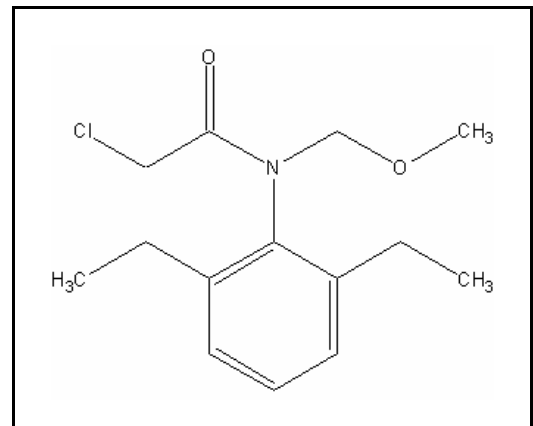




TIER I HUMAN HEALTH NONCANCER CRITERIA

ALACHLOR

CAS RN:	67-64-1
Water Solubility:	240 mg/L
Log K_{ow} :	-0.24 ^P
Reference Dose:	0.1 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class D; Not classifiable



Standard

The human health noncancer alachlor criterion for drinking water sources is 210 µg/L. The human health noncancer criterion for nondrinking water sources is 820 µg/L.

Calculations

Bioaccumulation Factor:

BAF predicted based on Log K_{ow}

$$\text{Log } K_{ow} = -0.24 \text{ (CLOGP program), } K_{ow} = 0.5754$$

$$\text{Trophic level 3 FCM} = 1.0; \text{ trophic level 4 FCM} = 1.0$$

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

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (0.5754)(1.0) = 0.5754$$

$$\text{Baseline BAF}_{T4} = (0.5754)(1.0) = 0.5754$$

$$\text{Human health BAF}_{T3} = [(0.5754)(0.0182)+1](1.0) = 1.0105$$

$$\text{Human health BAF}_{T4} = [(0.5754)(0.0310)+1](1.0) = 1.0178$$

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{100 \text{ mg/kg-day}}{1000} = 0.1 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNC} &= [(0.1)(70)(0.8)]/0.01+[(0.0036)(1.0105)+(0.0114)(1.0178)] \\ &= \mathbf{220,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNC} &= [(0.1)(70)(0.8)]/2+[(0.0036)(1.0105)+(0.0114)(1.0178)] \\ &= \mathbf{2,800 \mu\text{g/L}} \end{aligned}$$

References

1. USEPA 1993. Integrated Risk Information System (IRIS database) chemical file for alachlor (CAS # 15972-60-8).
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

August 13, 1997 - Criteria first developed

March 21, 2000 – Criteria rechecked (no modifications made). Fact sheet updated.

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