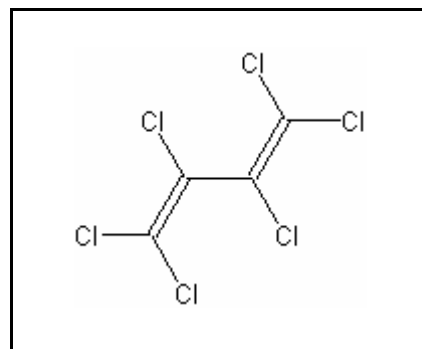




TIER II HUMAN HEALTH CANCER VALUES

HEXACHLOROBUTADIENE

CAS RN: 87-68-3
Water Solubility: 3.2 mg/L
Log K_{ow} : 4.842
Cancer Slope Factor: 7.8×10^{-2} mg/kg/day
Carcinogenicity Weight-of-Evidence Classification: Class C; possible human carcinogen



Standard

The human health cancer, hexachlorobutadiene value for drinking water sources is 0.22 $\mu\text{g/L}$.
The human health cancer value for nondrinking water sources is 0.24 $\mu\text{g/L}$.

Calculations

BAF - field measured (from EPA 1995)

Log K_{ow} = 4.842, K_{ow} = 69,502

Trophic level 3 FCM = 3.643

Trophic level 4 FCM = 3.162;

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.9661$$

$$\text{Baseline BAF}_{T3} = 43,940$$

$$\text{Baseline BAF}_{T4} = 354,800$$

$$\text{Human health BAF}_{T3} = 6,352$$

$$\text{Human health BAF}_{T4} = 1,341$$

Risk Associated Dose:

From the IRIS database:

$$\begin{aligned}\text{RAD} &= 0.00001/\text{q1}^* = 0.00001/7.8 \times 10^{-2} \\ &= 1.282 \times 10^{-4}\end{aligned}$$

Where:

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

Notes:

Data quality is not sufficient to release these values as Tier I criteria so they are being released as Tier II values pending new information from EPA.

Calculation of Criteria:

$$\begin{aligned}\text{Non Drinking Water HCV} &= [(1.282 \times 10^{-4})(70)]/0.01 + [(0.0036)(6,352) + (0.0114)(1,341)] \\ &= 0.24 \mu\text{g/L}\end{aligned}$$

$$\begin{aligned}\text{Drinking Water HCV} &= [(1.282 \times 10^{-4})(70)]/2 + [(0.0036)(6,352) + (0.0114)(1,341)] \\ &= 0.22 \mu\text{g/L}\end{aligned}$$

References

1. USEPA 1988. Integrated Risk Information System (IRIS database) chemical file hexachlorobutadiene (87-68-3).
2. USEPA 1995. Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors. EPA-820-B-95-005.

Acronyms/Abbreviations

ADE	Acceptable Daily Exposure
BAF	Bioaccumulation Factor

CAS RN	Chemical Abstract Service Registry Number
FCM	Food Chain Multiplier
HCC	Human Cancer Criterion
HNC	Human Noncancer Criterion
HCV	Human Cancer Value
HNV	Human Noncancer Value
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

December 8, 1999 - Values first developed

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