UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 6 1996

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Subject: Review of an 73-2(b) Acute EC50 Test with Eastern Oyster for TPTH (Triphenyltin Hydroxide; chem code# 83601) DP Barcode D227257, ID# 83601, PRAT case# 838877, MRID 44023901, D227257

From: Dennis J. McLane, Wildlife Biologist
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Thru: Daniel D. Rieder, Acting Chief 9-6-96
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

To: Ms. Jude Andreasen, PM Team Reviewer, Team 62
Special Review and Reregistration Division (H7507C)

Study identification:

Guideline	MRID	Acceptability
73-2(b)	44023901	Yes

The subject study was found to fulfill the guideline requirements. Following are the conclusions for this study:

"This study fulfills the guideline requirements. The results indicate that TPTH is very highly toxic to the Eastern Oyster."

"Results Synopsis

"EC_{50}: 0.29 ppb ai 95% C.I.: 0.11-1.2 ppb ai"
"NOEL: 0.048 ppb ai Probit Slope: 1.72(as calculated by EEB)"

The list A DCI indicated that the following studies were required:

1. 71-4(a) Avian Reproduction - Northern Bobwhite Quail
2. 71-4(b) Avian Reproduction - Mallard Duck
3. 72-3(a) Acute Estuarine/Marine - Fish

4. 72-3.(b) Acute Estuarine/Marine - Mollusk

5. 72-3(c) Acute Estuarine/Marine - Shrimp

6. 72-5 Life cycle fish

With the acceptance of the subject study, all these requirements have been met.

Please contact Dennis J. McLane (305-5096) if you have any further questions.

DATA EVALUATION RECORD
§ 72-3(B) -- ACUTE EC_{50} TEST WITH AN ESTUARINE/MARINE MOLLUSK SHELL DEPOSITION STUDY

1. **CHEMICAL:** Triphenyltin Hydroxide PC Code No.: 0836001

2. **TEST MATERIAL:** Triphenyltin Hydroxide (Technical)
Purity: 97.6%

3. **CITATION**

Authors:	Dionne, E.
Title:	Triphenlytin Hydroxide (TPTH) - Acute Toxicity to the Eastern Oyster (*Crassostrea virginica*) Under Flow-through Conditions
Study Completion Date:	May 24, 1996
Laboratory:	Springborn Laboratories, Inc.
Sponsor:	Griffin Corporation
Laboratory Report ID:	96-5-6512; study number 11117.1295.6105.504
MRID No.:	440239-01
DP Barcode:	D227257

4. **REVIEWED BY:** Dennis J. McLane, EEB, EFED

Signature: Dan McLane **Date:** 8-23-96

5. **APPROVED BY:** Les W. Touart, Head of Section (1), EEB, EFED

Signature: L W T **Date:** 9-3-96

6. **STUDY PARAMETERS**

Age or Size of Test Organism:	Similar age and a mean valve height of 41 mm (sd, 4 mm)
Definitive Test Duration:	96 hours
Study Method:	Flow-through
Type of Concentrations:	Mean measured

7. **CONCLUSIONS:**

This fulfills the guideline requirements. The results indicate that TPTH is very highly toxic to the Eastern Oyster.

Results Synopsis

EC_{50}: 0.29 ppb ai	95% C.I.: 0.11-1.2 ppb ai
NOEL: 0.048 ppb ai	Probit Slope: 1.72 (as calculated by EEB)

8. **ADEQUACY OF THE STUDY**

A. Classification: CORE

B. Rationale: Meets the intent of the guidelines

C. Repairability: N/A

9. **BACKGROUND**

10. **GUIDELINE DEVIATIONS**

1.

2. (etc.)

11. **SUBMISSION PURPOSE:** This submission (MRID 44023901) was required because a previous submission (MRID 43212703) was unacceptable due to insufficient shell growth.

12. **MATERIALS AND METHODS**

A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species are the Pacific oyster (*Crassostrea gigas*) and the Eastern oyster (*Crassostrea virginica*)	*Crassostrea virginica*
Mean valve height 25 - 50 mm along the long axis	41 mm (SD 4 mm)
Supplier	P. Cummins Oyster Co., Pasadena,MD
Are all oysters from same source?	Yes
Are all oysters from the same year class?	"...were of a similar age."

