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DATA EVALUATION RECORD

1. CHEMICAL: Fenarimol

2. FORMULATION: Technical - 100%

3. CITATION: Kehr, C. (1978) The toxicity of compound 56722 to Bluegills in a 7 Day, continuous Flow-through Bioassay; received 10/19/81 under 1471-EUP-75; unpublished report prepared by Lilly Research Laboratories (In Acc #070429).

4. REVIEWED BY: Stephen M. Hopkins
Plant Physiologist
EEB/HED

5. DATE REVIEWED: 12/3/81

6. TEST TYPE: Flow-through Fish acute LC_{50} - Bluegill Sunfish

7. REPORTED RESULTS:

The testing laboratory demonstrated a 96hr LC_{50} of fenarimol to the bluegill sunfish of greater than 5.17 in a flow-through system, and a 9-day LC_{50} of 4.5 ppm. However, shortcomings noted above cast sufficient doubt on this study to preclude its classification as "core".

8. REVIEWER'S CONCLUSIONS:

This study is scientifically sound, but does not meet EPA requirements for a fish acute LC_{50} study due to failure to to determine a 96hr LC_{50} and failure to report several experimental parameters including weight of fish or loading factor, flow rate in the test, DO, and pH.

Testing Laboratory Report

A. Test Procedure

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

Weight of fish	-	Not given, nor was length or age given
Number of fish	-	10 per test vessel
Test vessel size	-	Aquaria containing 47.5 L each
Water turnover		Not specified, but toxicant appears to have been added in 500 ml every 7 minutes.
Loading Factor	-	not determined
Dilution water	-	conditioned well water
Temperature -		19 + 1°C
Treatment levels	-	0.6, 1.08, 1.92, 3.36, and 6 ppm plus an untreated control
Chemical Analysis	-	Samples were taken 20 hours before initiation and on days 0-7 and determined by GLC.
Test initiation	-	Jan 25, 1977
Test duration	-	7 days in toxicant solutions, followed by a 2 day recovery period in untreated water.

Aquaria were treated by a flow through delivery system as described by Mount and Brungs, 1967. The diluter system was started 20 hours before initiation of the test to allow the system to equilibrate, and the toxicant concentrations was delivered in 500 ml at 7 minute intevals. Fish were fed daily during the test, and response to food stimulus was noted in addition to normal toxicity symptoms. Neither dissolved oxygen (DO) nor pH were measured.

B. Statistical Analysis

Mortality was not analyzed.

C. Results

Nominal Concentrations	Measured Concentration	Mortality at 96 hrs	Mortality at 7 days	Mortality at 9 days
6 ppm	5.7 ppm av	0	6	7
3.36	2.74	0	0	0
1.92	1.63	0	0	0
1.08	0.86	0	0	0
0.6	0.33	0	0	0
Control	--	0	0	0

The measured concentrations were used in LC_{50} calculations since they were significantly lower than nominal concentrations.

There were no mortalities at 96 hours at any level, and the author estimated that the LC_{50} at the end of the 9 day study was between 2.74 and 5.74 and 5.17 ppm. The 0.33 dose was reported as a no-effect level. Toxicity symptoms were noted at all higher levels, although at all but the highest level fish recovered during the 2 day recovery period with the exception of reduced response to food.

Reviewers Evaluation

A. Test Procedure

The procedure varied from the 1978 EPA guidelines in that a 96hr LC_{50} was not determined, and several test parameters were not reported including weight of fish or loading factor, flow rate in the test, DO, and pH.

B. Statistical Analysis

Mortality was analyzed by the binomial method, which indicated a 9 day LC_{50} of 4.5 ppm.

C. Results/Discussion

The testing laboratory demonstrated a 96hr LC_{50} of fenarimol to the bluegill sunfish of greater than 5.17 in a flow-through system, and a 9-day LC_{50} of 4.5 ppm. However, shortcomings noted above cast sufficient doubt on this study to preclude its classification as "core".

D. Conclusion

1. Category: Supplemental
2. Rationale: Failure to determine 96 hr LC_{50}, failure to indicate several test parameters including weight of fish or loading factor, flow rate in the test, DO, and pH.

3. Repairability: None.

STEVE FENARIMOL BLUEGILL 7-DAY FLOW-THROUGH LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
5.17	10	7	70	17.1875
2.74	10	0	0	0.09765625
1.63	10	0	0	0.09765625
0.86	10	0	0	0.09765625
0.33	10	0	0	0.09765625

THE BINOMIAL TEST SHOWS THAT 2.74 AND +INFINITY 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 4.472453

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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