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SECONDARY VALUES FOR DIMETHENAMID (CAS No. 87674-68-8)

A search was conducted for information on the chemical properties and toxicity of dimethenamid to human health and to fish and aquatic life using the following databases and search engines: ECOTOX (toxicity to fish and aquatic life), IRIS (Integrated Risk Information System; toxicity to human health), CHEMFATE (environmental fate), BIODEG (degradation), HSDB (Hazardous Substances Data Bank), CCRIS (Chemical Carcinogenesis Research Info System), ATSDR ToxFAQs (Agency for Toxic Substances and Disease Registry chemical fact sheets), and EXTOXNET (Extension Toxicology Network's pesticide information project). This search yielded some useful information on dimethenamid's aquatic toxicity, but very little information on it's properties or human toxicity.

Fish and Aquatic Life Secondary Values

To derive an acute toxicity criterion for fish and aquatic life, acute toxicity test results are required for at least one species in each of eight different families. Specific requirements and the data available to meet these requirements are found in Table 1. Following a search for information on the toxicity of dimethenamid to fish and other aquatic life, it was determined that data are available to meet three out of the eight requirements. Because data are available for a Daphnid species, it was possible to calculate a secondary acute value for dimethenamid.

Cold Water

To calculate a secondary acute value (SAV), the lowest genus mean acute value (GMAV) in the database is divided by the secondary acute factor (SAF; an adjustment factor corresponding to the number of satisfied requirements).

SAF for three out of eight requirements met = 8.0
Lowest GMAV = 2,600 µg/L (*Oncorhynchus mykiss*)

SAV = GMAV/SAF
= 2,600 µg/L / 8.0
= 325 µg/L

No chronic data are currently available for dimethenamid; therefore, a secondary chronic value (SCV) may be calculated using default ratios only.

SACR (secondary acute-chronic ratio) = Geometric mean of three species mean acute-chronic ratios (SMACRs).

SMACR 1 = 18 (default)

SMACR 2 = 18 (default)
SMACR 3 = 18 (default)

SACR = geometric mean of 18, 18, and 18 = 18

SCV = SAV/SACR
= 325 µg/L / 18
= 18.05 µg/L

Warm Water Sportfish

The rainbow trout drops out of the database when calculating a secondary value for warm water sportfish.

SAF for three out of eight requirements met = 8.0
Lowest GMAV = 6,400 µg/L (*Lepomis macrochirus*)

SAV = GMAV/SAF
= 6,400 µg/L / 8.0
= 800 µg/L

SCV = SAV/SACR
= 800 µg/L / 18
= 44.44 µg/L

Warm Water Forage Fish

The bluegill drops out of the warm water sportfish database when calculating a secondary value for warm water forage fish.

SAF for three out of eight requirements met = 8.0
Lowest GMAV = 16,000 µg/L (*Daphnia magna*)

SAV = GMAV/SAF
= 16,000 µg/L / 8.0
= 2,000 µg/L

SCV = SAV/SACR
= 2,000 µg/L / 18
= 111.11 µg/L

Limited Forage Fish and Limited Aquatic Life

Because the lowest GMAV available in the warm water forage fish database is for *Daphnia magna*, an invertebrate species that will not drop out of the limited forage fish or limited aquatic life databases, the secondary acute and chronic values calculated for warm water forage fish-designated waters will also apply for limited forage fish and limited aquatic life-designated waters.

Table 1. Requirements for calculation of an acute toxicity criterion for protection of aquatic life for dimethenamid, and corresponding acute toxicity data.

Species Name	Common Name	Duration/ Endpoint	Value µg/L	Reference #[a]	Source
1. At least one salmonid fish in the family Salmonidae, in the class Osteichthyes.					
Oncorhynchus mykiss	**rainbow trout**	**96-h/LC50**	**2,600**	**1**	**AQUIRE**
2. At least one non-salmonid fish from another family in the class Osteichthyes, preferably a commercially or recreationally important warmwater species.					
Lepomis macrochirus	**bluegill**	**96-h/LC50**	**6,400**	**1**	**AQUIRE**
3. At least one planktonic crustacean (e.g., cladoceran, copepod).					
Daphnia magna	**water flea**	**48-h/EC50**	**16,000**	**1**	**AQUIRE**
4. At least one benthic crustacean (e.g., ostracod, isopod, amphipod, crayfish).					
5. At least one insect (e.g., mayfly, dragonfly, damselfly, stonefly, caddisfly, mosquito, midge).					
6. At least one fish or amphibian from a family in the phylum Chordata not already represented in one of the other subdivisions.					
7. At least one organism from a family in a phylum other than Arthropoda or Chordata (e.g., Rotifera, Annelida, Mollusca).					
8. At least one organism from a family in any order of insect or any other phylum not already represented in subdivisions 1 through 7.					

[1]Office of Pesticide Programs. 2000. Environmental Effects Database. Environmental Fate and Effects Division, U.S. EPA, Washington, D.C.

HUMAN HEALTH

To calculate a criteria or secondary value for the protection of human health, it is first necessary to determine if the substance has been shown to be carcinogenic (which will result in the calculation of a human cancer criteria or secondary value) or not (which will result in the calculation of a human threshold criteria or secondary value). U.S. EPA has not yet determined whether dimethenamid is carcinogenic. Because there is no oral reference dose currently available for dimethenamid, a human threshold secondary value cannot be calculated at this time.

Chemical	CAS #	Category	Type of Secondary Value	Water Body Classification	Value (µg/L)
Dimethenamid	87674-68-8	Fish and Aquatic	Acute	Cold	325
Dimethenamid	87674-68-8	Fish and Aquatic	Chronic	Cold	18
Dimethenamid	87674-68-8	Fish and Aquatic	Acute	WWSF	800
Dimethenamid	87674-68-8	Fish and Aquatic	Chronic	WWSF	44
Dimethenamid	87674-68-8	Fish and Aquatic	Acute	WWFF, LFF, LAL	2,000
Dimethenamid	87674-68-8	Fish and Aquatic	Chronic	WWFF, LFF, LAL	111

Cold = cold water designated water bodies
WWSF = warm water sportfish designated water bodies
WWFF = warm water forage fish designated water bodies
LFF = limited forage fish designated water bodies
LAL = limited aquatic life designated water bodies (includes wetlands)