

DATA EVALUATION RECORD

1. CHEMICAL: CGA-64250
2. FORMULATION: Technical - 91% MRSD # 0006700
3. CITATION: Thompson, C. (1980) Acute Toxicity of CGA-64250 to Bluegill Sunfish; received 1/28/81 under 100-618; unpublished report prepared by Analytical Biochemistry Laboratories, Inc. for CIBA-GEIGY Corporation, Greensboro, NC (in acc # 244273)
4. REVIEWED BY: Stephen M. Hopkins
Plant Physiologist
Ecological Effects Branch/HED
5. DATE REVIEWED: 2/20/81
6. TEST TYPE: Fish acute LC₅₀ - Bluegill sunfish
7. REPORTED RESULTS:

The author demonstrated that the 96hr LC₅₀ of the test material to bluegill sunfish is 1.3 ppm, with a 95% confidence interval of 1-1.8 ppm.

8. REVIEWER'S CONCLUSIONS:

This study is scientifically sound, and meets EPA requirements for a fish acute LC₅₀ study using a warm-water fish.

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Testing Laboratory Report

A. Test Procedure

Protocol generally followed EPA proposed guidelines of July 10, 1978. Some specifics of note include:

| | |
|--------------------------|---|
| <u>Weight of fish</u> | - 0.21 g ave. |
| <u>Number of fish</u> | - 10 Per test vessel. |
| <u>Test vessel size</u> | - 5 Gallon glass vessels containing 15 liters each. |
| <u>Loading</u> | - 0.14 g/liter. |
| <u>Dilution water</u> | - Soft reconstituted well water. |
| <u>Temperature</u> | - $22^{\circ} \pm 1^{\circ}\text{C}$. |
| <u>Treatment levels</u> | - 0.56, 1, 1.8, 5.6; and 10 ppm, plus a control. Whether solvent or untreated control was not specified. |
| <u>Chemical analysis</u> | - Actual concentrations of toxicant at test initiation were determined by GLC |
| <u>Test initiation</u> | - August 18, 1980 |

B. Statistical Analysis

Mortality was analyzed using the Stephan computerized LC₅₀ program.

C. Results

| <u>Nominal Concentration</u> | <u>Measured Concentration</u> | <u>Mortality at 96hrs</u> |
|------------------------------|-------------------------------|---------------------------|
| Control | | 0 |
| 0.56 ppm | 0.64 ppm | 0 |
| 1.0 | 1.0 | 0 |
| 1.8 | 1.9 | 100 % |
| 3.2 | 3.4 | 100 |
| 5.6 | 6.3 | 100 |
| 10 | 4.2 | 100 |

The author calculated a 96hr LC₅₀ of 1.3 ppm with a 95% confidence interval of 1-1.8 ppm. The analysis of the test water gave measured concentrations close to the nominal values, with the exception of the highest concentration. However, since there was 100% mortality at lower values, this variation is of little concern.

Reviewer's Evaluation

A. Test Procedure

The procedure generally followed the 1978 EPA guidelines. Although it was not specified whether the control was a solvent or untreated control, there is little need for concern since the solvent in the treatments was acetone.

B. Statistical Analysis

Mortality was analyzed in EEB using the binomial method, the results of which agreed with the author's findings. There was no difference in the LC₅₀ whether nominal or measured concentrations were used in the calculations.

C. Results/Discussion

The author demonstrated that the 96hr LC₅₀ of CGA-64250 to bluegill sunfish is 1.3 ppm, with confidence limits of 1-1.8 ppm.

D. Conclusions

1. Category: Core
2. Rationale: NA
3. Repairability: NA

Bluegill Sunfish 96hr LC50
CGA-64250

nominal concentrations

| CONC. | NUMBER EXPOSED | NUMBER DEAD | PERCENT DEAD | BINOMIAL PROB.(PERCENT) |
|-------|-------------------|----------------|-----------------|----------------------------|
| 10 | 10 | 10 | 100 | 9.76563E-2 |
| 5.6 | 10 | 10 | 100 | 9.76563E-2 |
| 3.2 | 10 | 10 | 100 | 9.76563E-2 |
| 1.8 | 10 | 10 | 100 | 9.76563E-2 |
| 1 | 10 | 0 | 0 | 9.76563E-2 |
| .56 | 10 | 0 | 0 | 9.76563E-2 |

THE BINOMIAL TEST SHOWS THAT 1 AND 1.8 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 1.34164

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.

Bluegill sunfish LC50
measured concentrations

| CONC. | NUMBER EXPOSED | NUMBER DEAD | PERCENT DEAD | BINOMIAL PROB.(PERCENT) |
|-------|-------------------|----------------|-----------------|----------------------------|
| 6.3 | 10 | 10 | 100 | 9.76563E-2 |
| 3.4 | 10 | 10 | 100 | 9.76563E-2 |
| 1.9 | 10 | 10 | 100 | 9.76563E-2 |
| 1 | 10 | 0 | 0 | 9.76563E-2 |
| .64 | 10 | 0 | 0 | 9.76563E-2 |

THE BINOMIAL TEST SHOWS THAT 1 AND 1.9 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 1.3784

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.