RD COPY

MRID No. 444526-18

DATA EVALUATION RECORD
§ 72-2 -- ACUTE EC_{50} TEST WITH A FRESHWATER INVERTEBRATE

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

2. **TEST MATERIAL:** CL 312094 (Study 1) Purity: 98%
CL 325195 (Study 2) 97%
CL 303267 (Study 3) 98.1%

3. **CITATION:**
Authors: C.E. Olivieri, T.J. Ward, J.P. Magazu, and R.L. Boeri
Title: Acute Toxicity of Chlorfenapyr Soil Metabolites to *Daphnia magna* Under Static Test Conditions
Study Completion Date: November 13, 1997
Laboratory: T.R. Wilbury Laboratories, Inc., Marblehead, Massachusetts
Sponsor: American Cyanamid Company, Princeton, NJ
Laboratory Report ID: ECO-97-255, ECO-97-256, and ECO-97-257
MRID No.: 444526-18
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 C. Bailey **Date:** 8/28/98

6. **STUDY PARAMETERS:**

ALL STUDIES
Age or Size of Test Organism: <24 hours
Definitive Test Duration: 48 hours
Study Method: Static
Type of Concentrations: Nominal

7. **CONCLUSIONS:** These studies do not meet the guideline requirements for an acute freshwater invertebrate toxicity

test. Guidelines require that concentrations be measured at the beginning and end of the test. At the conclusion 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 the 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 312094

N/A

Study 2 - CL 325195

N/A

Study 3 - CL 303267

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 or core 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 presumed 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 *Daphnia magna*	*Daphnia magna*
All organisms are approximately the same size and weight?	Not reported
Life Stage Daphnids: 1st instar (<24 h). Amphipods, stoneflies, and mayflies: 2nd instar. Midges: 2nd & 3rd instar.	<24 hour neonates
Supplier	In-house cultures
All organisms from the same source?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 7 days	No acclimation period was necessary since daphnids were maintained under test conditions.
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	No
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A

Guideline Criteria	Reported Information
Feeding No feeding during the study.	The daphnids were not fed during the test.
Pretest Mortality No more than 3% mortality 48 hours prior to testing.	Mortality was <3% during the 48 hours prior to the test.

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 adjusted to a hardness of 160-180 mg/L $CaCO_3$ and a pH of <8 with phosphoric acid.
Does water support test animals without observable signs of stress?	Yes
Water Temperature Daphnia: 20°C Amphipods and mayflies: 17°C Midges and mayflies: 22°C Stoneflies: 12°C	19.8-20.9°C (Study 1-CL 312094) 20.0-21.0°C (Study 2-CL 325195) 20.0-20.9°C (Study 3-CL 303267)
pH Prefer 7.2 to 7.6.	7.7 (Study 1-CL 312094) 7.7-7.9 (Study 2-CL 325195) 7.6-7.9 (Study 3-CL 303267)
Dissolved Oxygen Static: ≥ 60% during 1st 48 h and ≥ 40% during 2nd 48 h, flow-through: ≥ 60%.	7.6-9.0 mg/L (Study 1-CL 312094) 8.6-8.9 mg/L (Study 2-CL 325195) 8.3-9.1 mg/L (Study 3-CL 303267) ≥84% of saturation for all studies
Total Hardness Prefer 40 to 48 mg/L as $CaCO_3$.	176 mg/L as $CaCO_3$ for all studies

Guideline Criteria	Reported Information
Test Aquaria 1. Material: Glass or stainless steel. 2. Size: 250 ml (daphnids and midges) or 3.9 L (1 gal). 3. Fill volume: 200 ml (daphnids and midges) or 2-3 L.	For all studies: 1. Glass 2. 300-mL beakers 3. 200 mL test volume
Type of Dilution System Must provide reproducible supply of toxicant.	Static
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.	≤ 0.5 g/L
Photoperiod 16 hours light, 8 hours dark.	16 hours light, 8 hours dark
Solvents Not to exceed 0.5 ml/L for static tests or 0.1 ml/L for flow-through tests.	Solvent: DMF Concentration: 0.5 mL/L for CL 312094 0.5 mL/L for CL 325195 0.1 mL/L for CL 303267

D. **Test Design**

Guideline Criteria	Reported Information
Range Finding Test If EC_{50} >100 mg/L, then no definitive test is required.	A range finding test was conducted for each of the three metabolites at nominal concentrations of 1.0, 10, 100, 1,000, and 10,000 µg/L. Results from the range finding tests were not reported.

