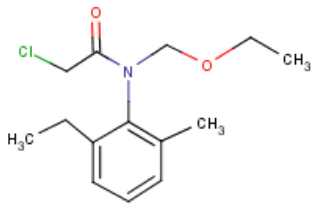
Illinois Environmental Protection Agency
Bureau of Water – Water Quality Standards Section

Acetochlor



CAS:	34256-82-1
Water Solubility:	223 mg/L
Log K_{ow}:	3.03

Derived Criteria

Aquatic Life: Where no aquatic life standard is applicable for a chemical substance within General Use waters, acute and chronic criteria may be calculated pursuant to 35 IAC 302.612-630. Aquatic organisms should not be adversely affected providing the four (4) day average concentration of acetochlor does not exceed 12 µg/L, and if 150 µg/L is not exceeded at any time.

Human Health: Where no human health standard is applicable for a chemical substance within General Use waters, a Human Threshold Criterion (HTC) or Human Nonthreshold Criterion (HNC) may be calculated pursuant to 35 IAC 302.642-657. Human health should not be adversely affected providing the annual average of acetochlor, based on at least eight samples, does not exceed 590 µg/L in waters except as provided in 302.208(d).

Aquatic Life Calculations

Acute: Tier II, 35 IAC 302.612(c)	Chronic: Tier III, 35 IAC 302.627(c)(5)
AATC = lowest SMAV / 10	CATC = AATC * 2 / 25
AATC = 1,464 µg/L / 10 = **150 µg/L**	CATC = 300 µg/L / 25 = **12 µg/L**

Human Health Calculations

HTC: 35 IAC 302.648, BCF based on log K_{ow} (35 IAC 302.663(c)), RfD from IRIS

ADI = RfD x 70 kg = 0.02 mg/kg/d x 70 kg = **1.4 mg/kg/d**
HTC = ADI / [W + (F x BCF)] = 1.4 mg/kg/d / [0.01 L/d + (0.02 kg/d x 118.3)] = **590 µg/L**

Acute Aquatic Toxicity Data

Table 1. Acute toxicity data used in criteria derivation for acetochlor.

Species	LC_{50} / EC_{50} (µg/L)	Test Type	Duration (hours)	Reference Number	SMAV (µg/L)	GMAV (µg/L)
Water flea Daphnia magna	8,200	S,M	48	1	8,200	8,200
Bluegill Lepomis macrochirus	1,600 1,340	S,M S,U	96 96	2 3	1,464	1,464
Mirror carp Cyprinus carpio	2,680	S,M	96	4	2,680	2,680

Chronic Aquatic Toxicity Data

Table 2. Chronic toxicity data used in criteria derivation for acetochlor.

Species	Conc. (µg/L)	Test Type	Duration (days)	Endpoint	Effect	Reference Number	ACR
Water flea Daphnia magna	30.7	F,U	21	MATC	Length	5	-
Fathead minnow Pimephales promelas	599	F,M	36	MATC	Survival	6	-
Inflated duckweed Lemna gibba	3.4	R	14	EC50	Pop. Abnd.	7	-
Blue-green algae Anabaena flosaquae	2,791	S,U	5	MATC	Pop. Abnd.	8	-
Green algae Chlorella vulgaris	34,756	S,U	4	EC50	Pop. Growth	11	-
Diatom Navicula pelliculosa	1,380	S,M	4	EC50	Pop. Abnd.	9	-
Green algae Selenastrum capricornutum	1.43	S,M	5	EC50	Pop. Abnd.	10	-

Green algae Scenedesmus quadricauda	4,300	S,U	4	EC50	Pop. Growth	12	-

*** Chronic data requirements not met, therefore criterion must be derived using acute data**

References

1. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 41565134. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

2. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 41565133. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

3. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 85993. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

4. Tapp, J.F., S.A. Sankey, J.E. Caunter, and H.M. Miller. 1989. Acetochlor: determination of acute toxicity to mirror carp (*Cyprinus carpio*). ICI Brixham environmental laboratory report no. BL/B/3554. Data provided by Monsanto Co.

5. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 42713105. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

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7. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 42713107. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

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9. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 42713108. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

10. Office of Pesticide Programs. 2000. Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)), Opp# 41565141. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

11. Ma, J., L. Xu, S. Wang, R. Zheng, S. Jin, S. Huang, and Y. Huang. 2002. Toxicity of 40 Herbicides to the Green Alga *Chlorella vulgaris*. Ecotoxicol.Environ.Saf. 51(2):128-132.

12. Ma, J., F. Lin, S. Wang, and L. Xu. 2003. Toxicity of 21 Herbicides to the Green Alga *Scenedesmus quadricauda*. Bull.Environ.Contam.Toxicol. 71(3):594-601.

Derivation History

Aquatic life: Derived 9/26/07
Human health: Derived 9/26/07

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