VALUE(S) ADDED 7-24-85

FACT SHEET REVISED _____

VALUE(S) REMOVED _____

Date: August 6, 1984

Surface Water Quality
Standard Documentation

Chemical: Mirex

C.A.S, No.(s): 2385-85-5

Basis (Human/Aquatic): Aquatic

Standard by Water Classification:

	ug/l	Notes
Classes AA,AA-s;A;A-s;B;C	0.001	H
Class D	0.001	H
Classes SA;SB;SC;I	0.001	H
Class SD	0.001	H

Remarks:

Summary of Information

1. EPA. 1976 Quality criteria for water. EPA 440/9-76-023. USEPA, Wash., D.C. 256 pp.

   -criterion: "0.001 ug/l for freshwater and marine aquatic life."

   -based on use of application factor of 0.01 with the lowest acute effect level for crayfish and lethal effects to marine crustaceans after a three to four week exposure.

2. IJC. 1978. Group 2 new and revised water quality objectives. Internation Joint Commission, Regional Office, Windsor, Ontario, 195 pp.

   -criterion: "For the protection of aquatic organisms and fish consuming birds and animals, mirex including its degradation products should be substantially absent from water and aquatic organisms. Substantially absent here means less than detection levels as determined by the best scientific methodology available."

-basis: little chronic data was available for freshwater organisms, but it is extremely toxic and persistent and there is evidence for delayed and cumulative toxic effects. Furthermore, the USFDA and NYSDEC action guidelines of 0.1 ug/g for edible portions of fish may be inadequate to protect fish consuming birds. Therefore, it was recommended that the IJC objective for "Persistent Organic Contaminants" be applied.

3. Buckler et al. 1979. Mirex. Pages 203-204 In: A review of the EPA Red Book: Quality criteria for water. RV. Thurston et al. (Eds.) Water Quality Section, American Fisheries Society, Bethesda, MD.

-support the EPA (1976) criterion, but authors stated concern for the paucity of chronic toxicity data.

4. Veith, G.D., D.L. DeFoe, and B.V. Bergstedt. 1979. Measuring and estimating the bioconcentration factor of chemicals in fish. J. Fish Res. Board Con. 36: 1040-1048.

-bioconcentration factor (BCF) of mirex in fathead minnow was 18,100.

-BCF for mirex estimated from its octanol/water partition coefficient was about 100,000.

5. IJC. 1981. Report of the Aquatic Ecosystems Objectives Committee. International Joint Commission, Regional Office, Windsor, Ont. 48 pp.

-reaffirmed their 1978 objective, noting that chronic data was still lacking.

-cited a study that found toxicity to rats at 0.05 to 500 ug/g mirex in the diet and another study that found a decrease in deer mouse litter size and numbers at 1.8 ug/g mirex in the diet.

Standard Derivation

Multiplying the dietary effect levels cited by IJC (1981) by an application factor of 0.2 results in estimates of no effect levels of 0.01 to 0.36 ug/g. Dividing these values by a BCF of 18,100 results in potential AWQC to protect wildlife consumers of fish ranging from 0.0005 to 0.02 ug/l. Dividing the FDA tolerance of 0.1 ug/g by a BCF of 18,100 results in a potential AWQC of 0.005 ug/l.

The EPA (1976) criterion of 0.001 ug/l is scientifically sound, satisfies NYS protocol and should be adopted as the standard for all classes of surface water. This standard should also provide protection for human and wildlife consumers of fish.