

US EPA ARCHIVE DOCUMENT

Duplicate

DATA EVALUATION

- 1. CHEMICAL: Cypermethrin degradation product 3-phenoxy benzoic acid
- 2. FORMULATION: 99% pure sample
- 3. CITATION: Hill, R.N., B.E. Young, and M.H. Camber (1981) Determination of the acute toxicity of 3-phenoxy benzoic acid to bluegill sunfish (Lepomis macrochirus). Unpublished report by Imperial Chemical Industries Ltd., Brixham Laboratory, Devon, and submitted on 12/28/81 by ICI Americas Inc., Wilmington, Delaware.

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- 4. REVIEWED BY: Thomas B. Johnston
Biologist, EEB/HED
- 5. REVIEW DATE: April 5, 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 bluegill sunfish is 36.3 ppm, with 95% confidence limits of 33.3 and 39.5 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 warmwater fish. With a 96-hr LC50 of 36.3 ppm, 3-phenoxy benzoic acid is slightly toxic to bluegill sunfish.

MATERIALS/METHODS

Methods used generally followed USEPA guidelines. Tests were run at 22°C. Test vessels were aerated, but chemical analyses of the test solutions showed that only negligible amounts of the test substance were lost. The LC50s 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
52.7	20/20
44.6	18/20
28.8	1/20
16.8	0/20
9.3	0/20
5.7	0/20
DMSO Control	1/20
Control	1/20

96-hr LC50=36.3 ppm

CONCLUSIONS:

Validation Category: Core

Category Rationale: N/A

Category Repairability: N/A

JOHNSTON 3-PHENOXYBENZOIC ACID 72 AND 96HR LC50S BLUEGILL

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
52.7	20	20	100	9.53674E-05
44.6	20	18	90	.0201225
28.8	20	1	5	2.00272E-03
16.8	20	0	0	9.53674E-05
9.3	20	0	0	9.53674E-05
5.7	20	0	0	9.53674E-05

THE BINOMIAL TEST SHOWS THAT 28.8 AND 44.6 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 36.5353

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	.029825	30.298	26.6267	35.0622

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

JOHNSTON 3-PHENOXYBENZOIC ACID 48HR LC50 BLUEGILL

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
52.7	20	20	100	9.53674E-05
44.6	20	16	80	.590897
28.8	20	1	5	2.00272E-03
16.8	20	0	0	9.53674E-05
9.3	20	0	0	9.53674E-05
5.7	20	0	0	9.53674E-05

THE BINOMIAL TEST SHOWS THAT 28.8 AND 44.6 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 37.9342

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
5	.0307325	31.8961	27.9243	37.1937

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