

US EPA ARCHIVE DOCUMENT

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Shaughnessy No.

Data Evaluation Record

MOLINATE TG, ORDRAM[©]

Marine and Estuarine Toxicity Test
Guideline 72-3(a).

1. TEST MATERIAL - Molinate TG

2. STUDY MATERIAL:

S-Ethyl hexahydro-1H-azepine-1-carbothioate 100% ai W/W.

3. STUDY TYPE:

Marine fish acute toxicity.

Species tested- Sheepshead minnow (*Cyprinodon variegatus*)

4. STUDY IDENTIFICATION:

Nicholson, R.B. 1987. Acute toxicity of Ordram[©] technical to Sheepshead minnow. Springborn Bionomics, Inc., 10307 Gulf Beach Hwy, Pensacola, FL 32507. Final Report No. 87-7-2413. Study No. 723.0287.6106.500. Submitted by ICI Americas, Inc., Agricultural Products, Wilmington, Delaware 19897. Registrants Code No. (?) on the Summary title page- T-12560, RR 90-342B.

5. REVIEWED BY:

James J. Goodyear
Biologist, Section 1
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Signature:

Date:

6. APPROVED BY:

Leslie W. Touart
Acting Head, Section 1
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Signature:

Date:

7. CONCLUSIONS:

The study does not meet the Guideline Requirement for a Marine fish toxicity study and *cannot* be used for reregistration.

8. RECOMMENDATIONS - N/A.

9. BACKGROUND:

The registrant submitted the study as a "Previously submitted, acceptable study." EEB has no record of having reviewed or even received the study. The records of the Registration Division confirm that the study has never been reviewed.

10. DISCUSSION OF INDIVIDUAL TEST - N/A.

11. MATERIALS AND METHODS:

A. TEST CONDITIONS:

Animals - Sheepshead minnow (*Cyprinodon variegatus*)

mean weight = 0.12 g (0.03-0.39 g), mean length = 18 mm (13-25 mm)

Containers - 18.9 l glass aquaria containing 15 l of test solution.

Solution - Filtered seawater.

Temperature - 22° C.

Duration - 96 hours.

pH - 7.2 to 7.9.

Dissolved O₂ - 1.8 to 7.1 mg/l (?20 % saturation)

B. DOSE - 8, 13, 22, 36, and 60 mg/l nominal plus a water and a solvent control.

C. DESIGN:

Ten fish per level, no aeration, static, nominal levels only, photoperiod of 16 hours of light and 8 hours of dark.

D. STATISTICS - Stephan, 1977.

12. REPORTED RESULTS:

LC₅₀ = 12 mg/l (95% C.I. 8.0 to 22 mg/l).

NOEL <8.0 mg/l (i.e., The experimenters observed signs of toxicity at all concentrations).

Mortality

			Ordram [®] mg/l					
	Control	Solvent Control	8.0	13	22	36	60	
Mortality (X/10)	0	1	0	6	10	10	10	

13. STUDY AUTHORS' CONCLUSIONS/QA MEASURES:

"The raw data and the final report for this study were audited by the Quality Assurance Unit to assure compliance with the protocols, standard operating procedures and the pertinent EPA Good Laboratory Practice Regulations on the following dates: 15 July 1987. If discrepancies were found, reports were made immediately to the Study Director and management. It is the opinion of this unit that these data accurately reflect the raw data generated during this study."

"The 96-hour LC₅₀ and 95% confidence interval was 12 (8.0 - 22) mg/l. The No Observed Effects Concentration was <8.0 mg/l. Based on EPA (1985) criteria the test material is classified slightly toxic to sheepshead minnow."

14. REVIEWER'S DISCUSSION AND CONCLUSIONS:

A. TEST PROCEDURES:

The experimenters did not measure the concentrations. In other tests Molinate levels varied as much as 30% during a 96-hour test. Therefore, EEB cannot trust the nominal concentrations that were used in the calculation of the LC₅₀. The dissolved oxygen readings in the 96-hour measurement fell to 21% of saturation in a 22 mg/l vessel and to 32% in a 22 mg/l vessel. The 48-hour measurement fell to 56% in a 13 mg/l vessel and 49% in the 22 mg/l vessel. There was an apparent positive correlation between reduced D.O. and Molinate concentration. This low level could have contributed in some indeterminable manner to the mortality. Table 3 lists the D.O. measurements and converts them to percent saturation. The percent figures are significantly higher than EEB's figures.

B. STATISTICAL ANALYSIS:

EEB did check the statistical analysis of the nominal data with Stephens (1977) computer program. The LC₅₀ = 12.2 mg/l (CI 8 - 22 mg/l).

C. DISCUSSION/RESULTS:

Even though this was a static study it should have measured concentration levels because of the history of Molinate precipitating in aquatic toxicity studies and the history of the registrant not telling EPA when it precipitated. The D.O. levels were too low in two levels during the 48-hour and the 96-hour measurements. If this study had been acceptable, Molinate would be categorized as "Slightly Toxic" to marine fish.

D. ADEQUACY OF THE STUDY:

Classification - Invalid.

Rational - The low D.O. in two levels at two times may have changed mortality in a way that is not predictable. EEB does not have enough information about the chemistry of Molinate to interpret the solutions and the number of tests.

Repair - None.

15. COMPLETION OF ONE-LINER FOR STUDY- No.

16. CBI APPENDIX - N/A.

LITERATURE CITED

Stephan, C.E. 1977. Methods for calculating an LC₅₀. *in*, Aquatic Toxicology and Hazard Evaluation. ASTM STP 634. F.L. Mayer and J.L. Hamelink, Eds. American Society for Testing and Materials. pp. 65-84.