6/13/88

Accession Number 404892-02

DATA EVALUATION RECORD

1. CHEMICAL: Iprodione Technical

2. TEST MATERIAL: Iprodione, an off-white powder; Tested as 100 percent active ingredient.

3. STUDY TYPE: Mollusc 96-hour Flow-Through Shell Deposition Study
Test Species: (Crassostrea virginica) Eastern Oyster

4. CITATION: Surprenant, D.C. 1987. Acute Toxicity of Iprodione Technical to Eastern Oysters (Crassostrea virginica). Springborn Life Sciences Report #87-12-2584. Prepared by Springborn Life Sciences, Inc., Wareham, Massachusetts. Submitted to Rhone-Poulenc Ag Company, Research Triangle Park, North Carolina. Accession Number 404892-02.

5. REVIEWED BY:

Kimberly D. Rhodes
Aquatic Toxicologist
Hunter Environmental Services, Inc.

Signature: Kimberly D. Rhodes
Date: 6/13/88

6. APPROVED BY:

Prapimpan Kosalwat, Ph.D.
Staff Toxicologist
KBN Engineering and
Applied Sciences, Inc.

Signature:
Date:

Henry T. Craven
Supervisor, EEB/HED
USEPA

Signature:
Date:

7. CONCLUSIONS: This Study is scientifically sound and meets the guideline requirements for the mollusc test. With a 96-hour EC50 value of 2.3 (1.0-5.3) mg/L, Iprodione Technical is considered moderately toxic to the Eastern Oyster, (Crassostrea virginica).

8. RECOMMENDATIONS: N/A

9. **BACKGROUND**:

10. **DISCUSSION OF INDIVIDUAL TESTS**: N/A

11. **MATERIALS AND METHODS**:

A. **Test Animals**: Eastern Oysters (Crassostrea virginica) were obtained from a commercial supplier in Dennis, Massachusetts. Oysters were reared in seawater from same source as that used in testing. No mortality occurred during the 7 day period prior to test initiation. Oysters had a mean valve height of 39 ± 5 mm. Oysters were transported to the testing laboratory 48 hours prior to testing and were fed a supplementary diet of algae (Isochrysis galbana).

B. **Test System**: The test was conducted for 96 hours under flow-through conditions. Five test concentrations, with a dilution factor of 0.60, a solvent control (acetone) and a seawater control were tested. The solvent control concentration was not reported. All treatments, and controls were tested in duplicate. Replicate test aquaria were 60x30x30-cm and equipped with a 10-cm high stand pipe for a resident test solution volume of 18 liters. Flow rate to each test aquarium was 75 mL/minute, which provided approximately six volume replacements in 24 hours. The test aquaria rested in a water bath with temperature controlled at 20 ± 2°C. The stock was introduced to the system via syringe pump calibrated to deliver 0.326 mL/minute of stock solution into 375 mL/min. of seawater to produce the highest test concentration which was proportionally diluted to produce the test concentration range.

The dilution water was natural unfiltered seawater collected by the Cape Cod Canal near Bourne, Massachusetts. The seawater used during this study had a salinity of 29-31°/oo and a pH of 7.7-7.9

C. **Dosage**: A 96-hour flow-through study was conducted. Flow-through was a continuous flow serial diluter with a 60-percent dilution factor.

D. **Design**: Twenty oysters were used in each test aquaria, and test concentrations were duplicated (40 oysters per test concentration). An unfiltered control and solvent control were tested in duplicate concurrently. During the test, nominal concentrations of 8.0, 4.8, 2.9, 1.7, and 1.0 mg/L Iprodione Technical were maintained. The mean measured test concentrations of Iprodione Technical were 5.2, 3.7, 2.3, 1.6, and 1.0 mg/L. During the exposure the oysters received a supplemental feeding of algae (Isochrysis galbana) three times/day.

E. Statistics: A computer program developed at the testing laboratory was utilized to compute four linear regression curves based on least squares. Percentage reduction in growth data were transformed to probits and concentrations to logs. Both untransformed and transformed data were regressed. The regression line which provided the best fit of the untransformed or transformed data was selected based on the highest associated coefficient of determination. The regression equation was then applied to calculate the EC50 and its 95% confidence limits.

12. REPORTED RESULTS: The reported EC50 value of 2.3 (1.0-5.3) mg/L of Iprodione Technical to the Eastern Oyster shows it to be moderately toxic. The No-Observed-Effect Concentration (NOEC) was 1.0 mg/L. The results of the test are provided in Table 3 (attached).

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES: After 96 hours of exposure to Iprodione Technical, the EC50 value for the Eastern Oyster was 2.3 (1.0-5.3) mg/L.

The data were audited by the laboratory's Quality Assurance Unit to assure compliance with protocols, standard operating procedures and pertinent EPA Good Laboratory Practice (GLP) Regulations. A GLP compliance statement was included and signed by the Quality Assurance Unit.

