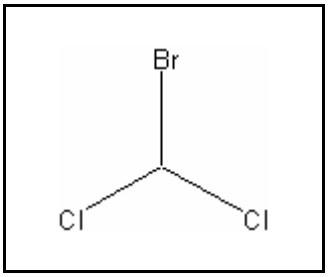
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH CANCER CRITERIA

DICHLOROBROMOMETHANE

CAS RN:	75-27-4
Water Solubility:	6,735 mg/L
Log K_{ow}:	2.092^{P}
Risk Associated Dose:	0.00016 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human carcinogen



Standard

The human health cancer dichlorobromomethane criterion for drinking water sources is 5.5 µg/L. The human health cancer criterion for nondrinking water sources is 150 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

Risk Associated Dose:

From the IRIS database:

$RAD = 0.00001/q1^{*} = 0.00001/ 0.062$
$= 0.000161$ mg/kg/day

Where:

RAD = Risk Associated Dose (mg/kg/day)
$q1^{*}$ = Cancer Slope Factor

Calculation of Criteria:

Non Drinking Water HCC = [(0.000161)(70)]/0.01+[(0.0036)(3.261)+(0.0114)(4.831)]

= **150 µg/L**

Drinking Water HCC = [(0.000161)(70)]/2+[(0.0036)(5.621)+(0.0114)(4.831)]

= **5.5 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

April 17, 2000 - Criteria first developed

Contact Information

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