72-3 Spot
acute
T6AI

DATA EVALUATION RECORD (12)

1. **Chemical:** CGA-64250

2. **Formulation:** 90.7% technical

3. **Citation:** Honeycutt, R.C. (1981). Acute toxicity of CGA-64250 to spot (<u>Leiostomus xanthurus</u>). EG&G Bionomics, Marine Research Laboratory, Pensacola, Florida; Acc. #072210.

MRID 00132921

4. **Reviewed by:** Carol M. Natella
   Wildlife Biologist
   EEB/HED

5. **Date Reviewed:** March 5, 1984

6. **Test Type:** Marine Fish 96-hour LC_{50} (Spot)

7. **Reported Results:** 96-hour LC_{50} = 2.2 ppm (95% C.L. 1.8-2.8)

8. **Reviewer's Conclusions:**

   This study is scientifically sound and indicates that CGA-64250 is moderately toxic to spot. The study, however, does not fulfill the requirement for a marine fish 96-hour LC_{50}.

note by D. Rieder — This test was subsequently invalidated via audit
(2|4|87) main problem in audit was measurement of concentrations. Since measurement is not required, test is again upgraded to supplemental

D.R.

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Materials/Methods

Test Procedures

Test animals: Juvenile spot (Leiostomus xanthurus) were collected from Big Lagoon, a Gulf of Mexico estuary adjacent to BMRL, and maintained in the lab in flowing natural sea water for 14 days. The control fish had a mean length and weight of 40 mm (S.D. ± 4) and 1.30 g (S.D. $\pm$ 0.45), respectively.

Test Water Quality: Natural sea water which was pumped from Big Lagoon. Before distribution into the test chambers, the water was pumped through a 5 um pore size polypropylene core filter. During testing, salinity and temperature were 25-26 pp thousand and 21-23°C, respectively.

Test Containers: 19 1 uncovered glass jars containing 15 1 of sea water.

Exposure: 3 fish/jar; 12 fish/treatment. A stock solution was prepared by mixing an appropriate amount of test material with reagent grade acetone.

Date of Testing: 7/9/81-7/13/81.

Statistical Analysis

Stephan's computer program was used to calculate the LC_{50} value (binomial probability method).

Author's Discussion/Results

Percent mortality after 96 hours was as follows (based on measured concentrations):

ppm:	8.6	5.3	2.8	1.8	0.90	Solvent Control	Control
% :	100	100	100	0	0	0	0

The following LC_{50} values were calculated:

24-hour LC_{50} = 3.8 ppm (95% C.L. 2.8-5.3)
48-hour LC_{50} = 3.8 ppm (95% C.L. 2.8-5.3)
72-hour LC_{50} = 2.2 ppm (95% C.L. 1.8-2.8)
96-hour LC_{50} = 2.2 ppm (95% C.L. 1.8-2.8)

The no-observed-effect concentration was 1.8 ppm. At the three highest concentrations, the signs of toxicity noted was a complete loss of equilibrium. At the lower

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concentrations, signs were a partial loss of equilibrium, then surfacing and lethargy.

Reviewer's Evaluation

A. Test Procedure

The test procedure generally complies with the U.S. EPA protocol. However, since there were no partial mortalities observed in this test, an accurate LC_{50} value cannot be determined. A contributing factor may have been the reduced oxygen levels that were noted in the test vessels, especially during the final 48 hours of testing (see attachment). In the 2.8 ppm test concentration, dissolved oxygen levels of 0.7 to 1.5 ppm (8% and 17%) were noted and this could have contributed to the 100% mortality observed at this level. At the next highest concentration, 100% mortality was also noted but this occurred when oxygen levels were still fairly high. Oxygen levels at the 1.8 ppm test concentration and below were also extremely low but no mortality was noted at these levels. In the control (but not the solvent control) oxygen levels were adequate.

B. Statistical Analysis

The 96-hour LC_{50} value was verified with Stephan's computer program.

C. Conclusions:

1. Category: Supplemental

2. Rationale: Low dissolved oxygen levels may have contributed to mortality.

3. Repairability: No

NATELLA CGA SPOT
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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
8.6	12	12	100	.0244141
5.3	12	12	100	.0244141
2.8	12	12	100	.0244141
1.8	12	0	0	.0244141
.9	12	0	0	.0244141

THE BINOMIAL TEST SHOWS THAT 1.8 AND 2.8 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 2.24499

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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