

109701

11-30-90 2-24-81

Duplicate

1. CHEMICAL: Cypermethrin
2. FORMULATION: Technical
3. CITATION: ICI (1980) Determination of the acute toxicity of cypermethrin (pp383) to Rainbow Trout (Salmo gairdneri). MRID 00062792
4. REVIEWED BY: Thomas B. Johnston
Biologist, EEB
5. DATE REVIEWED: February 24, 1981
6. TEST TYPE: Continuous flow 96-hr LC₅₀
7. REPORTED RESULTS: The 96-hr LC₅₀ of cypermethrin technical to rainbow trout, as calculated from measured concentrations, was 0.92 ppb, with 95% confidence limits of 0.81 and 1.05 ppb.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and satisfies the guideline requirement of a toxicity test using a coldwater fish. With a 96-hr LC₅₀ of 0.92 ppb, cypermethrin technical is very highly toxic to coldwater fish.

ADDENDUM

REVIEWED BY: Ann Stavola
Aquatic Biologist
EEB/EFED

Ann Stavola
11/30/90

2. FORMULATION: Technical, 91.5% active ingredient
7. REPORTED RESULTS: No effect level was 0.43 ppb.

Materials/Methods

Test Procedures - Test fish were exposed to the pesticide by use of a continuous flow-through apparatus. Test material from a stock jar was mixed with dilution water from a constant-temperature apparatus, and both were pumped into 20 litre exposure vessels. Each vessel contained 20 fish. Mortalities were recorded at 24-hr intervals for 96 hours. DMSO was used as a solvent. Each vessel was fed with the appropriate test concentration at the rate of 200 ml/min. The system was designed to achieve a complete exchange of the test solutions within a period of 3.5 hours.

Statistical Analysis - The mortality data were analyzed by the Finney probit analysis method.

Results/Discussion

	95% Confidence Intervals
24 hr LC ₅₀ = 1.78 ppb	1.50 - 2.12
48 hr LC ₅₀ = 1.00	0.97 - 1.25
72 hr LC ₅₀ = 0.96	0.84 - 1.09
96 hr LC ₅₀ = 0.92	0.81 - 1.05

All these listed LC₅₀ values were calculated using mean measured concentrations of the test substance, not nominal concentrations.

Conclusions:

Validation Category: Core
Category Rationale: N/A
Category Repairability: N/A

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
0.00335	20	20	100	- .536743E-05
0.00195	20	20	100	- .536743E-05
0.00149	20	19	- 5	0.002002716
0.00108	20	12	60	25.17223
0.00055	20	2	10	0.02012253
0.00043	20	0	0	- .536743E-05
0.00025	20	0	0	- .536743E-05
0.00014	20	0	0	- .536743E-05

THE BINOMIAL TEST SHOWS THAT 0.00055 AND 0.00149 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 0.0009559664

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	- 5 PERCENT CONFIDENCE LIMITS
6	0.04808197	0.0008325176	0.0007260318 0.0009565194

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
-	0.09172139	1	0.- 307529

SLOPE = 6.-8012
- 5 PERCENT CONFIDENCE LIMITS = 4.866153 AND - .094087

LC50 = 0.0009223139
- 5 PERCENT CONFIDENCE LIMITS = 0.000797391 AND 0.001049235

LC10 = 0.0006066434
- 5 PERCENT CONFIDENCE LIMITS = 0.0004653702 AND 0.0007146739