Guideline Criteria	Reported Information
Nominal Concentrations of Definitive Test Control & 5 treatment levels; a geometric series with each concentration being at least 60% of the next higher one.	Dilution water control, solvent control and five nominal test concentrations (corrected for purity) were used for each study. **Study 1:** 130, 220, 360, 600, 1000 µg/L **Study 2:** 610, 1000, 1700, 2800, 4700 µg/L **Study 3:** 44, 59, 79, 105, 140 µg/L
Number of Test Organisms Minimum 20/level, may be divided among containers.	10 daphnids per chamber, 2 chambers per treatment and control.
Test organisms randomly or impartially assigned to test vessels?	Yes
Water Parameter Measurements 1. Temperature Measured continuously or, if water baths are used, every 6 h, 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.	1. Temperature was measured continuously from a representative beaker in the water bath and daily in each replicate chamber. 2. DO and pH were measured daily in each replicate chamber.
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	Chemical analysis was not performed for each study. All results were based on nominal concentrations (corrected for purity).

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Control Mortality Static: ≤10% Flow-through: ≤5%	Control and solvent control mortality was ≤5% for all tests.
Percent Recovery of Chemical	N/A
Raw data included?	Yes

Mortality

Study 1 CL 312094

Concentration (ppb)		Number of Organ-isms	Cumulative Number Dead			
Nominal (µg/L)	Mean Measured[1]		Hour of Study			
			24	48	72	96
Control	-	20	0	0	-	-
Solvent Control	-	20	0	0	-	-
130	-	20	0	0	-	-
220	-	20	0	0	-	-
360	-	20	0	0	-	-
600	-	20	5	12	-	-
1000	-	20	20	20	-	-

Other Significant Results: None

Study 2 CL 325195

Concentration (ppb)		Number of Organ-isms	Cumulative Number Dead			
Nominal (µg/L)	Mean Measured[1]		Hour of Study			
			24	48	72	96
Control	-	20	0	0	-	-
Solvent Control	-	20	0	0	-	-
130	-	20	0	0	-	-
220	-	20	1	0	-	-
360	-	20	4	1	-	-
600	-	20	20	9	-	-
1000	-	20	20	20	-	-

Other Significant Results: None

Study 3 CL 303267

Concentration (ppb)		Number of Organ-isms	Cumulative Number Dead			
Nominal (µg/L)	Mean Measured[1]		Hour of Study			
			24	48	72	96
Control	-	20	0	0	-	-
Solvent Control	-	20	1	1	-	-
130	-	20	0	0	-	-
220	-	20	0	0	-	-
360	-	20	0	0	-	-
600	-	20	3	9	-	-
1000	-	20	20	20	-	-

Other Significant Results: None

Statistical Results

Study 1 - CL 312094

N/A

Study 2 - CL 325195

N/A

Study 3 - CL 303267

N/A

13. VERIFICATION OF STATISTICAL RESULTS:

Parameter	Result
Binomial Test EC_{50} (C.I.)	Study 1 - CL 312094 N/A Study 2 - CL 325195 N/A Study 3 - CL 303267 N/A
Moving Average Angle EC_{50} (95% C.I.)	Study 1 - CL 312094 N/A Study 2 - CL 325195 N/A Study 3 - CL 303267 N/A
Probit EC_{50} (95% C.I.)	Study 1 - CL 312094 N/A Study 2 - CL 325195 N/A Study 3 - CL 303267 N/A
Probit Slope	Study 1 - CL 312094 N/A Study 2 - CL 325195 N/A Study 3 - CL 303267 N/A
NOEC	Study 1 - CL 312094 N/A Study 2 - CL 325195 N/A Study 3 - CL 303267 N/A

14. REVIEWER'S COMMENTS: These studies do not meet the guideline requirements for an acute freshwater invertebrate toxicity test. Guidelines require that concentrations be measured at the beginning and end of the test. At the conclusion 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 the 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.

1. Concentrations not measured at any test concentrations.