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Shaughnessy No.:100601

Date Out of EAB:

JAN 15 1986

To: Hank Jacoby
Product Manager 21
Registration Division (TS-767)

From: Samuel Creeger, Chief
Review Section #1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached, please find the EAB review of...

Reg./File # : 3125-269

Chemical Name: Fenamiphos

Type Product : N

Product Name : Nemacur

Company Name : Mobay

Purpose : Fish accumulation study, review requested by EEB

Action Code(s): 400 EAB #(s) : 5638

Date Received: 5/30/85 TAIS Code:

Date Completed: JAN 15 1986 Total Reviewing Time: 2 days

Deferrals to: Ecological Effects Branch
Residue Chemistry Branch
Toxicology Branch

Monitoring study requested by EAB: /___/

Monitoring study voluntarily conducted by registrant: /___/

5 pages

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[redacted]

[redacted]

1. CHEMICAL: Fenamiphos

2. TEST MATERIAL: Radiolabeled fenamiphos sulfoxide (degradate of fenamiphos)

3. STUDY/ACTION TYPE: Fish accumulation study, review requested by EEB.

4. STUDY IDENTIFICATION:

Lamb, D.W. "A test for bio-accumulation in fish exposed to Nemacur sulfoxide-^{14}C" Chemagro Division of Baychem Corp. Report No. 35001, November 2, 1972, EPA Acc No. 256004.

5. REVIEWED BY:

Stephen J. Simko
Chemist
EAB/HED/OPP

Signature: S. Simko
Date: 1/15/86

6. APPROVED BY:

Samuel M. Creeger
Chief, Section 1
EAB/HED/OPP

Signature: Samuel M. Creeger
Date: JAN 15 1986

7. CONCLUSIONS:

This study does not fulfill EPA Guidelines for Registering Pesticides because it was not carried out for 28 days of exposure, the residues were not identified and because a flow-through system was not used. The fish accumulation study should use the parent fenamiphos as the test substance unless it is shown that fenamiphos in water is immediately transformed to other products with no parent compound remaining.

8. RECOMMENDATIONS:

A fish accumulation study using parent fenamiphos as the test substance is required.

9. BACKGROUND:

Environmental Effects Branch requested EAB review this fish accumulation study.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

10.1 Study Identification

Lamb, D.W. "A test for bio-accumulation in fish exposed to Nemacur sulfoxide-^{14}C" Chemagro Division of Baychem Corp. Report No. 35001, November 2, 1972, EPA Acc No. 256004.

Materials and Methods

Fish accumulation was studied using ^{14}C-ethyl fenamiphos sulfoxide (chemical purity 96.7%, radiochemical purity > 99%) which is a major degradation product of fenamiphos. Nonlabeled fenamiphos sulfoxide was used to dilute the labeled material to 2,287 and 22,289 dpm/ug. Three 200 liter aquariums were treated at 0 ppm (received a representative quantity of acetone solvent), 0.01 ppm (2 mg at 22289 dpm/mg) or 0.5 ppm (100 mg at 2287 dpm/mg) of the test substance. The water pH was 7.2-7.6, water temperature was 20 C and the water was saturated with dissolved oxygen within one hour of introduction of the fish. The water was filtered and oxygenated periodically. Eighty bluegill, approximately 0.5 g per fish in weight, were introduced to each aquarium and fed a maintenance diet throughout the study. Water samples were taken on days 0, 3, 7, 10 and 15. Fish were collected on days 0, 1, 2, 3, 4, 7, 10 and 15 of the exposure period and on days 16, 17, 18, 19, 22 and 25 of the withdrawal period for whole body determination of total radioactivity. On day 15, six additional fish were taken for determination of the residues in the edible and non-edible portions.

Water samples were radioassayed by LSC. Additionally, water samples from days 0, 7, 10 and 15 were extracted with chloroform and analyzed by TLC. Radioactivity on the plates were detected by radiochromatography. Whole body samples were determined by digesting duplicate fish samples and radioassaying by LSC. For edible/nonedible analysis, the heads and viscera were combined and the edible portions were combined as composites.

Reported Results

Fish from the 0.01 ppm exposure showed no average whole body residues above the minimum sensitivity of 0.02 ppm. Fish from the 0.5 ppm exposure had average residues of 0.10, 0.20, 0.19, 0.24, 0.24, 0.37, 0.43, 0.43, 0.22 (first day of depuration), 0.26, 0.28, 0.21, 0.22 and 0.12 ppm on days 0.25 (6 hours), 1, 2, 3, 4, 7, 10, 15, 16, 17, 18, 19, 22 and 25, respectively. The heads and viscera of the fish (which represent 48% of the fish weight) from day 15 of the 0.5 ppm exposure level contained 53% of the whole body residues. The fractions were as follows (percent of whole body residues):

Extract	Head and Viscera	Edible portion & scales	
Acetonitrile	29%	18%	
Hexane	7%	1%	
Remaining Solids	17%	28%	
	53%	47%	/100%

The water concentration of the test substance was ≥ 91% of the desired levels. TLC analysis showed that the water contained only the parent form of the test substance.

Reviewer's Discussion and Interpretation of Study Results

After 15 days of 0.01 ppm exposure, the bioaccumulation factor was shown to be <2, and at the 0.5 ppm exposure residues the bioaccumulation factor was <1. It is unusual for the levels of test substance to show no signs of decline in a static aquarium system, as reported in this study.

11. COMPLETION OF ONE-LINER: Not completed.

12. CBI APPENDIX: None.