72-2 2/20/81
Daphnia
acute w/
TGAI

DATA EVALUATION RECORD

1. **CHEMICAL:**   CGA-64250

2. **FORMULATION:**   Technical – 91%

MRID# 00067925

3. **CITATION:**   Forbis, A.(1980) Acute Toxicity of CGA-64250 to Daphnia
magna; received 1/28/81 under 100-618; unpublished report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:**   Aquatic invertebrate LC_{50} – Daphnia magna

7. **REPORTED RESULTS:**

   The author demonstrated that the 48hr LC_{50} of the test
   material to Daphnia magna is 4.8 ppm, with a 95%
   confidence interval of 3.9-6.2 ppm.

8. **REVIEWER'S CONCLUSIONS:**

   This study is scientifically sound, and meets EPA
   requirements for an aquatic invertebrate LC_{50} study.

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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:

Number of daphnids– 10 first instar daphnids per beaker, 2 beakers
per treatment level.
Dilution water   – well water.
Temperature   – 20° ± 1°C.
Treatment levels – 0.56, 1, 1.8, 3.2, 5.6, and 10 ppm, plus untreated
and acetone controls.
Chemical analysis – Actual concentrations of toxicant at test initiation
were determined by GLC
Test initiation   – August 19, 1980

B. Statistical Analysis

Mortality was analyzed using the Stephan computerized LC_{50} program.

C. Results

Nominal Concentration	Measured Concentration	Mortality at 96hrs
Controls		0
0.56 ppm	0.26 ppm	0
1.0	1.0	5 %
1.8	1.7	0
3.2	4.9	25
5.6	5.0	65
10.0	4.3	85

The author calculated a 48hr LC_{50} of 4.8 ppm with a 95% confidence
interval of 3.9–6.2 ppm.

Reviewer's Evaluation

A. Test Procedure

The procedure generally followed the 1978 EPA guidelines.

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B. **Statistical Analysis**

Mortality was analyzed in EEB using the probit method, the results of which agreed with the author's findings. When the measured concentrations of test material were used in the calculations, the LC_{50} was 4.2-5.6 ppm, well within the author's confidence interval.

C. **Results/Discussion**

The author demonstrated that the 48hr LC_{50} of CGA-64250 to <u>Daphnia</u> is 4.8 ppm, with confidence limits of 3.9-6.2 ppm.

D. **Conclusions**
1. Category: Core
2. Rationale: NA
3. Repairability: NA

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Daphnia 48hr LC$_{50}$

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
10	20	17	85.	.128841
5.6	20	13	65.	13.1588
3.2	20	5	25	2.06947
1.8	20	0	0	9.53674E-5
1	20	1	5.	2.00272E-3
.56	20	0	0	9.53674E-5

THE BINOMIAL TEST SHOWS THAT 3.2 AND 10 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 4.55639

--------RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	8.74267E-2	4.87776	4.0374	6.05529

--------RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	.111297	1	.268434

SLOPE = 3.40526
95 PERCENT CONFIDENCE LIMITS = 2.26922 AND 4.5413

LC50 = 4.81879
95 PERCENT CONFIDENCE LIMITS = 3.89082 AND 6.15739
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Daphnia 48hr LC50

measured concentrations
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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
5	20	13	65.	13.1588
4.9	20	5	25	2.06947
1.7	20	0	0	9.53674E-5
1	20	1	5.	2.00272E-3
.26	20	0	0	9.53674E-5

THIS DATA SET DOES NOT MEET THE CRITERIA ESTABLISHED BY THE
COMMITTEE ON METHODS FOR TOXICITY TESTS WITH AQUATIC ORGANISMS
BECAUSE NO PERCENT DEAD IS GREATER THAN 65 PERCENT.

THE BINOMIAL TEST SHOWS THAT 4.9 AND +INFINITY 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 4.96291

--------RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	.604756	4.96291	4.91609	5.05107

--------RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	2.30327	3.15873	2.35859E-2

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE = 2.94193
95 PERCENT CONFIDENCE LIMITS =-1.5229 AND 7.40677

LC50 = 5.60021
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY
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Daphnia 48hr LC50
measured concentrations

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
5	20	13	65.	13.1588
4.9	20	5	25	2.06947
4.3	20	17	85.	.128841
1.7	20	0	0	9.53674E-5
1	20	1	5.	2.00272E-3
.26	20	0	0	9.53674E-5

THE BINOMIAL TEST SHOWS THAT 1.7 AND +INFINITY CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THSE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 4.13175

--------RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	.257449	4.45315	3.77077	5.41791

--------RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
6	1.96263	5.47018	0

A PROBABILITY OF 0 MEANS THAT IT IS LESS THAN 0.001

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE =   3.32429
95 PERCENT CONFIDENCE LIMITS =-1.33284   AND   7.98142

LC50 =   4.24552
95 PERCENT CONFIDENCE LIMITS = 0   AND   +INFINITY
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