

US EPA ARCHIVE DOCUMENT

9-30-85

DATA EVALUATION RECORD

- 1. Chemical: Methamidophos (Monitor®)  
O,S-Dimethyl phosphoramidothioate
- 2. Test Material: Methamidophos: Technical (70.1% ai)
- 3. Study Type: Static, 96-hour EC<sub>50</sub>: Sheepshead minnow  
(Cyprinodon variegatus).
- 4. Study ID: Biospherics, Inc. (1983) The Acute Toxicity of  
Methamidophos (Technical) to Sheepshead Minnow  
(Cyprinodon variegatus). Submitted by Mobay  
Chemical Corporation, Stillwell, KS, December  
1983. EPA Registration No. 239-2452; EPA Accession  
No. 258108

5. Reviewed by: Margaret Rostker  
EEB/HED

Signature: *M. Rostker*  
Date: 18 Sept 1985

6. Approved by: Harry Craven  
EEB/HED

Signature: *Harry T. Craven*  
Date: 9/20/85

7. Conclusions:

The study reports a static, 96-hour LC<sub>50</sub> = 5.6 ppm (95% CI = 4.13, 6.89 ppm) for sheepshead minnow exposed to technical methamidophos. The NOEL = 4.13 ppm. The study fulfills guideline requirements for an acute toxicity test with technical product for an estuarine/marine fish.

8. Recommendations:

N/A

9. Background:

Required test under Registration Standard.

10. Discussion of Individual Test:

N/A

11. Materials and Methods:

- a. Test Animals: Cyprinodon variegatus (Sheepshead minnow) from Sea Plantations, Inc., Salem, MA. Approximate age at test initiation: 3 months; mean mass (N = 10) = .32 g; mean length (N = 10) = 27.1 mm.

Test System: Static; 19-liter glass vessels with 15 liters test solution; 96-hour test duration.

- b. Dose: Static bioassay; no solvent used.
- c. Design: Five test concentrations, 1 control. Ten fish/concentration or control. Test concentrations (measured concentrations): 2.77, 4.13, 6.89, 11.1, 18.4 ppm.
- d. Statistics: Binomial probability method; Stephan, 1979. All calculations based on initial concentrations of test material from samples taken following dosing.

12. Reported Results:

The study authors report a 96-hour LC<sub>50</sub> = 5.63 ppm (95% CI = 4.13, 6.89 ppm). NOEL = 4.13 ppm. Single observation of 1 minnow surfacing at 72 hours not considered significant to lower NOEL to 2.77 ppm.

13. Study Authors' Conclusions/QA Measures:

96-hour LC<sub>50</sub> (95% CI) = 5.63 ppm (4.13, 6.89 ppm).

Statement of QA inspection provided.

14. Reviewer's Discussion and Interpretation of Study:

- a. Test Procedures: While the procedures were in general conformance with guidelines, EEB is concerned that less than one-third the recommended volume of water was used in the range-finding tests. Inasmuch as an array of mortalities over the three highest test concentrations was observed, EEB will not invalidate the study for this protocol deviation.

- b. Statistical Analysis: The proper method was used.
- c. Discussion/Results: The study  $LC_{50} = 5.6$  ppm with 95 percent CI = 4.13, 6.89 ppm. The NOEL = 4.13 ppm.
- d. Adequacy of Study:
  - 1. Classification: Core
  - 2. Rationale: Guidelines
  - 3. Repairability: N/A

15. Completion of One-liner for Study:

September 9, 1985

16. CBI Appendix:

N/A

EEB Check on reported results.

ROSTKER MONITOR 96-HOUR MINNOW

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
18.4	10	10	100	.0976563
11.1	10	10	100	.0976563
6.89	10	9	90	1.07422
4.13	10	0	0	.0976563
2.77	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 4.13 AND 6.89 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 5.63022

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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