

US EPA ARCHIVE DOCUMENT

Shaughnessy No.: 109702

Date Out of EAB: AUG 16 1988

To: George La Rocca
Product Manager No. 15
Registration Division (TS-767C)

From: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section #3
Exposure Assessment Branch/HED (TS-769C)

Through: Paul F. Schuda, Chief
Exposure Assessment Branch/HED (TS-769C)

Attached, please find the EAB review of . . .

Reg./File # : 279-3026, -3027

Chemical Name : Cypermethrin

Type Product : Insecticide

Product Name : CYMBUSH

Company Name : EMC Corporation

Purpose : Evaluation of data requirements for product with improved
improved isomer spectrum (Cypermethrin-minus)

Date Received: 6-3-88 Action Code: 300

Date Completed: 8-15-88 EAB # (s): 80809-10

Monitoring Study Requested: _____ Total Reviewing time: 1.5 days

Monitoring Study Volunteered: _____

Deferrals to: _____ Ecological Effects Branch
_____ Residue Chemistry Branch
_____ Toxicology Branch

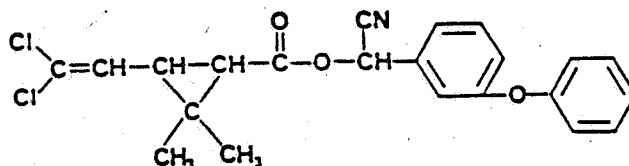
1. CHEMICAL:

Common name: Cypermethrin

Chemical name: (+)-alpha-Cyano-3-phenoxybenzyl-(+)-cis,trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate

Trade name(s): Cymbush 2E, Cymbush 3E, Cymbush OL

Structure:



Formulations: 2 and 3 lb/gallon EC;
cis/trans ratio: 45 ± 10% Cis; 55 ± 10% Trans

Physical/Chemical properties of the pure enantiomeric pair:

Molecular formula: C₂₂H₁₉Cl₂NO₃.
Molecular weight: 416.3.
Physical state: Pure isomers are colorless crystals (mixed isomers are viscous semisolids).
Specific density: 1.12 g/cm³.
Vapor pressure: 170 nPa at 20°C.
Solubility (25°C): 0.005-0.01 mg/L in water; 620 g/L in acetone; 515 g/L in cyclohexanone; 7 g/kg in hexane; 315 g/L in xylene.

2. TEST MATERIAL: n/a

3. STUDY/ACTION TYPE: Evaluation of data requirements for newly formulated product with "improved isomer spectrum".

4. STUDY IDENTIFICATION: n/a

5. REVIEWED BY:

A. Reiter, Chemist
Environmental Chemistry Review Section 3
EAB/HED/OPP

Allen J. Reiter

Date: August 15, 1988

V. APPROVED BY:

Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section 3
EAB/HED/OPP

Emil Regelman
AUG 16 1988

7. CONCLUSION:

EAB lacks sufficient data to arrive at the conclusion proposed by FMC Corp. to permit the Cypermethrin environmental fate data to support the proposed new formulation, Cypermethrin-Minus. It is not clear what isomers are being enriched or diminished in the new formulation. More detailed chemical information about the new formulation and use rates are needed.

8. RECOMMENDATION:

Based upon available information EAB does not concur with the proposed rationale to bridge the environmental fate data requirements between Cypermethrin and Cypermethrin-Minus. The registrant is advised to resubmit the proposal with a more detailed chemical explanation on the nature of the isomer enrichment in the new formulation and its effect on the actual use rates. A copy of the CSF and the current and proposed labels would be helpful.

9. BACKGROUND:

Cypermethrin is a synthetic pyrethroid insecticide that according to the Farm Chemicals Handbook is active on cotton, fruit (e.g., pecans), and vegetables (e.g., lettuce, cabbage, tomatoes). It is not clear from the branch files on what uses this chemical, per se, is registered. Environmental fate data reviewed and found acceptable for cypermethrin registration include:

Hydrolysis	Photolysis
Aerobic soil metabolism	Anaerobic soil metabolism
Leaching	Fish accumulation
Aerobic aquatic metabolism	Anaerobic aquatic metabolism
Rotational crop	Adsorption/desorption

Based upon this data EAB recommended for registration of cypermethrin on cabbage and lettuce (memo of Dr. John Jordan, 4 December 1985).

EAB has discussed the issue of the registration of Cypermethrin-Minus by bridging data in two memos (Dr. Jordan, Feb 26 and March 31, 1988). Both times EAB stated that new studies were needed for the new formulation for the following: aerobic and anaerobic soil metabolism, crop rotation and field dissipation.

In the current action the registrant, FMC Corp., has submitted a letter (Susan E. Burkart, 8 April 1988) providing a "Rationale for Cypermethrin Product with an Improved Isomer Spectrum". The proposed product is called Cypermethrin-Minus and FMC claims that it is identical to cypermethrin in its common (chemical) name, cis/trans isomer ratio, optical activity, isomer composition, and technical CSF/impurity profile. However, the claim is made that for the new formulation the concentration of the active isomers has been increase approximately two-fold, and that of the inactive isomers has been decreased significantly.

FMC states that they believe that the environmental fate studies which support the registration of cypermethrin will also support the registration of Cypermethrin-Minus. The proposed use pattern for the new formulation is the same as for Cypermethrin, but the use rate is less than half. Thus they conclude that the amount of biologically active isomers applied to the environment is the same for both products (and the amount of inactive isomers is significantly less). Thus, they propose that the Agency should accept the environmental fate studies for Cypermethrin in support of Cypermethrin-Minus.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: n/a
11. COMPLETION OF ONE-LINER: n/a
12. CBI APPENDIX: n/a