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MRID No. 444526-17

DATA EVALUATION RECORD
§ 72-1 - ACUTE LC_{50} TEST WITH A WARMWATER FISH

1. **CHEMICAL:** Chlorfenapyr PC Code No.: 129093

2. **TEST MATERIAL:** CL 303267 (Study 1) Purity: 98.1%
CL 325195 (Study 2) 97%

3. **CITATION:**

Authors: C.E. Olivieri, T.J. Ward, J.P. Magazu, and R.L. Boeri
Title: Acute Toxicity of Chlorfenapyr Soil Metabolites to the Bluegill Sunfish, *Lepomis macrochirus*, Under Static Test Conditions
Study Completion Date: November 10, 1997
Laboratory: T.R. Wilbury Laboratories, Inc., Marblehead, MA
Sponsor: American Cyanamid Company, Princeton, NJ
Laboratory Report ID: ECO 97-253, ECO 97-254
MRID No.: 444526-17
DP Barcode: D241963

4. **REVIEWED BY:** William Evans, Biologist
Ecological Hazard Branch
Environmental Fate and Effects Division

Signature: William Evans **Date:** 4/13/98

5. **APPROVED BY:** Thomas A. Bailey, Branch Chief
Ecological Hazard Branch
Environmental Fate and Effects Division

Signature: Tom A. Bailey **Date:** 8/28/98

6. **STUDY PARAMETERS:**

Age or Size of Test Organism: 29.7 mm (Study 1-CL 303267)
32.9 mm (Study 2-CL 325195)
Definitive Test Duration: 96 hours
Study Method: Static
Type of Concentrations: Nominal

7. **CONCLUSIONS:** These studies do not meet the guideline requirements for acute toxicity tests using bluegill sunfish. Guidelines require that concentrations be measured at the

beginning and end of the test. At the conclusion of both of these tests, concentrations were not measured at any test level. Further, chemical analysis was not performed. Although these tests were static tests, registrant should provide rationale for the lack of a chemical analysis. Chemical characteristics such as solubility and adsorbing tendencies of this compound would be useful. Until such rationale can be provided, these studies must be classified as Invalid. However, upon submission of this rationale, these studies could be upgraded to Supplemental or core status.

Results Synopsis

Study 1 - CL 303267

N/A

Study 2 - CL 325195

N/A

8. **ADEQUACY OF THE STUDY:**

   A. **Classification:** Invalid

   B. **Rationale:** Concentrations were not measured at any test levels at the conclusion of the studies. Chemical analysis was also not carried out.

   C. **Repairability:** These tests could be upgraded to Supplemental status if registrant can provide rationale for the lack of a chemical analysis.

9. **GUIDELINE DEVIATIONS:** The following deviations from the protocol were noted.

   1. Test concentrations were not measured at the end of the experiment. EPA/NACA guidance requires all test solutions to be measured at the beginning and the end of the test.

   2. Chemical analysis should have been conducted since the compound is presummed insoluble and a solvent was used to dissolve it.

10. **SUBMISSION PURPOSE:** To examine fish toxicity to soil degrades of Chlorfenapyr.

11. **MATERIALS AND METHODS:**

A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species is the bluegill sunfish (*Lepomis macrochirus*)	*Lepomis macrochirus*
Mean Weight 0.1-5 g	0.23 g (Study 1-CL 303267) 0.39 g (Study 2-CL 325195)
Mean Standard Length Longest not > 2x shortest	**Study 1-CL 303267** Mean: 29.7 mm Range: 27.2-33.3 mm **Study 2-CL 325195** Mean: 32.9 mm Range: 28.3-35.8 mm
Supplier	Northeastern Aquatics, Rhinebeck, NY
All fish from same source?	Yes
All fish from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 14 days	At least 14 days
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	None
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A
Feeding No feeding during the study	No feeding during the test

Guideline Criteria	Reported Information
Pretest Mortality < 3% mortality 48 hours prior to testing	< 5% mortality during the 48 hours prior to testing

C. Test System

Guideline Criteria	Reported Information
Source of dilution water Soft reconstituted water or water from a natural source, **not** dechlorinated tap water	Carbon filtered deionized water, stored in 500-gallon poly-ethylene tanks where it was aerated and continuously passed through a particle filter, ultraviolet sterilizer, and activated carbon.
Does water support test animals without observable signs of stress?	Yes
Water Temperature 17°C or 22°C	21.8-22.1°C (Study 1-CL 303267) 21.9-22.1°C (Study 2-CL 325195)
pH Prefer 7.2 to 7.6	7.3-7.8 (Study 1-CL 303267) 7.3-7.9 (Study 2-CL 325195)
Dissolved Oxygen Static: ≥ 60% during 1st 48 hrs and ≥ 40% during 2nd 48 hrs, flow-through: ≥ 60%	≥68% of saturation for both studies
Total Hardness Prefer 40 to 200 mg/L as $CaCO_3$	40 mg/L as $CaCO_3$ (Study 1-CL 303267) 44 mg/L as $CaCO_3$ (Study 2-CL 325195)
Test Aquaria 1. Material: Glass or stainless steel 2. Size: Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. Fill volume: 15-30 L of solution	For both studies: Glass 20 L 15 L