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

A. Test Procedure: The test procedures were in accordance with protocols recommended by the Guidelines, with the following exceptions:

A flow rate of 75 ml/minute/test aquarium was utilized providing a flow of 225 ml/oyster/hour. This rate is only about 4 percent of the rate setforth in test protocols recommended in the SEP (approximately 5 L/oyster/hour and only one quarter of the minimum rate setforth in EPA's Environmental Effects Guidelines for oyster shell deposition studies referenced by the author. To offset the reduced flow the test facility supplemented the water with the alga, Isochrysis galbana Parke at a density of 1 $x10^5$ cells/ml three times per day, and utilized pumps to recirculate test solutions at a flow rate of 5 L/oyster/hour. It should be noted however, that a flow-through test as defined by ASTM (1980) to consist of "test solutions that flow through the test chamber on a once-through basis throughout the test" and not on a recirculated flow.

B. **Statistical Analysis**: The reviewer recalculated the EC50 value using log concentrations and percentage reduction with a regression analysis. The EC50 obtained was 2.32 mg/L which is similar to that calculated by the author.

C. **Discussion/Results**: With an EC50 value of 2.3 (1.0-5.3) mg/L, Iprodione Technical is classified as moderately toxic to the Eastern Oyster (Crassostrea virginica).

D. **Adequacy of the Study**:

(1) **Classification**: Core

(2) **Rationale**: Even with the deviations from protocol, the study is scientifically sound. The deviations do not detract from the study's soundness.

(3) **Repairability**: N/A

15. **COMPLETION OF ONE-LINER FOR STUDY**: Yes, 6-13-88

No. _____ Chemical Name Iprodione Technical Chemical Class _____ Page 1 of _____

Study/Species/Lab/ Succession	Chemical % a.i.	Results	Reviewer/ Date	Validation Status
14-Day Single Dose Oral LD_{50} Species _____ Lab _____ Acc.		LD50 = mg/kg (95% C.L.) Contr. Mort.(%)= Slope= # Animals/Level= Age(Days)= Sex = 14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____
14-Day Single Dose Oral LD_{50} Species _____ Lab _____ Acc.		LD50 = mg/kg (95% C.L.) Contr. Mort.(%)= Slope= # Animals/Level= Age(Days)= Sex = 14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____
8-Day Dietary LC_{50} Species Lab _____ Acc.		LC50 = ppm (95% C.L.) Contr. Mort.(%)= Slope= # Animals/Level= Age(Days)= Sex = 8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____
8-Day Dietary LC_{50} Species Lab _____ Acc.		LC50 = ppm (95% C.L.) Contr. Mort.(%)= Slope= # Animals/Level= Age(Days)= Sex = 8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____
8-Day Dietary LC_{50} Species Lab _____ Acc		LC50 = pp__ (95% C.L.) Contr. Mort.(%)= Sol. Contr. Mort.(%)= Slope= # Animals/Level= Temperature = 96-Hour Dose Level pp m/(%Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____
96-Hour LC_{50} Species Crassostrea virginica Lab Springborn Life Sciences, Inc. Acc. 404892-02	Not reported	EC50= 2.3 ppm (95% C.L. 1.0-5.3) Con. Mor(%)= 0 Sol. Con. Mor.(%)= 0 Slope= not reported # Animals/Level= 40 Temp.= 18+ 1°C 96-Hour Dose Level ppm/% reduction in new growth 1.0 (13), 1.6 (26), 2.3 (52), 3.7 (83), 5.2 (78) Comments: Mean measured concentrations reported	KDR 6/13/88	Core
96-Hour LC_{50} Species Lab _____ Acc.		LC50 = pp__ (95% C.L.) Con. Mort.(%)= Sol. Con. Mort.(%)= Slope= # Animals/Level= Temp.= 96-Hour Dose Level pp__ /(%Mortality) ( ), ( ), ( ), ( ), ( ) Comments:	_____	_____

Table 3. Effects of IPRODIONE Technical on shell deposition of Eastern oysters (Crassostrea virginica) after 96 hours of exposure.

Mean Measured Concentration (mg/L)	Mean (Standard Deviation) Shell Deposition[a] (mm)	Percentage Reduction[b]
5.2	0.5 (0.5)	78
3.7	0.4 (0.4)	83
2.3	1.1 (0.7)	52
1.6	1.7 (0.7)	26
1.0	2.0 (0.9)	13
Solvent Control	2.2 (1.0)	NA[c]
Control	2.4 (0.8)	NA
Pooled Control	2.3 (0.9)	NA

[a]The mean represents the measurements of 40 oysters per treatment level.

[b]% reduction compared to the pooled control value for shell growth.

[c]Not applicable.