
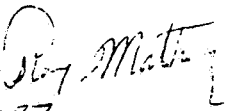


US EPA ARCHIVE DOCUMENT



DATA EVALUATION RECORD

1. CHEMICAL: Bifenthrin, FMC 54800
  
2. TEST MATERIAL: 88.35% A.I.
  
3. TEST TYPE: Estuarine mollusc acute toxicity test (shell deposition)
  
4. STUDY IDENTIFICATION: Acute effect of FMC 54800 Technical on new shell growth of the Eastern oyster (Crassostrea virginica). Unpublished report prepared by ESE, Inc. for FMC Corporation. [EPA Accession No. 402665-01]
  
5. REVIEWED BY:  
Les Touart  
Fisheries Biologist  
Ecological Effects Branch/HED  
Signature:   
Date: 10-13-87
  
6. APPROVED BY:  
Raymond Matheny  
Supervisory Biologist  
Ecological Effects Branch/HED  
Signature:   
Date: 10-15-87
  
7. CONCLUSIONS: The study is not acceptable as it fails to report an EC50 concentration, that is a concentration which inhibits new shell growth by 50%, and the controls deposited less than 3.0 mm of new shell growth in 96 hours. The highest level tested (99.7 ppb) was insufficient to cause a 50% reduction in shell growth.
  
8. RECOMMENDATIONS: N/A

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- 9. BACKGROUND:
  
- 10. DISCUSSION OF INDIVIDUAL TESTS: N/A
  
- 11. METHODS AND MATERIALS:
  - A. Test Organisms: Eastern oyster  
Size: 36 - 50 mm [umbo to distal valve edge]  
Source: Shinnocock Tribe Oyster Project
  
  - B. Dosage Form:  
Solvents/Vehicles: acetone  
Route of Administration: injection to dilution water into proportional diluter
  
  - C. Referenced Protocol:  
Test Levels: Nominal - 1000, 600, 360, 216 and 130 ppb;  
Mean Measured - 73.9, 99.7, 71.5, 95.7 and 32.1 ppb. Appropriate controls were included.  
Number per Level: 20 oysters/treatment  
Test Conditions:  
Temperature: 26° C                      Salinity: 35 - 36 ppt  
Dissolved Oxygen: 3.4 - 6.0  
pH: 7.0 - 7.8  
Source of Dilution Water: unfiltered natural seawater  
Test Vessels: 16.3 l glass aquaria  
Loading: 20 oysters/glass aquaria  
Photoperiod: 16 hours light: 8 hours dark  
Observation Period: 96 hours  
Statistical Methods: n/a

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12. REPORTED RESULTS:

Effects Criteria: mortality

EC50 and C.L.'s: n/a

NEL: not attained

Dose Response Data:

Conc. (ug/l)	Mean shell deposition	% change
73.9	1.97 mm	-13
99.7	1.72 mm	-24
71.5	2.62 mm	+16
95.7	2.42 mm	+7
32.1	2.52 mm	+12
control	2.77 mm	+23
solvent control	2.26 mm	--

Observation Period: 96 hours

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

A 96-hr EC50 value could not be determined from the test data, but appeared to be >99.7 ppb.

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF THE STUDY:

- A. Test Procedures: The test was conducted according to acceptable methods. However, the concentrations tested were insufficient to allow a calculation of an EC50 and D.O. and pH values were excessively low. Also, the test concentrations were above solubility limits of the compound which resulted in non-homogeneous test concentrations.
- B. Statistical Analysis: n/a
- C. Discussion/Results: The data do not support the calculation of an EC50 for FMC 54800 to oyster shell growth. The control oysters did not deposit new shell at an optimum rate of 1 mm per day. The optimum rate could have been affected by low D.O. and pH during the test.
- D. Adequacy of Test:
1. Validation Category: Invalid.
  2. Rationale: Inappropriate response from control animals and lack of homogeneous test concentrations.
  3. Repairability: None.

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