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SECONDARY VALUES FOR 1-METHYLNAPHTHALENE (CAS No. 90-12-0)

A search was conducted for information on the chemical properties and toxicity of 2-methylnaphthalene 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), and CHEMFATE (environmental fate).

FISH AND AQUATIC LIFE

It was determined that data are available to meet only two out of the eight requirements for the establishment of criteria (Table 1). However, because this database includes *Daphnia* sp., it is possible to calculate a secondary acute value.

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 two out of eight requirements met = 13.0

Lowest GMAV = 1422 μg/L (*Daphnia magna*)

SAV = GMAV/SAF
= 1422/13
= 109.4

There are currently no chronic data for 1-methylnaphthalene which meet suitability requirements. Therefore, a secondary chronic value may be calculated only by using default acute-chronic ratios.

SACR = Geometric mean of 18, 18, and 18 = 18

SCV = SAV/SACR
= 109.3846/18
= 6.077

Warm Water Sport Fish, Warm Water Forage Fish, Limited Forage Fish, Limited Aquatic Life

Because the lowest GMAV in the cold water database is for *Daphnia magna*, an invertebrate, and because this species will not drop out for any of the other use classifications, secondary

values for warm water sport fish, warm water forage fish, limited forage fish and limited aquatic life waters will be the same as for cold waters.

Table 1. Requirements for calculation of an acute toxicity criterion for protection of aquatic life for 1-methylnaphthalene, 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.					
2. At least one non-salmonid fish from another family in the class Osteichthyes, preferably a commercially or recreationally important warmwater species.					
Pimephales promelas	fathead minnow	96-h/LC50	9000	2	AQUIRE
3. At least one planktonic crustacean (e.g., cladoceran, copepod).					
Daphnia magna	water flea	48-h/EC50	10 mmol/m3 = 1422 µg/L	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]Bobra, A.M., W.Y. Shiu and D. MacKay. 1983. A predictive correlation for the acute toxicity of hydrocarbons and chlorinated hydrocarbons to the water flea (*Daphnia magna*). Chemosphere 12(9-10):1121-1129.

[2]Mattson, V.R., J.W. Arthur and C.T. Walbridge. 1976. Acute toxicity of selected organic compounds to fathead minnows. Ecological Research Series EPA-600/3-76-097. Environ. Res. Lab., U.S. EPA Duluth, MN.

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). 1-Methylnaphthalene has not yet been classified (IRIS, HSDB, CCRIS) as to its carcinogenicity. The IRIS database does not include this chemical, and the CCRIS database contains only two carcinogenicity studies (conducted in mice, with mixed results). This chemical is not on the Priority Pollutants list (U.S. EPA 1999), and no criteria or secondary values have been established for any of the Great Lakes states. Because there is no oral RfD available it is not possible to calculate a human threshold secondary value for the protection of human health at this time.