8-16-91

DATA EVALUATION REPORT
ECOLOGICAL EFFECTS BRANCH

1. **Chemical:** Bromacil

2. **Test Material:** Technical grade 95.1% ai

3. **Study Type:** Semi-Static Acute 96 Hour Toxicity Test with Cyprinodon variegatus.

4. **Study Identification:**
   Study Laboratory: Enseco Laboratories, Marblehead, Ma.
   Study Director: Boeri, Robert L.
   Study Dates: March 2-6, 1989
   Study Identification: #DPZ888
   Sponsor: duPont deNemours & Co.
   EPA Identification: MRID 415887-02

5. **Reviewed by:** Brian Montague, Fisheries Biologist
   Ecological Effects Branch
   Environmental Fate & Effects Division
   Brian Montague 8/16/91

6. **Approved by:** Les Touart, Supervisory Biologist
   Ecological Effects Branch
   Environmental Fate & Effects Division
   8/16/91

7. **Conclusions:** Bromacil is shown to be nearly non-toxic to sheepshead minnow with an LC_{50} of 162.8 mg/L (145.8 - 272.0 mg/L) and an NOEL of $\geq$ 55.1 mg/L.

8. **Recommendations:** N/A.

9. **Submission Purpose:** Submitted to satisfy reregistration guideline requirements.

10. **Methodology and Protocol:** Protocol was developed by duPont de Nemours and carried out by Enseco Laboratories.

Test Organisms: Test fish were 17 days old at initiation and were purchased from a commercial supplier. Acclimation was over 14 days and fish were held in the same dilution water as used during testing. Control fish, measured after 96 hours, averaged 70 mg and had mean length of 17.6 mm.

Test Solutions and Dilution Water: Nominal concentrations were based on early range testing. Dilution water was natural seawater drawn near Marblehead, fine mesh filtered to 5 microns, and subjected to activated carbon filtration. Stock solutions were used to prepare nominal concentrations of 285 mg/L, 143 mg/L, 95 mg/L, 28 mg/L and 9.5 mg/L. No solvents were employed.

Test Materials and Methods: Test solutions (10 L) were added to 19 liter glass aquaria, thoroughly mixed and then maintained at 22 $\pm 1^{\circ}C$. Test vessels were randomly arranged in the environmental chamber and 2 replicates were used for each test group. Ten Cyprinodon were randomly introduced into each test vessel. Aeration was employed within 24 hours to maintain oxygen levels which had begun to drop. Visual observations of test fish were made every 24 hours and water quality parameters were measured daily. None of the test vessels were constantly monitored for temperature, though the environmental chamber was. A 16D/8N photoperiod was maintained.

11. **Reported Test Results:** Analysis of actual concentrations yielded mean values of 37.6, 55.1, 95./6, 145.8 and 272.0 mg/L active ingredient. The high three concentrations exhibited some traces of precipitation throughout the study. All other vessels remained clear.

Mortality was complete in the 272.0 mg/L concentration with 24 hours. No mortality occurred in the 145 ppm test group until after 72 hours. Other test groups suffered no mortalities after 96 hours. Loss of equilibrium and lethargy was seen in the 95.6 mg/L vessels after 72 hours. No other effects in lower concentrations were seen.

Acceptable water quality parameters were as follows: Salinity stable at 20 ppt, pH 7.4 - 7.8, temperature 23 $\pm$ $0^{\circ}C$. Dissolved O_2 did fall below 4.0 mg/L at 24 hours, but was restored with aeration. This did not appear to affect volatility of the chemical as was seen in 96 hour measured

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concentration results.

12. **Study Author's Conclusions:** "The no observed effect concentration (NOEC) based on survival was 95.6 mg/L...The 96 hour LC_{50} (associated 95 percent confidence limit) is 165.1 mg/L active ingredient (95/6 - 272.0 mg/L)".

13. **Reviewer's Discussion:** Though oxygen levels did fall below acceptable levels, the 96 hour toxicant levels appeared to be unaffected. No mortality appeared to have occurred because of this discrepancy and O_2 levels were restored. Other parameters remained stable. The study author has based his NOEL on survival only. Effects were seen at the 95.6 mg/L test level. Therefore the 96 hour NOEL is felt to be 55.1 mg/L and the LOEL is 95.6 mg/L. The authors LC_{50} computations were confirmed by statistical analysis and correlate closely with Agency computations.

Adequacy of Study:

Category: Core
Rationale: Despite use of aeration (a departure from generally accepted protocol), measured concentration analysis has shown that toxicant stability was not affected. Therefore the data does support the study author's conclusions.
Repairability: N/A