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 10 days	11 days

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Guideline Criteria	Reported Information
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	Yes, "less than 1% mortality was observed among the oyster population during the 7 days before test initiation" No mortality and stress reported after the shell growth was ground off.
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A
Amount of peripheral shell growth removed prior to testing	3-5 mm
Feeding during the acclimation Must be fed to avoid stress.	Fed supplementary algal diet of *Isochrysis galbana*
Pretest Mortality <3% mortality 48 hours prior to testing	<1% mortality

C. **Test System**

Guideline Criteria	Reported Information
Source of dilution water Natural unfiltered seawater from an uncontaminated source.	Cape Cod Canal, Bourne, Massachusetts
Does water support test animals without observable signs of stress?	Yes
Salinity 30-34 ‰ salinity, weekly range < 6 ‰	31 ‰
Water Temperature 15°-30° C, consistent in all test vessels	20±2°C
pH	7.7 - 8.0

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Guideline Criteria	Reported Information
Dissolved Oxygen ≥ 60% throughout	Range: 70-97 % (70 lowest % DO at 96 hours)
Total Organic Carbon	0.75 to 1.4 mg/L
Test Aquaria Should be constructed of glass or stainless steel.	glass
Type of Dilution System Must provide reproducible supply of toxicant	A Harvard Apparatus peristaltic pump was calibrated to deliver 0.100 mL/minute of 1.5 ug A.I./mL stock solution to the diluter system's dilutions cells which also received 0.200 L/min of dilution water.
Flow rate Consistent flow rate	120 vol/24 hours
Was the loading of organism such that each individual sits on the bottom with water flowing freely around it?	Yes
Photoperiod 16 hours light, 8 hours dark	16 hours light, 8 hours dark
Solvents Not to exceed 0.5 ml/L	Solvent: acetone Maximum conc.: 50 ml/L

D. Test Design

Guideline Criteria	Reported Information
Range Finding Test If EC_{50} >100 mg/L with 30 fish, then no definitive test is required.	Grow effects at all test levels (0.13, 0.22, 0.36, 0.6, and 1.0 ug/L)
Nominal Concentrations of Definitive Test Control & 5 treatment levels; each conc. should be 60% of the next highest conc.; concentrations should be in a geometric series	The next highest is only 50% higher. Control and solvent control (0.047, 0.094, 0.19, 0.38, 0.75 ug ai/L).

Guideline Criteria	Reported Information
Number of Test Organisms Minimum 20 individual per test level and in each control	Two groups of 15 equaling 30 per level
Test organisms randomly or impartially assigned to test vessels?	No
Biological observations made every 24 hours?	Yes
Water Parameter Measurements 1. Temperature Measured hourly in at least one chamber 2. DO and pH Measured at beginning of test and every 48 h in the high, medium, and low doses and in the control	1. Monitored continuously in one replicate (a) of the dilution water control. 2. Measured daily in each replicate.
Was chemical analysis performed to determine the concentration of the test material at the beginning and end of the test? (Optional)	Yes

13. **REPORTED RESULTS**

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Control Mortality Not more than 10% of control organisms may die or show abnormal behavior.	0 %
Control Shell Deposition Must be at least 2 mm.	3.3 mm
Recovery of Chemical	50 - 100 %
Raw data included?	Yes

Guideline Criteria	Reported Information
Signs of toxicity (if any) were described?	Yes

Shell Growth

Concentration (ppm)		Number Per Level	Number Dead	Mean Shell Deposition (mm)	Mean Percent Reduction
Nominal	Mean Measured				
Control	--	30	0	3.3	--
Solvent Control	--	30	0	3.1	--
0.047	0.48	30	0	3.4	+3%
0.094	0.054	30	0	2.8	-15.2%
0.19	0.12	30	0	2.2	-33.3%
0.38	0.19	30	0	1.8	-45.5%
0.75	0.45	30	0	1.3	-60.6%

B. Statistical Results

Method:

96-hr EC_{50}: 0.29 ug a.i./L 95% C.I.: 0.11 - 1.2 ug a.i./L

Probit Slope: not reported NOEC: 0.048 ug a.i./L

14. VERIFICATION OF STATISTICAL RESULTS

Parameter	Result
Statistical Method for EC_{50}	Probit
EC_{50} (95% C.I.)	0.26(0.16-0.89) ppb ai
Probit Slope	1.72
Statistical Method for NOEC	(Williams Test and Dunnett's Test)
NOEC	0.048 ppb ai

15. REVIEWER'S COMMENTS: It appears that the oysters were not randomly selected, "Approximately 10 oyster, in addition to the

number required for testing, were prepared; any oysters which appeared less than optimal were discarded."