201106
RECORD NO.

128825
SHAUGHNESSY NO.

REVIEW NO.

EE BRANCH REVIEW

DATE: IN 08-13-87 OUT 10-15-87

FILE OR REG. NO. 279-3055

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 07/16/87

DATE RECEIVED BY HED 08/11/87

RD REQUESTED COMPLETION DATE 10/26/87

EEB ESTIMATED COMPLETION DATE 10/26/87

RD ACTION CODE/TYPE OF REVIEW 330

TYPE PRODUCT(S): I, D, H, F, N, R, S Synthetic pyrethroid

DATA ACCESSION NO(S). 402665-01

PRODUCT MANAGER NO. G. LaRocca(15)

PRODUCT NAME(S) Bifenthrin(Brigade, Capture, Talstar)

COMPANY NAME FMC Corproation

SUBMISSION PURPOSE Submission of oyster shell deposition study

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
128825	bifenthrin	

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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 Unpublished report prepared by ESE, Inc. for FMC Corporation.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: L. T
Date: 10-13-87

6. APPROVED BY:

Raymond Matheny
Supervisory Biologist
Ecological Effects Branch/HED

Signature: Ray Matheny
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

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.