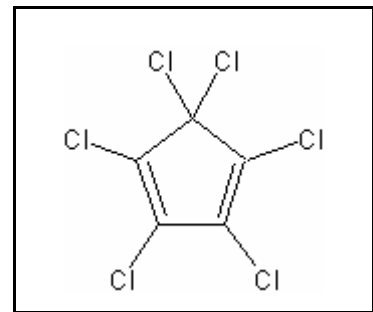




TIER I HUMAN HEALTH NONCANCER CRITERIA

HEXACHLOROCYCLOPENTADIENE

CAS RN:	77-47-4
Water Solubility:	3.4 mg/L
Log K_{ow} :	4.645 ^P
Reference Dose:	0.007 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not Classifiable



Standard

The human health noncancer hexachlorocyclopentadiene criterion for drinking water sources is 170 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 1,500 $\mu\text{g/L}$.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow} and measured BCF (from Stephan 1993)
Log K_{ow} = 4.645 (CLOGP), K_{ow} = 44,157, BCF = 29, Percent lipid = 7.6
Trophic level 3 FCM = 1.950; trophic level 4 FCM = 1.459

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.9895$$

$$\text{Baseline BAF}_{T3} = (1.950)[(29/0.9895)-1](1/0.076) = 726.3$$

$$\text{Baseline BAF}_{T4} = (1.459)[(29/0.9895)-1](1/0.076) = 543.4$$

$$\text{Human health BAF}_{T3} = [(726.3)(0.0182)+1](0.9895) = 14.07$$

$$\text{Human health BAF}_{T4} = [(543.4)(0.0310)+1](0.9895) = 17.66$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: decreased growth rate, food consumption, and organ weights

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{7 \text{ mg/kg-day}}{1000} = 0.007 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.007)(70)(0.8)]/0.01 + [(0.0036)(14.07) + (0.0114)(17.66)] \\ &= \mathbf{1,500 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.007)(70)(0.8)]/2 + [(0.0036)(14.07) + (0.0114)(17.66)] \\ &= \mathbf{170 \mu\text{g/L}} \end{aligned}$$

References

1. USEPA 1990. Integrated Risk Information System (IRIS database) chemical file hexachlorocyclopentadiene (77-47-4).

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

March 15, 2000 - Criteria first developed

Contact Information

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