6-24-86

RECORD NO.

108501
SHAUGHNESSEY NO.

46
REVIEW NO.

EEB REVIEW

DATE: IN 4-18-86 OUT 6-24-86

FILE OR REG. NO 241-245

PETITION OR EXP. NO.

DATE OF SUBMISSION 10-30-85

DATE RECEIVED BY HED 4-11-86

RD REQUESTED COMPLETION DATE 6-10-86

EEB ESTIMATED COMPLETION DATE 6-03-86

RD ACTION CODE/TYPE OF REVIEW 660

TYPE PRODUCT(S) : I, D, H, F, N, R, S Herbicide

DATA ACCESSION NO(S). 260404

PRODUCT MANAGER NO. R. Taylor (25)

PRODUCT NAME(S) Prowl

COMPANY NAME American Cyanamid Company

SUBMISSION PURPOSE Submission of data in response to registration standard

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
108501	Prowl	45.6%
	Inert Ingredient	54.4%

EEB REVIEW

Pesticide Name: Prowl

100.0 Submission Purpose

Submission of 48-hour LC_{50} for Daphnia magna in response to registration standard.

101.0 Chemical and Physical Properties

101.1 Chemical

Pendimethalin, (N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine)

101.2 Common Name

Prowl

103.0 Toxicological Properties

48-hour LC_{50} for Daphnia magna

105.0 Conclusions

The 48-hour aquatic invertebrate study is scientifically sound and indicates prowl is moderately toxic to Daphnia magna with an LC_{50} of 5.1 ppm. This study does fulfill the guideline requirements in support of registration for an aquatic invertebrate study for a formulated product.

In a telephone conversation with Dr. B. Gingher of American Cyanamid Company on June 12, 1986, she stated that "the Daphnia magna study was conducted with a 45.60% a.i. (formulated product). The formulated product contained [redacted] This study was conducted because it was required by the Ecological Effects Branch in order to fulfill a data gap in the reregistration of prowl".

Curtis E. Laird, Fishery Biologist Curtis E. Laird
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

Norman J. Cook, Section Head-2 Norman J. Cook
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C) 6.24.86

Michael W. Slimak, Chief M W Slimak 6/26/86
Ecological Effects Branch
Hazard Evaluation Division (TS-769-C)

INERT INGREDIENT INFORMATION IS NOT INCLUDED

DATA EVALUATION RECORD

1. Chemical: Prowl

2. Test Material: 45.60% (formulated), a brown liquid

3. Study Type: 48-hour LC_{50}

   Species Tested: Daphnia magna

4. Study ID: Forbis, A.D. (1985) Acute toxicity of AC 92,553 4E to Daphnia magna; Report No. 33409; Prepared by Analytical Bio-Chemical Laboratories, Inc. for American Cyanamid Company, P.O.Box 400, Princeton, NJ 08540. Acc. No. 260404.

5. Reviewed By:

   Curtis E. Laird
   Fishery Biologist
   EEB/HED

   Signature: Curtis E. Laird
   Date: 6-24-86

6. Approved By:

   Norman J. Cook
   Supervisory Biologist
   EEB/HED

   Signature: Norman J. Cook
   Date: 6.24.86

7. Conclusions:

   The 48-hour aquatic invertebrate study indicate Prowl is moderately toxic to Daphnia magna with an LC_{50} of 5.1 ppm. This study does fulfill the requirement in support of registration.

8. Recommendations: N/A

9. Background: EEB requested a Daphnia magna study using the formulated product (TEP) to fulfill the data requirement for reregistration of Prowl.

10. Discussion of Individual Test: N/A

11. Materials and Methods

    A. Test Animals: Twenty less than twenty-four hour old daphnids from laboratory stock.

    B. Test System: 250 ml glass beakers with 200 ml test solutions; 48-hour static exposure at 20±2°C.

    C. Dose: Static bioassay using Nominal concentrations: No solvent used.

D. Design: 20 less than 24-hours old daphnid per level; 6 dose levels plus control (0.56, 1.0, 1.8, 3.2, 5.6, and 10 ppm).

E. Statistics: Stephan, et. al., 1978. Computer program for calculating LC_{50}; "Probit method used for this data set.

12. Reported Results: The study author found that the 48-hour LC_{50} was 5.2 mg/l for Prowl. The no observed effects level (NOEL) was determined to be 1.0 mg/l at 48-hours.

13. Study Author's Conclusions/Q.A. Measures:

The 48-hour LC_{50} (95% c.i.) = 5.2 mg/l (4.4 to 6.1 mg/l). "The study was conducted following the intent of Good Laboratory Practice Regulations and the final report was reviewed by Analytical Bio-Chemistry Laboratories Quality Assurance Unit.

14. Reviewer's Discussion and Interpretation of the Study

A. Test Procedures: The test procedures complied with the recommended EPA protocol of October 1982 (Part 158).

B. Statistical Analysis:

No additional work on the statistical analysis is necessary. EEB agrees with the method used and results obtained. The author's printout was reviewed. It is the same as EEB's analysis.

C. Discussion/Results:

1. Classification: Core for 45.60% a.i.
2. Rationale: formulated test.
3. Repairability: N/A

D. Adequacy of Study:

15. Completion of One-Liner: Yes

16. CBI Appendix: N/A

LAIRD PROWL 48-HOUR LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
10	20	18	90	.0201225
5.6	20	16	80	.590897
3.2	20	0	0	9.53674E-05
1.8	20	0	0	9.53674E-05
1	20	0	0	9.53674E-05
.56	20	0	0	9.53674E-05

THE BINOMIAL TEST SHOWS THAT 3.2 AND 5.6 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 4.70575

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
3	.0782511	5.47214	4.57211	6.84115

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
8	.148059	1	.0580682

SLOPE = 6.64463
95 PERCENT CONFIDENCE LIMITS = 4.08788 AND 9.20138

LC50 = 5.17595
95 PERCENT CONFIDENCE LIMITS = 4.4305 AND 6.06591

LC10 = 3.33318
95 PERCENT CONFIDENCE LIMITS = 2.40825 AND 3.97146

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