

US EPA ARCHIVE DOCUMENT

72-3 Oyster Acute  
WTEP

DATA EVALUATION RECORD (14)

1. Chemical: CGA-64250
2. Formulation: Tilt 3.6E (41.8% a.i.)
3. Citation: Honeycutt, R.C. (1983). Acute toxicity of Tilt™ 3.6E to eastern oysters (Crassostrea virginica). EG&G Bionomics, Marine Research Laboratory, Pensacola, Florida. Project number H78. Acc. # 072209.
4. Reviewed by: Carol M. Natella  
Wildlife Biologist  
EEB/HED
5. Date Reviewed: March 7, 1984
6. Test Type: Oyster Shell Deposition Test
7. Reported Results: The 96-hour EC<sub>50</sub> (based on percent change in rate of shell deposition) is 0.27 ppm (95% C.L. 0.24-0.29).
8. Reviewer's Conclusions: The study is scientifically sound and indicates that a 41.8% formulation of CGA-64250 is highly toxic to eastern oysters. The study does fulfill the requirement for an oyster 96-hour shell deposition study performed on this formulatd product only.

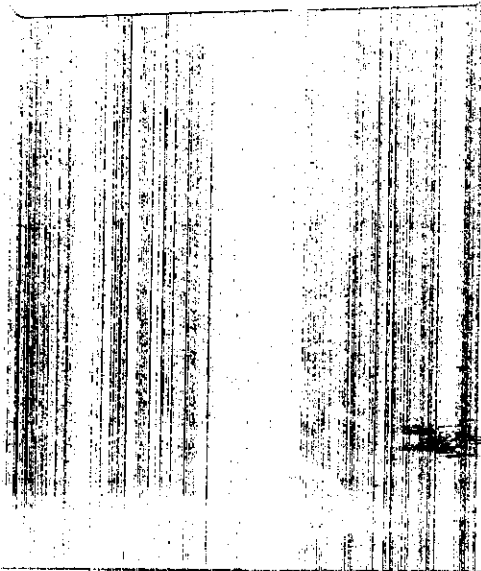
MRED 00132933

Test is still core despite audit  
as reassessment of test concentrations was  
not required to begin with.

EFED Document



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## Materials/Methods

### Test Procedures

Test animal: Eastern oysters, received from a commercial supplier. The solvent control oysters were 32-55 mm umbo to distal valve edge and weighed 1.04-3.47 g wet weight without shells; mean height and weight were 43 (S.D.  $\pm$  8) mm and 1.95 (S.D.  $\pm$  0.97) g, respectively.

Test Water Quality: Natural unfiltered sea water which was pumped from Big Lagoon. During testing, salinity and temperature were 17-24 parts per thousand and 13-17°C, respectively.

Test Containers: 9 l glass aquaria containing approx. 7 l of test solution at a depth of 9 cm. Each aquarium received a continuous flow of sea water at the rate of 60 l/hour.

Testing: 10 oysters/aquaria; 10 oysters/concentration. Stock solutions were prepared using reagent grade acetone. Oysters were cleaned of attached organisms, ground by hand using a fine-grit grinding wheel to remove approximately 2-5 mm of new peripheral shell. The oysters were removed from the test containers after 96 hours exposure and new shell growth of each oyster was measured to the nearest 0.1 mm with a vernier caliper. Calculation included: The mean shell growth of solvent control oysters less the mean shell growth of oysters from each test concentration divided by the solvent control growth; multiplication by 100 to give the percentage reduction in shell growth for oysters from each test concentration relative to the solvent control.

### Statistical Analysis

The EC<sub>50</sub> value was calculated using Stephan's computer program. The moving average angle method was used to report the data. Shell growth of oysters in all treatments were compared to the shell growth of solvent control oysters by a "Student's" t-test to determine if the presence of Tilt 3.6E or solvent significantly affected new shell growth.

### Author's Discussion/Results

Percent change in rate of shell deposition at each concentration is shown in Table 2 (attached).

Average measured test concentrations of Tilt 3.6E  $>$  0.18 ppm significantly reduced new shell growth of

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exposed oysters as compared to the new shell growth of oysters exposed to only the solvent. There was no significant difference in new shell growth between the sea water control oysters and the solvent control oysters. The 96-hour EC<sub>50</sub> was 0.27 ppm (95% C.L. 0.24-0.29).

Reviewer's Evaluation

A. Test Procedure

The test procedure generally complies with a recommended protocol (Standard Methods for the Examination of Water and Wastewater. 15th Ed., Am. Public Health Association), except that only 10 oysters per concentration were used instead of the recommended 20. In addition, a formulated product was used for testing rather than the technical.

B. Statistical Analysis

The EC<sub>50</sub> value was verified using Stephan's computer program.

C. Conclusions:

1. Category: Core, for the formulated product.
2. Rationale: A formulated product was used for testing.
3. Repairability: N/A

NATELLA CGA OYSTER

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.28	100	98	98	9.53674E-05
.66	100	92	92	9.53674E-05
.44	100	74	74	9.53674E-05
.18	100	29	29	.128841
.12	100	10	10	2.00272E-03

BECAUSE THE NUMBER OF ORGANISMS USED WAS SO LARGE, THE 95 PERCENT CONFIDENCE INTERVALS CALCULATED FROM THE BINOMIAL PROBABILITY ARE UNRELIABLE. USE THE INTERVALS CALCULATED BY THE OTHER TESTS.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .272534

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.0173252	.27297	.249228	.298652

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
3	.0196063	1	.692457

SLOPE = 3.35603  
 95 PERCENT CONFIDENCE LIMITS = 2.88611 AND 3.82595

LC50 = .274077  
 95 PERCENT CONFIDENCE LIMITS = .247725 AND .302298

LC10 = .11467  
 95 PERCENT CONFIDENCE LIMITS = .0951391 AND .133065

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