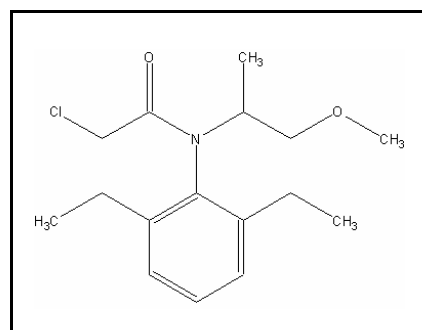




TIER I HUMAN HEALTH NONCANCER CRITERIA

METOLACHLOR

CAS RN:	51218-45-2
Water Solubility:	
Log K_{ow} :	3.25 ^P
Reference Dose:	0.15 mg/kg/day
Carcinogenicity Weight-of-Evidence Classification:	Class C; Possible human Carcinogen



Standard

The human health noncancer metolachlor criterion for drinking water sources is 3,000 $\mu\text{g/L}$. The human health noncancer criterion for nondrinking water sources is 11,000 $\mu\text{g/L}$.

Calculations

BAF predicted based on Log K_{ow}

$$\text{Log } K_{ow} = 3.250 \text{ (CLOGP program), } K_{ow} = 1778$$

$$\text{Trophic level 3 FCM} = 1.053; \text{ trophic level 4 FCM} = 1.012$$

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

$$\text{Baseline BAF}_{T3} = (\text{FCM})(K_{ow}) = (1778)(1.053) = 1872$$

$$\text{Baseline BAF}_{T4} = (1778)(1.012) = 1799$$

$$\text{Human health BAF}_{T3} = [(1872)(0.0182)+1](1.0) = 35.07$$

$$\text{Human health BAF}_{T4} = [(1778)(0.0310)+1](1.0) = 56.12$$

Acceptable Daily Exposure:

From the IRIS database:

Critical Effect: Decreased body weight gain

$$\text{ADE} = \frac{\text{NOAEL}}{\text{UF}} = \frac{15 \text{ mg/kg-day}}{100} = 0.15 \text{ mg/kg/d}$$

Calculation of Criteria:

$$\begin{aligned} \text{Non Drinking Water HNV} &= [(0.15)(70)(0.8)]/0.01+[(0.0036)(35.07)+(0.0114)(56.12)] \\ &= \mathbf{11,000 \mu\text{g/L}} \end{aligned}$$

$$\begin{aligned} \text{Drinking Water HNV} &= [(0.15)(70)(0.8)]/2+[(0.0036)(35.07)+(0.0114)(56.12)] \\ &= \mathbf{3,000 \mu\text{g/L}} \end{aligned}$$

References

1. USEPA 1994. Integrated Risk Information System (IRIS database) chemical file for metolachlor (CAS # 51218-45-2).
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

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

August 13, 1997 - Criteria first developed

July 26, 2000 – Fact sheet updated. No modifications to criteria.

Contact Information

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