4-1-82

Duplicate

DATA EVALUATION

1. CHEMICAL: Cypermethrin degradation product, 3-phenoxy benzoic acid

2. FORMULATION: 99% pure sample

3. CITATION: Hill, R., and B.E. Young (1981) Determination of the acute toxicity of 3-phenoxy benzoic acid to rainbow trout (Salmo gairdneri). Unpublished report by Imperial Chemical Industries Ltd., Brixham Laboratory, Devan, and submitted on 12/28/81 by ICI Americas Inc., Wilmington, Delaware.

   EPA Accession No. 070562 MRID 00079037

4. REVIEWED BY: Thomas B. Johnston
   Biologist, EEB/HED

5. REVIEW DATE: April 1, 1982

6. TEST TYPE: 96-hr static acute LC50 test

7. REPORTED RESULTS: The reported 96-hr static acute LC50 of 3-phenoxy benzoic acid for rainbow trout is 13.3 ppm, with 95% confidence limits of 11.2 and 15.8 ppm. The 96-hr no observed effect level was 5.5 ppm.

8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and fulfills USEPA guideline requirements for a static acute 96-hr toxicity test of a primary degradation product on a coldwater fish. With a 96-hr LC50 of 13.3 ppm, 3-phenoxy benzoic acid is slightly toxic to rainbow trout.

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MATERIALS/METHODS

Methods used generally followed USEPA guidelines. The test was run at 15°C, rather than at 12°C as recommended by ASTM. The solvent used was DMSO. Test vessels were aerated throughout the test, but chemical analyses of the test solutions showed that only negligible amounts of the test substance were lost. The LC_{50}s were calculated from mean measured concentrations. Test solutions were changed every 24 hours.

STATISTICAL ANALYSES

Data were analyzed according to the Finney (1971) probit method.

RESULTS

Concentrations (ppm)	No. Dead/No. Exposed
56.7	10/10
33.7	10/10
17.7	9/10
10.0	1/10
5.5	0/10
3.5	0/10
DMSO Control	0/10
Control	0/10

96-hr LC50= 13.3 ppm

CONCLUSIONS:

Validation Category: Core

Category Rationale: The slight deviations from recommended procedures do not invalidate the study.

Category Repairability: N/A

JOHNSTON 3-PHENOXYBENZOIC ACID RT 96-HR LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
56.7	10	10	100	.0976563
33.7	10	10	100	.0976563
17.7	10	9	90	1.07422
10	10	1	10	1.07422
5.5	10	0	0	.0976563
3.5	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 10 AND 17.7 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 13.3041

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	.0730163	13.6005	10.4626	17.6738

NO CONVERGENCE IN 25 ITERATIONS. THE PROBIT METHOD
PROBABLY CANNOT BE USED WITH THIS SET OF DATA.

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JOHNSTON 3-PHENOXYBENZOIC ACID ACUTE 24HR LC50 RAINBOW TROUT

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
56.7	10	10	100	.0976563
33.7	10	10	100	.0976563
17.7	10	6	60	37.6953
10	10	1	10	1.07422
5.5	10	0	0	.0976563
3.5	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT 10 AND 33.7 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 15.9508

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	.07505	15.4002	11.8911	20.3444

NO CONVERGENCE IN 25 ITERATIONS. THE PROBIT METHOD
PROBABLY CANNOT BE USED WITH THIS SET OF DATA.

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