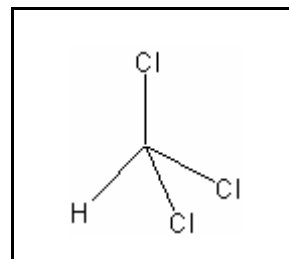




TIER I HUMAN HEALTH CANCER CRITERIA

CHLOROFORM

CAS RN:	67-66-3
Water Solubility:	7,950 mg/L
Log K_{ow} :	1.952 ^P
Risk Associated Dose:	1.639×10^{-3} mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class B2; Probable human Carcinogen



Standard

The human health cancer chloroform criterion for drinking water sources is 56 $\mu\text{g/L}$. The human health cancer criterion for nondrinking water sources is 1,700 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow} and measured BCF (from Stephan 1993)

Log K_{ow} = 1.952 (CLOGP program), K_{ow} = 89.54, BCF = 6, Percent lipid = 4.8

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

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

$$\text{Baseline BAF}_{T3} = (1.005)[(6/1.0)-1](1/0.048) = 104.7$$

$$\text{Baseline BAF}_{T4} = (1.000)[(6/1.0)-1](1/0.048) = 104.2$$

$$\text{Human health BAF}_{T3} = [(104.7)(0.0182)+1](1.0) = 2.906$$

$$\text{Human health BAF}_{T4} = [(104.2)(0.0310)+1](1.0) = 4.230$$

Risk Associated Dose:

From the IRIS database:

$$\begin{aligned} \text{RAD} &= 0.00001/q1^* = 0.00001/ 6.1 \times 10^{-3} \\ &= 1.639 \times 10^{-3} \end{aligned}$$

Where:

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

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HCC} &= [(1.639 \times 10^{-3})(70)]/0.01+[(0.0036)(2.906)+(0.0114)(4.230)] \\ &= \mathbf{1,700 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HCC} &= [(1.639 \times 10^{-3})(70)]/2+[(0.0036)(2.906)+(0.0114)(4.230)] \\ &= \mathbf{56 \mu\text{g/L}} \end{aligned}$$

References

1. Stephen, C.E. 1993. Derivation of Proposed Human Health and Wildlife Bioaccumulation Factors for the Great Lakes Initiative. Environmental Research Laboratory, Office of Research and Development, U.S. EPA, Duluth, MN.
2. USEPA 1991. Integrated Risk Information System (IRIS database) chemical file for chloroform (67-66-3).

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
UF	Uncertainty factor

Revision History

August 19, 1997 - Criteria first developed

April 11, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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