

US EPA ARCHIVE DOCUMENT

UNDATED

DATA EVALUATION RECORD

1. **CHEMICAL:** Molinate.
Shaughnessey No. 041402.
2. **TEST MATERIAL:** Ordram 8E; Lot No. NH1-0821; 90.3% molinate w/w; an amber liquid formulated product.
3. **STUDY TYPE:** Saltwater Fish Acute Static Toxicity Test. Species Tested: Sheepshead (Cyprinodon variegatus).
4. **CITATION:** Tapp, J.F., S.A. Sankey, J.E. Caunter and R.D. Stanley. 1990. Mol Determination of Acute Toxicity of the Formulation Ordram 8E to Sheepshead (Cyprinodon variegatus). Laboratory Study No. BL3790/B. Conducted by Imperia Industries PLC, Brixham, Devon, UK. Submitted by ICI Agrochemicals, Fernhurst, EPA MRID No. 416136-07.
5. **REVIEWED BY:**

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

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Henry T. Craven, M.S. **Signature:**
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7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for static, acute toxicity test. Based on mean measured concentrations, the 96-hour LC50 for sheepshead minnows was 12 mg/L. Therefore, Ordram 8E is classified as slightly toxic to sheepshead minnows. The NOEC was estimated as 0.33 mg/L.
8. **RECOMMENDATIONS:** N/A.
9. **BACKGROUND:**
10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.
11. **MATERIALS AND METHODS:**
 - A. **Test Animals:** Sheepshead Minnow (Cyprinodon variegatus) were obtained from commercial supplier in Salem, MA. The fish were held in salt water and fed available fish food daily. The fish were held under the test conditions and no fish were not fed during the test. The average length and weight of the

39 mm (range of 34-45 mm) and 2.08 g (range of 1.13-3.32 g).

- B. **Test System:** Vessels used in the test were glass, 50-L aquaria which contained 50 L of test solution or control water. performed in a temperature controlled room set to maintain 22.0 \pm 1.0°C. water was natural seawater from Tor Bay, Devon which was filtered prior to was 35.09 parts per thousand (ppt) and pH was 8.14 at test initiation concentrations were prepared by adding appropriate amounts of test material to the test chambers. The photoperiod was 16 hours light/8 hours darkness. were gently aerated.
- C. **Dosage:** Ninety-six-hour static test. Eight nominal concentrations (0.1, 0.18, 32, 56, and 100 mg/L) and a dilution water control were used. The concentrations made were based on total product. The highest rate of 100 mg/L was initiated and cleared after 10 minutes.
- D. **Design:** Ten minnows were randomly allocated to a single vessel for each test concentration and dilution water control. The position of the control and test vessels were randomly allocated. The loading rate was 0.42 g/L. All chambers were checked every 24 hours for mortality and signs of toxicity. Samples of the test water were taken at 0, 48, and 96 hours for chemical analysis of molinate.
- Dissolved oxygen (DO), pH, and temperature measurements were made every 24 hours in all test concentrations and the dilution water control.
- E. **Statistics:** The 96-hour median lethal concentration (LC₅₀) and associated confidence interval (C.I.) was calculated using the moving average test.

12. **REPORTED RESULTS:** The mean measured values ranged from 100 to 110% of nominal values in the test vessels (Table 1, attached). The mortality responses of minnow are given in Table 2 (attached). The 96-hour LC₅₀, based on mean concentrations, was 12 mg/L (95% C.I. = 7.6-20 mg/L). The no-observed-effect (NOEC), based on the lack of mortality and abnormal effects, was 0.33 mg/L based on measured concentrations.

The final pH was between 7.8 and 7.9. The dissolved oxygen was between 6.0-6.4 (65-69% of saturation) at test initiation and 6.0-6.4 (61-65% of saturation) at test termination. Temperature ranged between 21.2-22.8°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 included in the report, indicating that the study was conducted in accordance with FIFRA Good 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 with protocols recommended by the guidelines, but deviated from the SEP as follows:

The fish tested in the study appeared to be adult. Juveniles were not recommended.

The DO in the test chambers was 43 to 59% of saturation (at 35 ppt on day 1. Dissolved oxygen concentrations greater than 60% and 100% during the first 48 hours of the test are recommended.

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

The salinity of the test water was 35 ppt. Sheepshead minnows are species and should be tested in water of lower salinity (i.e., 10-17

A large gap existed in the nominal rates between 0.32 and 10 mg/L. above these concentrations, respectively, each selected nominal concentration was between 56% and 57% of the next highest concentration. This recommends that each concentration be 60% of the next highest concentration.

The report did not state the time period between test solution preparation and fish addition.

B. Statistical Analysis: The reviewer used EPA's Toxanal program to calculate the LC₅₀ value and obtained a higher LC value than the authors (printout). Since the authors' values are more conservative, they will be the correct values.

C. Discussion/Results: Although the fish were tested in water that was less than recommended salinity, the control fish demonstrated no mortality stress. Therefore, the higher salinity water did not affect the study. Similarly, the drop in DO on day 1 did not appear to affect the fish. Although there was a large gap between the nominal rate and 10 mg/L, the dose response occurred in the range of 10-100 mg/L. The LC₅₀ derived by the authors is therefore considered valid. The NOEC determined to be 0.33 mg/L but the next highest rate was 10 mg/L. It may actually be higher than the one stated in this report, but since it is more conservative, it will be taken to be the NOEC value.

This study is scientifically sound and satisfies the guideline requirement for a static acute toxicity test. The 96-hour LC₅₀ of 12 mg/L (based on measured concentrations) classifies Ordrum 8E as slightly toxic to minnow. The NOEC can be estimated as 0.33 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, 6-14-91.