



ENDOSULFAN

ClC1(Cl)C(Cl)C(Cl)C(Cl)C1C2OCCSC(=O)O2

The human health noncancer, endosulfan value for drinking water sources is 85 µg/L. The human health noncancer value for nondrinking water sources is 170 µg/L.

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}
 Log K_{ow} = 3.65 (CLOGP), K_{ow} = 4467
 Trophic level 3 FCM = 1.103; trophic level 4 FCM = 1.023

$$f_{fd} = 1/(1+(0.00000024 \text{ kg/L})(K_{ow})) = 0.999$$

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (0.999)(4467) = 4927$$

$$\text{Baseline BAF}_{T4} = (0.999)(4467) = 4570$$

Human health $\text{BAF}_{\text{T3}} = [(4927)(0.0182)+1](0.999) = 90.57$

$$\text{Human health BAF}_{T4} = [(4570)(0.0310)+1](0.999) = 142.5$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Reduced body weight gain, etc.

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{0.6 \text{ mg/kg-day}}{100} = 0.006 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNV} &= [(0.006)(70)(0.8)]/0.01 + [(0.0036)(16.56) + (0.0114)(26.96)] \\ &= 170 \text{ } \mu\text{g/L} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNV} &= [(0.006)(70)(0.8)]/2 + [(0.0036)(16.56) + (2.698)(26.96)] \\ &= 85 \text{ } \mu\text{g/L} \end{aligned}$$

References

1. USEPA 1988. Integrated Risk Information System (IRIS database) chemical file endosulfan (115-29-7).
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/Abbreviations

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

September 9, 1999 - Values first developed

November 22, 1999 - Fact sheet updated no modifications to values.

Contact Information

David B. Kallander
 Water Quality Standards Section
 Indiana Department of Environmental Management
 100 North Senate Ave., P.O. Box 6015
 Indianapolis, IN 46206-6015
 (317) 233-2472
 Email: dkalland@dem.state.in.us