

DATA EVALUATION RECORD

1. CHEMICAL: Nuosept
2. FORMULATION: Nuosept - 95
3. CITATION: Bionomics, EG & G, Inc. 1974. Acute toxicity of Nuosept-95 to bluegill (Lepomis macrochirus) and rainbow trout (Salmo gairdneri). Submitted to Tenneco Chemicals, Piscataway, NJ. June 1974. Accession No. 247878.
4. REVIEWED BY: Mary L. Gessner
Fishery Biologist
HED/EEB
5. DATA REVIEWED: 8/13/82
6. TEST TYPE: 96-hour acute toxicity to freshwater fish
Test species:
Rainbow trout (Salmo gairdneri)
7. REPORTED RESULTS: The reported 96-hour LC₅₀ (and 95% confidence limits) of Nuosept-95 for rainbow trout is 240 (181-320) ppm. The reported no-effect level is 87 ppm.
8. REVIEWER'S CONCLUSIONS:

This study is scientifically sound, but is not adequate to fulfill the guideline requirement concerning acute toxicity of the technical material to coldwater fish. The study would, however, be adequate to fulfill a data requirement pertaining to the toxicity of this particular formulation, as testing was conducted on the formulated product. With an LC₅₀ of 240 ppm, Nuosept-95 is practically non-toxic to coldwater fish.

Materials/Methods

Test Procedure

Rainbow trout were obtained from a commercial trout producer and held in the testing laboratory for at least 30 days prior to testing. Mortality during holding was less than 2 percent. Test fish had a mean length of 41 mm and mean weight of 1.2 g. Food was withheld for 48 hours prior to testing. Testing was conducted in 5-gallon glass vessels kept in a water bath at $10 \pm 1^\circ\text{C}$. Ten fish per concentration and 10 control fish were tested. Test vessels were not aerated during the test. The test material was introduced into the test vessels in a solution of water. The reconstituted test water was prepared by adding 48 mg of NaHCO_3 , 30 mg of CaSO_4 , 30 mg of Mg SO_4 and 2 mg of KCl per liter of deionized water. The pH of the diluent water was 7.1, and the methyl orange alkalinity was 35 ppm as CaCO_3 . Dissolved oxygen values for the various test vessels ranged from 8.7 initially to 4.8 mg/l at the end of the test.

Statistical Analysis

The TL_{50} value and its 95% confidence intervals were reportedly calculated by converting the test concentrations and the corresponding observed percent mortalities to logs and probits, respectively. These values were then used to calculate a linear regression equation.

Discussion/Results

The following TL_{50} s and their 95% confidence intervals were reported:

24-hour TL_{50} - 664 (506-873) ppm
96-hour TL_{50} - 240 (181-320) ppm

The no-effect level was reported to be 87 ppm.

Reviewers's Evaluation

A. Test Procedure

Testing generally followed EPA-recommended protocols. Testing was conducted on the formulated product, not the active ingredients. Food was withheld for only 48 hours prior to testing, not the recommended 96 hours. Raw mortality data were not reported, only the percent of test organisms dead at 24 and 96 hours.

B. Statistical Analysis

GESSNER NUOSEPT-95 LC50 RAINBOW TROUT

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
1000	10	10	100	0.09765625
870	10	10	100	0.09765625
560	10	10	100	0.09765625
370	10	7	70	17.1875
240	10	2	20	5.46875
180	10	1	10	1.074219
120	10	1	10	1.074219
87	10	0	0	0.09765625

THE BINOMIAL TEST SHOWS THAT 180 AND 560 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 312.2921

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS
7	0.0519767	282.3002	230.6584 341.3015

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
9	0.1537673	1	0.5495435

SLOPE = 5.425253
 95 PERCENT CONFIDENCE LIMITS = 3.297839 AND 7.552667

LC50 = 287.0781
 95 PERCENT CONFIDENCE LIMITS = 235.7088 AND 353.3639

LC10 = 167.4594
 95 PERCENT CONFIDENCE LIMITS = 111.8591 AND 208.2923

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C. Discussion/Results

The reported LC₅₀ of 240 ppm is acceptable for this formulated product.

D. Conclusions

1. Category: Supplemental
2. Rationale: Testing was conducted on the formulated product.
3. Repairability: None