DATA EVALUATION REPORT

1. Chemical: Abamectin 2/13/1986

   Sha. No.: 122804

2. Test Material: 8α-Hydroxy Avermectin $B_{1}a$ (Major soil metabolite of Avermectin $B_{1}a$.)

3. Study/Action Type: 48-Hour LC_{50} with Daphnia magna

4. Study ID: Forbis, A.D.; Georgie, L.; Burgess, D. Acute Toxicity of 8α-Hydroxy Avermectin $B_{1}a$ to Daphnia magna. Analytical Bio-chemistry Laboratories, Study No. 33469, dated August 26, 1985. (Submitted by Merck, Sharp, and Dohme Research Laboratories.) Accession Number 074005

5. Reviewed by: Daniel Rieder
   Wildlife Biologist
   EEB/HED
   Signature: Daniel Rieder
   Date: 2/11/86

6. Approved by: Norm Cook
   Section Head, Section 2
   EEB/HED
   Signature: Norman Cook
   Date: 2·13·86

7. Conclusions:

   This study is scientifically sound. LC_{50} = 25.5 ppb 95% C.L. = 18 to 32 ppb. This study will fulfill the Guideline requirement for an aquatic invertebrate LC_{50} with a soil degradate of Abamectin.

8. Recommendation: N/A

9. Background:

   This study was submitted to support registration.

10. Discussion of Individual Tests: N/A

1

11. Methods and Materials:

a. Test Materials: 8 α-hydroxy Avermectin B_{1a}, a soil degradate.

Percent active ingredient: 99+ %

b. Test Organism: Water flea

Species: Daphnia magna
Number per concentration: 20
Age/Stage: < 24 hrs
Source: ABC Laboratory Stock

c. Test Containers: Glass

Size: 250 mL
Aerated: No
Organisms per container: 10
Replicates: 2

d. Test Conditions: Static

Photoperiod: 16 hours per day
Temperature: 20 °C
Measured concentrations: No
Test Solution: Aged wellwater
Controls: Solvent and Untreated
Solvent: Acetone
Protocol References: Committee on Methods for Toxicity Tests With Aquatic Organisms. Methods of Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians. (1975) U.S. EPA, Ecol. Res. Serv. 660/3-75009.

American Public Health Association (1980) Standard Methods for the Examination of Water and Wastewater. 15th ed. Washington DC. 1134 p.

e. Statistics:

Reference: Stephan, C.E.; Busch, K.A.; Smith, R.; Burke, J.; and Andrews, R.W. (1978) A Computer Program for Calculating an LC_{50}. U.S. Environmental Protection Agency, Duluth, Minnesota, prepublication manuscript, August 1978.

12. Reported Results:

48-hour LC_{50} = 25.54 ppb 95% C.L. = 18 to 32 ppb.

2

CONCENTRATION PPB Nominal	MORTALITY 24 hours	48 hours	CONDITIONS DO	pH
Control	0	0	8.3	8.5
Solvent control	0	0		
3.2	0	0	8.0	8.6
5.6	0	0		
10	0	0	8.0	8.6
18	0	0		
32	0	18	7.8	8.6

13. Study Authors' Conclusions:

The 24-hour LC_{50} is greater than 32 ppb. The 48-hour LC_{50} is 25.5 ppb. The 48-hour NOEL is 3.2 ppb. Abnormal effects were observed at 5.6, 10, 18, and 32 ppb.

14. Reviewer Discussion:

a. Methods/Procedure: The test procedure was acceptable.

b. Statistics: The statistical results are compatible with the raw mortality data.

c. Discussion/Results: 8α-hydroxy Avermectin B_1a (a soil degradate of Avermectin) is very highly toxic to aquatic invertebrates.

d. Adequacy: Core

15. Completion of One-liner: One-liner completed.

16. CBI Appendix: N/A

3

122804 Abamectin Degradate Daphnia magna LC50

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CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
32	20	18	90	2.012253E-02
18	20	0	0	9.536742E-05
10	20	0	0	9.536742E-05
5.6	20	0	0	9.536742E-05
3.2	20	0	0	9.536742E-05

THE BINOMIAL TEST SHOWS THAT 18 AND 32 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 25.54447

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

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