

109701

12-19-90

Duplicate

1. CHEMICAL: Cypermethrin
2. FORMULATION: GFU 061 (36% w/v)
3. CITATION: Determination of the acute toxicity of ~~GM~~ GFU 061, a 36% w/v formulation of cypermethrin to Rainbow Trout (Salmo gairdneri) MRID 00065813
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 4.7 ppb, with 95% confidence limits of 4.1 and 5.4 ppb. * See below for change
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, but does not satisfy the guideline requirement of a toxicity test to a coldwater fish. With a 96-hr LC₅₀ of 4.7 ppb, cypermethrin formulation GFU 061 is very highly toxic to coldwater fish.

ADDENDUM

Reviewed by: Ann Stavola
Aquatic Biologist
EEB/EFED

Ann Stavola
12/19/90

Reported Results: The 96-hr LC₅₀ of formulated cypermethrin, GFU 061, to rainbow trout is 4.7 ug cypermethrin GFU 061/l (95% CI of 4.1 to 5.4 ug/l).

Reviewer's Conclusion: The conclusion above is correct.

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 = 18.3 ppb	14.3 - 23.39
48 hr LC ₅₀ = 6.3	5.7 - 6.9
72 hr LC ₅₀ = 5.3	4.7 - 5.9
96 hr LC ₅₀ = 4.7	4.1 - 5.4

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

Conclusions:

Validation Category: Supplemental
Category Rationale: The test was run on a formulated product, rather than on the technical.
Category Repairability: Not repairable

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CONC.      NUMBER      NUMBER      PERCENT      BINOMIAL
           EXPOSED      DEAD        DEAD        PROB. (PERCENT)
8.07       20           20          100         9.536743E-05
6.02       20           11          55          41.19015
4.27       20           8           40          25.17223
1.9        20           1           5           0.002002716
1.53       20           0           0           9.536743E-05

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THE BINOMIAL TEST SHOWS THAT 1.9 AND 8.07 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 5.370662

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

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SPAN      G      LC50      95 PERCENT CONFIDENCE LIMITS
4          0.0551931  4.474838  3.986613  5.034051

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RESULTS CALCULATED USING THE PROBIT METHOD

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ITERATIONS  G      H      GOODNESS OF FIT PROBABILITY
6           0.1292203  1      0.1079086

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SLOPE = 5.229894
 95 PERCENT CONFIDENCE LIMITS = 3.349892 AND 7.109895

LC50 = 4.728427
 95 PERCENT CONFIDENCE LIMITS = 3.98927 AND 5.494677

LC10 = 2.703223
 95 PERCENT CONFIDENCE LIMITS = 1.820084 AND 3.334288