

US EPA ARCHIVE DOCUMENT

3-27-92

MRID No. 420553-15.

DATA EVALUATION RECORD

- 1. **CHEMICAL:** NTN 33893
Shaughnessy No. ~~129059~~ 129099
- 2. **TEST MATERIAL:** Technical NTN 33893, 97.4%.
- 3. **STUDY TYPE:** Acute Toxicity Test for Freshwater Fish, Rainbow Trout (Oncorhynchus mykiss).
- 4. **CITATION:** Bowman, J. and J. Bucksath. 1990. "Acute Toxicity of NTN 33893 to Rainbow Trout (Oncorhynchus mykiss)". Analytical Bio-Chemistry Laboratories, Inc. Aquatic Toxicology Division, 7200 East ABC Lane, P.O. Box 1097, Columbia, Missouri 65205. Laboratory Report No. 37861. Submitted by Mobay Corporation, Research and Development Department, P.O. Box 4913, Kansas City Missouri 64120. US EPA MRID No. 420553-15.
- 5. **REVIEWED BY:**
Dana Lateulere, Biologist
Ecological Effects Branch
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Signature: *Dana Lateulere*
Date: 3-27-92
- 6. **APPROVED BY:**
Ann Stavola, Section Head, 5
Ecological Effects Branch
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Signature: *Ann Stavola*
Date: 3/27/92
- 7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements. There was no mortality in any of the tested concentrations. The LC50 is determined to be >83 mg/L, the highest concentration tested. The LOEC is 64 mg/L based on abnormal behavior observations. The NOEC is 42 mg/L. NTN 33893 is classified as slightly to practically non-toxic to cold-water, freshwater fish.
- 8. **RECOMMENDATIONS:**
- 9. **BACKGROUND:** This study was submitted as part of registration and EUP requirements.
- 10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

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11. MATERIALS AND METHODS:

A. **Test Animals:** The 70 rainbow trout used in this study were obtained from Mt. Lassen Trout Farms in Red Bluff, CA. The fish were received as green eggs and sperm. The eggs were fertilized at the lab. After hatching, the fish were reared and maintained in well water and were fed newly hatched brine shrimp or a commercially available fish food daily. Approximately 4 weeks before the test, the fish were placed in a "living stream", which is an enclosed system in which water is recirculated through the system. The fish were acclimated to the test water and approximate test temperature in this system. The fish were acclimated for 48 hours before the test in a temperature acclimation unit. They were not fed during the acclimation and test periods. The rainbow trout had a mean weight of 1.07 g and a mean standard length of 44 mm. This gave a test chamber loading biomass of .72 g/L for the definitive study.

B. **Test System:** The static fish bioassay was conducted in five gallon glass vessels containing 15 liters of soft blended water which was equivalent to a depth of 29.9 cm. The test vessels were placed in a waterbath and temperature was maintained at $12 \pm 1^\circ\text{C}$.

Ten fish per each of 5 test concentrations were selected for the definitive bioassay. The fish were added to the test chambers in an impartial manner within 30 minutes after addition of test material.

C. **Dosage:** A range finding test was conducted to determine the concentration range for the definitive test. The nominal concentrations were: 0, 0 (DMF), 16, 27, 45, 75 and 125 mg/L. The measured concentrations were: 0, 0, 15, 27, 42, 64, and 83 mg/L.

D. **Design:** Temperature, dissolved oxygen and Ph were measured in the control, solvent control, low, middle and high test concentrations with live fish at 0, 48, and 96 hours. No aeration was necessary during the study. The lighting was maintained on a 16 hour daylight photoperiod. The light intensity in the test was an average of 20 footcandles. A continuous recording of the waterbath temperature was included in the raw data for the definitive test.

Fish were observed every 24 hours for mortality and abnormal effects such as quiescence, dark discoloration, erratic swimming or placement on the bottom of the test vessel.

- E. **Statistics:** A computerized program calculated the LC50 and its 95% confidence limits using the binomial, moving average and probit methods. Three different methods of analyzing the data were used since no one method of analysis is appropriate for all possible sets of data. The method of calculation selected in this report was that which gave the narrowest confidence limits for the LC50.
12. **REPORTED RESULTS:** The 24, 48, 72 and 96 hour LC50 values for rainbow trout exposed to NTN 33893 were all >83 mg/L. The LC50 was shown to be greater than the water solubility limits of the test material. The 42 mg/L solution had a small amount of surface film and some whitish precipitate on the bottom of the chamber at 0-hour. The 64 and 83 mg/L chambers each had proportionally more surface film and precipitate at the bottom. Surface film and precipitate were not visible in the 42 mg/L after 72 hours. Surface film was not visible in the 64 and 83 mg/L chambers after 72 hours but the precipitate was still present in these two chambers.

The dissolved oxygen concentrations ranged from 5.6 to 9.3 mg/L during the test. These values represented 55 and 92% saturation at 13°C. This was considered adequate for testing; therefore, aeration was not necessary. The pH values ranged from 7.0 to 7.9. The continuous temperature recording showed the temperature ranged from 13°C to 14.5°C.

The 96-hour no-observed effect concentration was estimated to be 42 mg/L, based on the lack of mortality or observed abnormal effects at this concentration. The abnormal effects of dark discoloration, fish on the bottom of test chamber, erratic swimming and/or quiescence were observed in the 64 and 84 mg/L test concentrations during the 96-hour exposure period.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

The 96-hour LC50 for rainbow trout exposed to NTN 33893 was >83 mg/L. The NOEC was 42 mg/L.

Quality Assurance Inspection was conducted for compliance verification by the Quality Assurance Unit. It was also stated that this study was conducted in compliance with the Good Laboratory Practice Standards, 40 CFR Part 160.

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:

A. Test Procedure: The test procedures were in accordance with Subdivision E, and SEP guidelines except for the following deviations:

- Temperature should be 12°C for cold-water fish, the temperature range was 13 - 14.5°C.
- Temperature should not deviate more than 1° C during the exposure period, the temperature deviated by 1.5°C.

B. Statistical Analysis: Data was not conducive to statistical analysis.

C. Discussion/Results: There was no mortality in any of the tested concentrations; therefore, the LC50 is determined to be >83 mg/L, the highest concentration tested. The author suggests that 83 ppm is greater than the water solubility of the chemical, therefore testing at concentrations of 100 ppm (as required) could not be obtained. However, a Daphnia magna acute toxicity test (MRID# 420553-17, Bio-Chemistry Laboratories, Report #37862) performed with NTN 8893 (95.4% a.i.) tested concentrations as high as 113 ppm with only sonication to break up precipitation. Also noted in the D. magna study was the label of the chemical as obtained from the registrant which stated the water solubility was 580 mg/L (ppm). Based on the low toxicity of NTN 33893 to freshwater fish, EEB will not require the study to be repeated obtaining test concentrations ≥ 100 ppm. The LOEC is 64 mg/L based on abnormal behavior observations. The NOEC is 42 mg/L. NTN 33893 is classified as slightly to practically non-toxic to freshwater, cold-water fish.

D. Adequacy of the Study:

- (1) Classification: Core.
- (2) Rationale: See 14c.
- (3) Repairability:

Incomplete review

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Pages 6 through 7 are not included.

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