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Date Out EFB: 02 APR 1984

TO: Tim Gardner/Heyward
Product Manager
Registration Division
TS-767

FROM: Samuel Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 279-GNET

Chemical: Cypermethrin

Type Product: Insecticide

Product Name: Ammo 2.5 EC

Company Name: FMC Chemical Co.

Submission Purpose: Registration of new use on cabbage

ZBB Code: Other

ACTION CODE: 121

Date in: 1/6/84

EFB # 4144

Date Completed: 3/30/84

TAIS (level II) 63 Days 2

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

FMC Corporation has submitted an application for registration of Ammo 2.5 EC (Cypermethrin as a. i.), Reg. No. 279-GNET, for use on cabbage for control of insects. Included in submission is a letter from ICI, Americas, Inc. authorizing the use of their data to support the application of FMC Corporation.

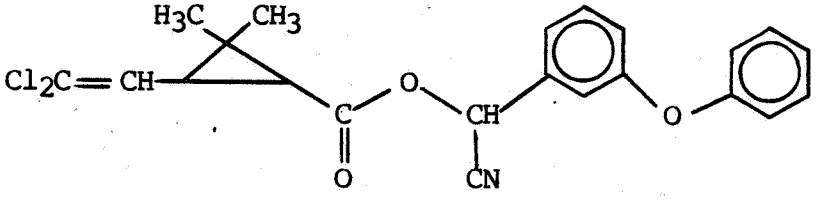
Data previously submitted in support of Cypermethrin have been reviewed by EAB in reviews dated 5/14/81, 4/29/82 and 5/14/82. In the last review, EAB concluded that additional field dissipation data are necessary to support registration of cypermethrin.

1.1 Chemical

Common name: Cypermethrin

Chemical name: (±)-a-cyano-3-(phenoxyphenyl)methyl (±)-cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane-carboxylate.

Chemical structure:



1.2 Formulation

Ammo 2.5 EC is formulated with 30.6% active ingredient (cis/trans ratio: max. 55% (±) cis and min 45% (±) trans). Formulation contains 2.5 lbs. active ingredient per gallon.

2.0 DIRECTIONS FOR USE

Directions for use are appended to this review. Briefly, 0.05 to 0.1 lb. a. i./acre (2.5 to 5 fl oz/acre) is applied as necessary for control. Make no more than 10 applications per season.

3.0 DISCUSSION OF DATA

3.1 Data submitted previously and accepted by EAB as supporting registration of cypermethrin include:

Hydrolysis	Fish accumulation
Photolysis	Aerobic aquatic metabolism
Aerobic soil metabolism	Anaerobic aquatic metabolism
Anaerobic soil metabolism	Rotational crop

3.2 Data submitted but not accepted: Field dissipation

In the study submitted, soil was analyzed for parent material only. Soil was not analyzed for the degradation products identified in the soil metabolism study.

3.3 Data submitted in current application include an overview of additional field dissipation studies. Briefly, Ammo 2.5 EC was applied in a single application of 2 lbs/acre to silt loam, loam and clay loam soils. Soil was sampled at 0-6 and 6-12 inch depths throughout a year. The results showed that cypermethrin residues declined rapidly during the first two weeks of the study with half-lives ranging from 7 to 29 days. After that, the rate slowed. Analysis of the 6-12 inch layer showed little movement of residues to this soil depth.

Note: This overview referenced the complete report previously submitted by ICI, Americas.

Conclusion

EAB notes that soil was analyzed only for parent cypermethrin residues. The soil should have been analyzed for the degradation products identified in the soil metabolism study, namely 3-phenoxybenzoic acid and 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylic acid (DCVA)

Also, field application did not follow label directions as required by the Environmental Fate Guidelines. In the proposed label, application is 0.05 to 0.1 lb ai/acre/application with a maximum of 10 applications per season.

Thus, EAB does not consider this study adequate to satisfy the field dissipation study data requirement.

4.0 EXECUTIVE SUMMARY

4.1 EAB does not consider all the environmental fate data requirements as being satisfied for registration of cypermethrin for the proposed use on cabbage. The field dissipation of cypermethrin and soil degradation products have not been adequately defined.

4.2 EAB in review dated 4/29/82 recommended for conditional registration of cypermethrin for use on cotton on the condition that the registrant submit the data on formation and decline of the degradates of cypermethrin under field conditions.

4.3 EAB reviews subsequent to the 4/29/82 review requested that the registrant provide either data on the formation and decline of soil metabolites of the field study or provide a justification as to why analyses of the metabolites were not done in the studies. Open literature studies on field dissipation of cypermethrin or of similar compounds having the same degradation products may suffice.

5.0 RECOMMENDATION

5.1 EAB still does not consider all the data requirements as having been satisifed for cypermethin. The submitted study does not satisfy the field dissipation data requirement.

5.2 The registrant must provide a field dissipation study which analyzes the soil for those degradation products identified in the soil metabolism study; namely, 3-phenoxybenzoic acid and 3-(2,2-dichloroethenyl)-2,2-dimethylcycloproanecarboxylic acid (DCVA). Information on conducting such a test is given in Subpart N: Environmental Fate Guidelines: Field Dissipation Studies. Briefly:

- The formulated product should be applied according to label directions at the highest use rate.
- Soil from two typical use areas should be treated. EAB recommends one soil to contain less than 1% organic matter.
- Soil should be sampled at adequate intervals to define formation and decline of degradation products and to a sufficent depth to define the extent of leaching, if leaching occurs.

- Rainfall and other climatic data should be included in the report.

- Half-life estimates for cypermethrin and degradation products should be reported.

5.4 The registrant should consult the Guidelines for additional information on procedures that should be followed and the information that should be reported in the study.

5.5 EAB suggests that the registrant submit a protocol for review before initiating the study. The protocol should describe, in detail, how the registrant proposes to carryout the study.

5.6 Alternatively, the registrant may be able to satisfy this deficiency by submitting data from the open literature on field dissipation of similar compounds having the same degradation products as cypermethrin.

Clinton Fletcher
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

AMMO® 2.5 EC DIRECTIONS FOR USE

Crop	Pest	Dosage		Remarks
		Lb ai/a	Fl oz/a	
Cabbage	Beet Armyworm Diamondback Moth Larvae Imported Cabbage worm Cabbage Looper Cabbage Aphid	0.05 - 0.1	2.5 - 5	Apply Ammo 2.5 EC as necessary for insect control using a minimum of 15 gallons of finished spray per acre with ground equipment and 1 gallon per acre by air. Do not make more than 10 applications per season. Ammo may be applied within 1 day of harvest.

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