UNDATED

DATA EVALUATION RECORD

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

2. **TEST MATERIAL:** Ordram 8-E; Reference No. 11240-38; 91.2% active ingredient w/w; formulated product.

3. **STUDY TYPE:** Freshwater Invertebrate Static Acute Toxicity Test. Species Tested: magna.

4. **CITATION:** Farrelly, E. and M. J. Hamer. 1989. Molinate: An Investigation of th Formulation Ordram 8-E to First Instar Daphnia magna. Report No. RJ0717B. P submitted by ICI Agrochemcials, Bracknell, Berkshire, UK. EPA MRID No. 416136-05

5. **REVIEWED BY:**

Mark A. Mossler, M.S. **Signature:**
Associate Scientist
KBN Engineering and **Date:**
Applied Sciences, Inc.

6. **APPROVED BY:**

Louis M. Rifici, M.S. **Signature:**
Associate Scientist
KBN Engineering and **Date:**
Applied Sciences, Inc.

Henry T. Craven, M.S. **Signature:**
Supervisor, EEB/HED
USEPA **Date:**

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirem acute static toxicity test for freshwater invertebrates. Based on measured co 48-hour LC_{50} of Ordram 8-E for Daphnia magna was 4.7 mg/l. Therefore, Ordr classified as moderately toxic to Daphnia magna. The NOEC was estimated as 2.6 m

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

9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The Daphnia magna used were less than 24 hours old and were in hard reconstituted water. The daphnids were fed a diet of yeast and a vulgaris). The temperature was approxi-mately 20°C with a 16-hour photop culturing.

B. **Test System:** Vessels used in the test were covered 250-ml glass beakers co

200 ml of dilution water (control) or test solution. A 16-hour light provided by two warm-white fluorescent tubes with a light intensity of solution surface. The vessels were held in a temperature controlled (20°±1°C). Reconstituted water was used as dilution water. The quantitie were 192 mg $NaHCO_3$/l, 120 mg $CaSO_4 \cdot 2H_2O$/l, 245 mg $MgSO_4 \cdot 7H_2O$/l, and 8 mg KCl/l.

The daphnids were not fed during the test.

C. **Dosage:** Forty-eight-hour static test. Two definitive tests were performed eight nominal concentrations (56, 34, 20, 12, 7.2, 4.3, 2.6, 1.6 mg/l) an control were used. In the second, ten nominal concentrations (155, 93, 5 7.2, 4.3, 2.6, and 1.6 mg/l) and a dilution water control were used.

D. **Design:** Test solutions were prepared by adding the formulation directly to water to give the highest concentration. The lower concentrations were making serial dilutions of the highest rate. The control was reconstit Three beakers were used for each concentration and ten daphnids were beaker.

All concentrations were observed once at 3, 9, 24, and 48 hours for m immobilization. The dissolved oxygen (D.O.) and pH were measured concentrations at the beginning and end of the test. The temperature of was recorded using a minimum/maximum thermometer at each observation time.

Molinate concentrations were measured by GC analysis from samples taken initiation and termination.

E. **Statistics:** The 48-hour median lethal concentration (LC_{50}) and associated confidence interval (C.I.) were calculated using probit analysis. T determined by use of one-way analysis of variance.

12. **REPORTED RESULTS:** The mean measured concentrations for tests I and II are given 1 (attached). The mean measured concentrations ranged from 90 to 105% of no concentrations.

The responses of Daphnia magna are given in Tables 4 and 5 (attached). The 48- values based on mean measured concentrations were 5.4 mg/l (95% C.I. = 3.3-8.2 m mg/l (95% C.I. = 4.2-5.2 mg/l) for test I and II, respectively. The no-observed (NOEC) was determined to be 2.6 mg/l for both tests.

Dissolved oxygen levels were between 8.3 and 8.9 mg/l during the tests. The pH from 8.3 to 8.5. The temperature was within the 20°±1°C range at each observat both tests. Continuous temperature monitoring established the temperature rang as 19.5-20.5°C.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**
No conclusions were reported by the authors.

Quality Assurance and Good Laboratory Practices statements were includ report. It was stated that the document was not subject to the requireme Part 160.

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

2

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

The alkalinity, conductivity, and hardness of the dilution water wa the report. The hardness is estimated by the reviewer to be approx mg/l as $CaCO_3$.

The length of time between solution preparation and test initiation and the method used to transfer daphnids to test solutions was not the report.

No acclimation period to the test water was reported.

The report did not state whether the recommended 15-30 minute t period between light and dark was used.

Observations of the daphnid cultures such as adult mortality, str presence of ephippia were not given in the report.

First instar Daphnia magna used in tests should be from the fou broods of a given parent. The authors did not indicate which bro source of the test animals.

The slopes of the dose response curves were not given.

B. **Statistical Analysis:** The reviewer used EPA's Toxanal program to cal the LC_{50} values and obtained similar results (see attached printout). value generated in test II was lower than that of test I. Since this value is more conservative and will better invertebrates, it will be taken to be the correct LC value for Ordram

C. **Discussion/Results:** The hardness of the reconstituted water was not the report. The authors describe the reconstituted water as "ha hardness had to be estimated from the quantity of calcium and magnes added. When preparing reconstituted water, basic water ch determinations, such as hardness and alkalinity, should be performe the quality of the water. In addition, guidelines recommend limit which should be addressed prior to test initiation.

The 48-hour LC_{50} of 4.7 mg/l (based on measured concentrations) class Ordram 8-E as moderately toxic to Daphnia magna. The NOEC was 2.6 mg

D. **Adequacy of the Study:**

(1) **Classification:** Core for the formulated product.

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

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

15. **COMPLETION OF ONE-LINER FOR STUDY:** Yes, 6-5-91.