

US EPA ARCHIVE DOCUMENT

DATA EVALUATION REPORT
ECOLOGICAL EFFECTS BRANCH

1. Chemical: Tilt
Shaughnessy No: 122101
2. Formulation: EC 250 (A-6097 A) 25.2% a.i. (per August 31, 1984, telephone conversation with Dick Conn of Ciba-Geigy 919-292-7100)
3. Study ID: Bathe, R. 1979. Report on Acute Toxicity to Brown Trout and Bluegill of CGA-64250 EC 250 (A-6097 A). Unpublished Report prepared by Ciba Geigy Ltd. Data Acc 172209, Ref. 4.
4. Studt Type: 96-hour LC50 Brown trout and Bluegill
5. Review By: Daniel Rieder
Wildlife Biologist
EEB/HED
Daniel Rieder
Date: 11/17/84
Review Time 3 Hrs.
6. Reported Conclusions:

	<u>Brown trout</u>	<u>Bluegill</u>
The 96-hour LC50 =	3.3 ppm	10.2 ppm
95% C.L. =	3.0-3.8	8.6-12.2

Concentrations expressed as nominal values of A-6097 A.

Reviewer calculated 3.39 ppm* 9.8 ppm**
2.8-4.9 ppm 7.5-11.7 ppm

* Binominal test
**Moving average method

7. Reviewer's Conclusions:

This study is scientifically sound but does not fulfill guideline requirements for fish 96-hour LC50's because the test material was not the technical product. It would fulfill the requirements for an acute study using the formulation EC 250 (25.3% a.i.). It shows that EC 250 is moderately toxic to fish

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8. Methods and Materials:

Ten fish were tested per level (both trout and bluegill). The test concentrations were 6.5, 8.7, 10 and 21 ppm for the bluegill and 2.1, 2.8, 3.7 and 4.8 ppm for the brown trout.

	<u>Brown trout</u>	<u>Bluegill sunfish</u>
Test temperature:	14° + 2°C	21° + 1°C
Average weight :	2.5g	4.6g
Average length :	59 mm	62 mm
Average age :	3 months	3 months
Supplier :	Mandli fish breeding station	Exotarium Stubenvoll

No control was mentioned.

9. Results:

<u>Trout</u>			<u>Bluegill</u>		
<u>Conc.</u> <u>ppm*</u>	<u>No.</u> <u>Tested</u>	<u>Mort.</u> <u>-----</u>	<u>Conc.</u> <u>ppm*</u>	<u>No.</u> <u>Tested</u>	<u>Mort.</u> <u>-----</u>
2.1	10	0	6.5	10	0
2.8	10	0	8.7	10	2
3.7	10	8	10	10	7
4.9	10	10	21	10	10

LC50 = 3.3 (3.0-3.8)ppm*

LC50 = 10.2 (8.6-12.2)ppm*

* EC 250 formulation with 25% a.i.

10. Statistics:

LC50 and 95% C.L. were calculated by the Logit model.

11. Reviewer's Evaluation:

The study deviates from guideline protocol in several aspects:

1. The brown trout was used instead of rainbow trout. (This is an acceptable substitution.)
2. Test temperature in brown trout study varied more than +1° (This is still acceptable).

3. No control was reported. This deficiency normally causes a study to be at least supplemental (i.e., noncore) if not invalid. The fact that in both studies there was zero mortality in the lowest test level makes this factor less critical.

4. The test material was not technical and there is no indication that test concentrations were measured. In fact the study specifically says concentrations are expressed as nominal values of A-6097 A (25.2% a.i.).

12. Conclusion:

Category: Supplemental

Rationale: The nontechnical test material was the primary factor.

Repairability: The study may fulfill a guideline requirement for a fish study requiring this particular formulation (EC 250 25.2%).

122101 TILT CGA-64250 BROWN TROUT LC50 REFERENCE 4

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
4.9	10	10	100	.0976563
3.7	10	8	80	5.46875
2.8	10	0	0	.0976563
2.1	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 2.8 AND 4.9 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 3.38925

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.

122101 TILT CGA-64250 BLUEGILL LLC50 REFERENCE 4

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
21	10	10	100	.0976563
10	10	7	70	17.1875
8.7	10	2	20	5.46875
6.5	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 6.5 AND 21 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 9.46909

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
2	.214883	9.79943	7.4772	11.6957