Guideline Criteria	Reported Information
Type of Dilution System Must provide reproducible supply of toxicant	N/A
Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	N/A
Biomass Loading Rate Static: ≤ 0.8 g/L at ≤ 17°C, ≤ 0.5 g/L at > 17°C; flow-through: ≤ 1 g/L/day	0.15 g/L/day (Study 1-CL 303267) 0.26 g/L/day (Study 2-CL 325195)
Photoperiod 16 hours light, 8 hours dark	16 h light, 8 h dark
Solvents Not to exceed 0.5 mL/L for static tests or 0.1 mL/L for flow-through tests	0.5 mL DMF/L (both studies)

D. **Test Design**

Guideline Criteria	Reported Information
Range Finding Test If LC_{50} >100 mg/L with 30 fish, then no definitive test is required.	A range finding test was conducted for each metabolite at nominal concentrations of 1, 10, 100, 1000, and 10000 µg/L. **Study 2-CL 303267** Concentrations resulted in 0, 0, 0, 0, 40, 100, and 100% mortality, respectively, with no sublethal effects noted. **Study 2-CL 325195** Concentrations resulted in 0, 0, 0, 0, 0, 0, and 100% mortality, respectively, with no sublethal effects noted.

Guideline Criteria	Reported Information
Nominal Concentrations of Definitive Test Control & 5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be in a geometric series	Dilution water control, solvent control and five nominal concentrations were used for each study. **Study 1-CL 303267** 36, 60, 100, 170, 280, and 470 µg ai/L **Study 2-CL 325195** 1000, 1700, 2800, 4700, and 7800 µg ai/L
Number of Test Organisms Minimum 10/level, may be divided among containers	20 fish per treatment level or control, 10/replicate.
Test organisms randomly or impartially assigned to test vessels?	Yes
Biological observations made every 24 hours?	Yes
Water Parameter Measurements 1. Temperature Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C 2. DO and pH Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control	Test vessels placed in a water bath and temperature measured daily in each chamber as well as continuously in one control vessel. DO and pH measured daily in each test vessel.
Chemical Analysis Needed if solutions were aerated, if chemical was volatile, insoluble, or known to absorb, if precipitate formed, if containers were not steel or glass, or if flow-through system was used	No chemical analyses were conducted.

12. **REPORTED RESULTS:**

A. **General Results**

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Recovery of Chemical	Chemical analyses were not conducted.
Control Mortality Not more than 10% control organisms may die or show abnormal behavior.	0% mortality in control groups for both studies
Raw data included?	Yes
Signs of toxicity (if any) were described?	**Study 1-CL 303267** No signs of test material toxicity were observed. **Study 2-CL 325195** Yes, signs observed in the 2800 and 4700 µg ai/L treatments.

Mortality

Study 1 - CL 303267

Concentration (ppb)		Number of Fish	Cumulative Number Dead			
			Hour of Study			
Nominal (µg ai/L)	Mean Measured (µg ai/L)[1]		24	48	72	96
Negative Control	-	20	0	0	0	0
Solvent Control	-	20	0	0	0	0
36	-	20	0	0	0	0
60	-	20	4	5	5	5
100	-	20	19	19	19	19
170	-	20	20	20	20	20
280	-	20	20	20	20	20
470	-	20	20	20	20	20

Other Significant Results: No sublethal signs of toxicity were observed. No insoluble material was noted in any test vessel.

Study 2 - CL 325195

Concentration (ppb)		Number of Fish	Cumulative Number Dead			
			Hour of Study			
Nominal (µg ai/L)	Mean Measured (µg ai/L)[1]		24	48	72	96
Negative Control	-	20	0	0	0	0
Solvent Control	-	20	0	0	0	0
1,000	-	20	0	0	0	0
1,700	-	20	7	7	7	7
2,800	-	20	14	15	15	15
4,700	-	20	20	20	20	20
7,800	-	20	20	20	20	20

Other Significant Results: Sublethal signs of toxicity including lethargy, loss of equilibrium, and darker coloration than control fish were observed at the 2,800 and 4,700 µg ai/L treatments. No insoluble material was noted in any test vessel.

B. Statistical Results

Study 1 - CL 303267

13. **VERIFICATION OF STATISTICAL RESULTS:**

Parameter	Result
Binomial Test LC_{50} (C.I.)	**Study 1 - CL 303267 N/A** **Study 2 - CL 325195 N/A**
Moving Average Angle LC_{50} (95% C.I.)	**Study 1 - CL 303267 N/A** **Study 2 - CL 325195 N/A**
Probit LC_{50} (95% C.I.)	**Study 1 - CL 303267 N/A** **Study 2 - CL 325195 N/A**
Probit Slope	**Study 1 - CL 303267 N/A** **Study 2 - CL 325195 N/A**
NOEC	**Study 1 - CL 303267 N/A** **Study 2 - CL 325195 N/A**

14. **REVIEWER'S COMMENTS:** These studies do not meet the guideline requirements for acute toxicity tests using bluegill sunfish. Guidelines require that concentrations be measured at the beginning and end of the test. At the conclusion of both of these tests, concentrations were not measured at any test level. Further, chemical analysis was not performed. Although these tests were static tests, registrant should provide rationale for the lack of a chemical analysis. Chemical characteristics such as solubility and adsorbing tendencies of this compound would be useful. Until such rationale can be provided, these studies must be classified as Invalid. However, upon submission of this rationale, these studies could be upgraded to Supplemental or core status.

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