BAF_{T3} = (FCM)(K_{ow}) = (1.005)(123.59) = 124.213$

Baseline $BAF_{T4} = (1.000)(123.59) = 123.59$

Human health BAF_{T3} = [(123.213)(0.0182)+1](1.0) = 3.261

Human health BAF_{T4} = [(123.959)(0.0310)+1](1.0) = 4.831

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Renal cytomegaly

$$ADE = \frac{LOAEL}{UF} = \frac{17.9 \text{ mg/kg-day}}{1000} = 0.017 \text{ mg/kg/d}$$

Calculation of Criteria:

Non Drinking Water HNC = [(0.0179)(70)(0.8)]/0.01+[(0.0036)(3.261)+(0.0114)(4.831)]

= **13,000 µg/L**

Drinking Water HNC = [(0.0179)(70)(0.8)]/2+[(0.0036)(5.621)+(0.0114)(4.831)]

= **480 µg/L**

References

1. USEPA 1991. Integrated Risk Information System (IRIS database) chemical file for bromodichloromethane (CAS # 75-27-4).

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

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

October 19, 1998 - Criteria first developed
April 17, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

David B. Kallander
Water Quality Standards Section
Indiana Department of Environmental Management
100 North Senate Ave., P.O. Box 6015
Indianapolis, IN 46206-6015
(317) 233-2472
Email: dkalland@dem.state.in.us