VALUE(S) ADDED 7-24-85

FACT SHEET REVISED _____

VALUE(S) REMOVED _____

Date: October 10,1984

Surface Water Quality
Standard Documentation

Chemical: Hydroquinone

C.A.S, No.(s): 123-31-9

Basis (Human/Aquatic): Aquatic

Standard by Water Classification:

	ug/l	Notes
Classes AA,AA-s;A;A-s;B;C	2.2	J
Class D	4.4	K
Classes SA;SB;SC;I		
Class SD		

Remarks:

Summary of Information

1. Pickering et al. 1983. Effects of pollution on freshwater fish and amphibians. J. Wat. Poll. Cont. Fed. 55(6):846.
   -96hr LC_{50} for zebrafish = 0.17 mg/l
   -48hr LC_{50} for golden orfe: 0.15-0.16 mg/l.

2. Spehar et al. 1981. Effects of pollution on freshwater fish. J. Wat. Poll. Cont. Fed. 53(6):1039.
   -96hr LC_{50} for rainbow trout, flow through, 14°C, pH 8.0: 0.097 mg/l.
   -96hr LC_{50} for fathead minnow, flow though, 14°C, 700 ppm hardness: 0.044 mg/l.

3. National Association Photographic Manufacturers, Inc. 1974. Environmental effects of photoprocessing chemicals Vol. I NAPM, Inc. Harrison, NY 158 pp.

   -LC_{50} for fathead minnow from 0.1 - 0.18 mg/l.
   -LC_{50} for Daphnia magna = 0.05 mg/l.

4. Juhnke, V.I. and D. Ludemann. 1978. Ergebinsse der Untersuchung von 200 chemischen verbindungen auf akute fish toxizitat mit dem goldenorfentest. Z. f Wasser-und Abwasser-Forschung. 11. Jahrgang. Nr 5/78: 161-164.
   -lab 1: LC_{50} = 0.15 mg/l
   -lab 2: LC_{50} = 0.16 mg/l

5. Bringman, G. and R. Kuhn. 1980. Comparison of the toxicity thresholds of water pollutants to bacteria, algae, and protozoa in the cell multiplication inhibition test. Water Research 14: 231-241.
-hydroquinone concentration at which inhibitory action begins: bacteria, 58 mg/l; algae, 0.93 mg/l; and protozoan, 11 mg/l.

6. Verschueren, K. 1983. Handbook of environmental data on organic chemicals, second edition. Van Nostrand Reinhold Co., New York, 1310 pp.

-in activated sludge 90% of added hydroquinone was degraded in the first hour.

7. Harbison, K.G. and R.T. Belly. 1982. The biodegradation of hydroquinone. Environ. Tox. and Chem. 1(1): 9-15.

-greater than 99.5% hydroquinone was removed by an activated sludge system with a retention time of 12 hr.

Standard Derivation

Based on the rapid biodegradation found in references 6 and 7 a factor of 0.05 applied to the fathead minnow acute value of 0.044 mg/l results in a value of 2.2 ug/l. This value should be adopted as the standard for all freshwater classes except D. Applying a factor of 0.1 to the same acute value results in a value of 4.4 ug/l. This value should be adopted as the standard for class D.