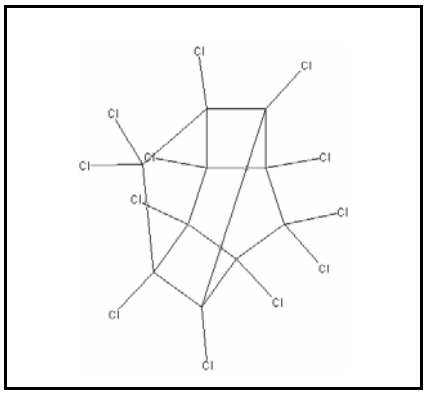
Indiana Department of Environmental Management
Office of Water - Water Quality Standards Section

TIER I HUMAN HEALTH NONCANCER CRITERIA

MIREX



CAS RN:	2385-85-5
Water Solubility:	
Log K_{ow}:	6.89^{P}
Reference Dose:	0.000233 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	None

Standard

The human health noncancer mirex criterion for drinking water sources is 7.3×10^{-4} µg/L. The human health noncancer criterion for nondrinking water sources is 7.3×10^{-4} µg/L.

Calculations

BAF - field measured (from Stephan 1995)

Log K_{ow} = 6.89, K_{ow} = 7,762,471

BAF = 134,900,000; Trophic level 3 FCM = 14.39

Trophic level 4 FCM = 26.67;

$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.34928$

Baseline BAF_{T3} = 55,590,000

Baseline BAF_{T4} = 134,900,000

Human health BAF_{T3} = 353,400

Human health BAF_{T4} = 1,461,000

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Decreased body weight gain

$$ADE = \frac{NOAEL}{UF} = \frac{0.07 \text{ mg/kg-day}}{300} = 0.000233 \text{ mg/kg/d}$$

Calculation of Criteria:

Non Drinking Water HNC = [(0.000233)(70)(0.8)]/0.01+[(0.0036)(353,400)+(0.0114)(1,461,000)]
= 7.3 x 10^{-4} µg/L

Drinking Water HNC = [(0.000233)(70)(0.8)]/2+[(0.0036)(353,400)+(0.0114)(1,461,000)]
=7.3 x 10^{-4} µg/L

References

1. Stephen, C.E. 1995. 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. Miller, M.M., S.P. Wasik, G.-L. Huang, W.-Y. Shiu, and D. Mackay 1985. Relationships between octanol-water coefficient and aqueous solubility. Environ. Sci. Technol. 19: 522-529. (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 1, 1998 - Criteria first developed
July 26, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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