

US EPA ARCHIVE DOCUMENT

9:13.90

DATA EVALUATION REPORT
ECOLOGICAL EFFECTS BRANCH

- 1. Chemical: Bromacil
- 2. Test Material: Numerical identification among 15 chemicals tested. Percent active ingredient is not identified nor is the source.
- 3. Study Type: 96 hour Acute Toxicity to mysid shrimp (mysidopsis bahia under flow through conditions.
- 4. Study Identifications:
 - Study Author: Not identified
 - Study Laboratory: EG and G Bionomics Marine Research Laboratory, Pensacola, Fla.
 - Study Dates: Tests conducted January through February, 1980
 - Study Identification: Project No. L27
 - Sponsor: E. I. duPont de Nemours and Co.
 - EPA Identification: MRID 126346

5. Reviewed By: Brian Montague, Fisheries Biologist
 Ecological Effects Branch
 Environmental Fate & Effects Division (H7507C)

Brian Montague
9/12/90

6. Approved By: Ray Matheny, Supervisory Biologist
 Ecological Effects Branch
 Environmental Fate & Effects Division (H7507C)

Ray Matheny 9/13/90

7. Conclusions: The study appears to have been conducted under sound scientific methodology, however, the laboratory has failed to confirm nominal concentrations with actual measured concentrations, the percent active ingredient is not properly identified, and there is some question as to why the laboratory was not able to achieve solubility needed to establish the LC₅₀.

8. Recommendations: The study is upgradeable if proof that the concentration levels remained constant for 96 hours, that test material was of technical grade, confirmation that H 11,229 is indeed Bromacil, and the reason it was not soluble above 1 ppm in natural seawater despite achievement of 300 ppm in other studies.

Invalid

9. **Submission Purpose:** This study was submitted under Section 6(a)(2) of FIFRA - Identification of Unreasonable Adverse Information.

10. **Test Methods and Protocol:** Protocol is assumed to be of the laboratory's own design. No specific protocol was mentioned.

Test Organisms: Mysid shrimp were laboratory reared and approximately 6-8 days of age at test initiation. Total body length ranged from 4-6 mm.

Dilution water: Test dilution water was natural seawater obtained from the Big Lagoon estuary adjacent to the laboratory. The intake was located 85 meters offshore at 3 meters of depth. All seawater was pumped via PVC pipe to fiberglass sand filters, 10 micron polypropylene core filters, and then stored in fiberglass holding tanks. Seawater was aerated within the reservoirs. Temperature averaged $24 \pm 2^{\circ}\text{C}$ and an analysis is provided in the report. All pesticide analysis revealed concentrations less than 0.05 ppb and analysis for heavy metals showed no values over 0.05 ppb (zinc).

Test Materials and Procedures: Flow of dilution water to the mixing chambers was by gravity feed and intermittent flow proportional diluters (Mount and Brungs, 1967) delivered 0.5 liters of test solution per cycle per aquarium. Each 8L test aquarium received approximately 9 volume additions per 24 hours. Stock solutions were introduced into the mixing chamber via 50 ml glass syringes or glass dipping birds. Prior to each test initiation the diluter was tested for 24 hours to establish system equilibrium. Intermittent introduction was accomplished by use of a teflon solenoid valve arrangement controlled by two float switches. Nominal test concentrations were reported to be 500, 250, 125, 62, and 31 ppb for H 11,229 which is identified (handwritten) as Bromacil on the cover of the report. Five mysids were placed in each test vessel. Vessels were glass petri dishes covered with nitex 315 micro-meter mesh size screen collars. Four test vessels were placed in each test aquarium thus providing 20 mysids and four replicates per test level. Hourly observations were made during the initial 8 hours followed by 12, 24, 48, 72, and 96 hour observation points. Mortalities and sublethal effects were noted at these observation times.

Water quality parameters (salinity, temperature, dissolved oxygen, and pH) were measured at 0, 24, 48, 72, and 96 hours.

11. **Reported Test Results:** No control mortality was experienced nor was there mortality in the 6 and 12 ppm concentrations. At 50 ppm a 25% mortality occurred and at 25 ppm 5% mortality was observed. A 65% mortality was recorded after 96 hours of

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exposure to 100 ppm. No effects were observed in the lower concentrations.

Salinity was stable at 26±3 ppt, temperature was 24°C, dissolved oxygen ranged from 86-103% and pH remained stable at 7.9 in all test vessels.

12. **Study Author's Conclusions:** "Because the test material was insoluble in test concentrations \geq than 1000 ppb during range finding tests, 1000 ppb was the highest concentration tested in the definitive test. . . .After 96 hours, the maximum mortality was 10% in 200 ppb; there was no control mortality. The estimated 96 hour LC_{50} was > 1000 ppb. A no discernible effect concentration was not determined."
13. **Reviewer's Discussion:** The study appears to be scientifically sound in most respects. However, no measured concentrations were made to confirm the nominal concentration estimates. Though H-11,229 is identified by the cover letter as Bromacil there is no statement of purity accompanying the study report. Thus, the percent active is not known. A discrepancy in the author's statement concerning solubility has been noted when comparison to studies made by du Pont's Haskell laboratories is examined. In studies with bluegill sunfish concentrations of 300 ppm were achieved without using solvents. This raises the question as to why EG&G Bionomics was unable to achieve a concentration of 1 ppm. Temperature should have been measured continuously in one test vessel. However, as natural seawater was employed it is assumed that this parameter remained constant.

Adequacy of Study:

Classification:Invalid

Rationale: Percent active ingredient is not identified and concentrations were not verified by analysis. In addition the study author's claim that H 11,229 was not soluble above 1000 ppb is not supported by other aquatic studies submitted with reregistration data supplied by the company in which concentrations of 300 ppm were achieved without the use of solvents.

Repairability: Repairable if the prementioned discrepancies can be mitigated by additional information.