UNDATED

DATA EVALUATION RECORD

1. **CHEMICAL:** Molinate.
Shaughnessey No. 041402.

2. **TEST MATERIAL:** Arrosolo 3-3E; 33.5% molinate, 34% propanil; Sample No. 11877-1; dark-brown liquid formulated product.

3. **STUDY TYPE:** Marine Shrimp Static Acute Toxicity Test. Species Tested: Mysidopsi

4. **CITATION:** Williams, T.D., J.F. Tapp, S.A. Sankey, and P.A. Johnson. 1990. Mol Determination of Acute Toxicity of the Formulation Arrosolo 3-3E to Mysid Shri bahia). Report No. BL3868/B. Prepared by ICI PLC, Brixham, Devon, UK. Subm Agrochemicals, Haslemere, Surrey, UK. EPA MRID No. 416136-10.

5. **REVIEWED BY:**

Mark A. Mossler, M.S. **Signature:**
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6. **APPROVED BY:**

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USEPA **Date:**

7. **CONCLUSIONS:** This study is scientifically sound and satisfies the guideline requ static acute toxicity test for marine organisms. The 96-hour LC_{50} of Arrosolo shrimp was 7.6 mg/L (based on mean measured concentrations of the formulation). Arrosolo 3-3E is classified as moderately toxic to mysid shrimp. The NOEC, base mortality and sublethal effects, was estimated as 5.7 mg/L.

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**
10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Less than 24 hour-old mysid shrimp (Mysidopsis bahia) were r in-house. The parental shrimp originally came from Sea Plantations, Inc This supplier stated that the original cultures came from the USEPA L Narragansett, RI. The shrimp were maintained in culture tanks under the t throughout rearing. The shrimp were fed newly hatched brine shrimp daily good condition at test initiation.

B. **Test System:** Vessels used in the test were glass beakers with loose fittin

containing 1000 mL of water (control) or test solution. The dilution w seawater from Tor Bay, Devon which was diluted with distilled water to adj to 20 ±2% parts per thousand (ppt). The water was filtered (1 ?m) prior t vessels were randomly positioned in a temperature-controlled incubator se 25.0 ±1°C. The photoperiod used was 16-hours light/8-hours dark. concentrations were prepared by adding appropriate amounts of stock sol mg/L) directly to the test chambers.

The shrimp were fed 10-20 brine shrimp nauplii per mysid per day during the

C. **Dosage:** Ninety-six-hour static test. Six nominal concentrations (1.0, 1.8 and 18 mg/L) and a dilution water control were used. The concentrations based on total product.

D. **Design:** Ten mysids were randomly allocated to a single vessel for each tes concentration and dilution water control. All chambers were observed o hours for mortality, which was considered the absence of life when viewed shrimp were removed at the time of observation. Samples of the test so taken at 0, 48, and 96 hours for chemical analysis of molinate.

The dissolved oxygen (D.O.) was monitored in each solution at 0, 48, and 9 pH of each solution was measured at the start and finish of the test. control and highest test concentration was measured at the start and fin Temperature was measured in each test vessel daily and hourly in a co contained no test organisms.

E. **Statistics:** The 96-hour median lethal concentration (LC_{50}) and associated confidence interval (C.I.) was calculated using the binomial method.

12. **REPORTED RESULTS:** The mean measured values ranged from 90 to 102% of nominal val in the test vessels (Table 1, attached). The mortality responses of the mysid s Table 2 (attached). The 96-hour LC_{50}, based on mean measured concentrations, wa (95% C.I. = 5.7-10 mg/L). The no-observed-effect concentration (NOEC), based o mortality and abnormal effects, was 5.7 mg/L after 96 hours.

The initial pH was 8.16 and the final pH was between 8.08 and 8.1. The dissolv between 7.3-7.4 mg/L (88-89% of saturation) at test initiation and 7.2-7.4 (87- at test termination. Salinity ranged from 20.1-20.2 ppt throughout the test. between 24.1-25.2°C throughout the test.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**
The authors presented no conclusions.

Quality Assurance and Good Laboratory Practice Compliance Statements were in the report, indicating that the study was conducted in accordance wit Laboratory Practice Standards set forth in 40 CFR Part 160.

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

A. **Test Procedure:** The test procedures were generally in accordance wit protocols recommended by the guidelines, but deviated from the SEP as

A 30-minute dawn and dusk simulation period is recommended in the transition period was not used in the study.

2

Each selected nominal concentration was between 56% and 57% of th highest concentration. The SEP recommends that each concentration b the next highest concentration.

The report did not state the time period between test solution pre shrimp addition.

No weight, length, or loading for the shrimp was stated in the report

The salinity and pH during the test were 20 ppt and 8.0, respect recommended salinity and pH for mysids are 30-34 ppt and 8.0-8.3 or and 7.7-8.0, respectively.

The test temperature (24.1-25.2°C) was higher than recommended (22°C)

B. **Statistical Analysis:** The reviewer used EPA's Toxanal program to cal the LC_{50} value and obtained the same results (see attached printout).

C. **Discussion/Results:** Although the weight, length and loading were not reported, it was stated that the mysid shrimp used were less than 2 Therefore, the maximum loading rate of 0.5 g was probably not reached

The report summary stated that the percentage of molinate in the fo 35.5% w/w. However, the materials and methods section stated t percentage of molinate in the formulation was 33.5% w/w. The percentage is taken to be close to these values.

This study is scientifically sound and satisfies the guideline req shrimp static acute toxicity test. The 96-hour LC_{50} of 7.6 mg/L (bas measured concentrations) classifies Arrosolo 3-3E as moderately tox shrimp. The NOEC can be estimated as 5.7 mg/L.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** N/A.

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, 6-12-91.