

US EPA ARCHIVE DOCUMENT

Shaughnessy No.: 128831

Date out of EFGWB AUG 30 1990

TO: G. T. LaRocca/A. Heyward  
Product Manager #15  
Registration Division (H7505C)

FROM: Emil Regelman, Supervisory Chemist  
Chemistry Review Section #2  
Environmental Fate and Ground Water Branch

THRU: Hank Jacoby, Chief  
Environmental Fate and Ground Water Branch  
Environmental Fate and Effects Division (H7507C)

Attached, please find the EFGWB review of ...

Reg./File #: 3125-351/3125-352/3125-380

Chemical Name: Cyano (4-fluoro-3-phenoxyphenyl) methyl-3-(2,2-dichloro-  
ethenyl)-2,2-dimethyl-cyclopropane-carboxylate

Type Product: Insecticide

Common Name: Cyfluthrin, Baythroid 2, TEMPO 2, TEMPO 20 WP

Company Name: Mobay Corporation

Purpose: Response to correspondence

Date Received: 25 July 1990 Date Completed: 30 July 1990

Action Code: 300

EFGWB #(s): 90-0709

Total Reviewing Time: 0.5 day

Deferrals to: Ecological Effects Branch, EFED  
Science Integration and Policy Staff, EFED  
Non-Dietary Exposure Branch, HED  
Dietary Exposure Branch, HED  
Toxicology Branch

1. CHEMICAL:

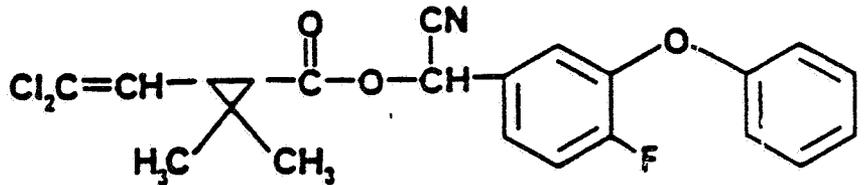
Chemical name: Cyano (4-fluoro-3-phenoxyphenyl) methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropane-carboxylate

CAS no.: 68359-37-5

Common name: Cyfluthrin

Trade name: Baythroid 2, TEMPO 2, TEMPO 20 WP

Chemical structure:



Formulations: Cyfluthrin.....25%/24.3%/20.0%  
Inert Ingredients.....75%/75.7%/80.0%

Molecular weight: 434.3

Physical/Chemical properties of active ingredient:

Physical characteristics: Viscous amber oil, partially crystalline  
Vapor pressure:  $3.3 \times 10^{-8}$  mm Hg @ 20°C  
Solubility:  $1-2 \times 10^{-6}$  g/100 mL at 20°C  
Octanol/water partition coefficient: 420,000

2. STUDY/ACTION TYPE:

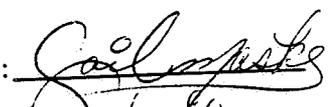
Response to correspondence.

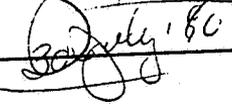
3. STUDY IDENTIFICATION:

Thornton, J.S. CORRESPONDENCE TO G.T. LaROCCA. Mobay Corporation, Agricultural Chemical Division, Kansas City, MO;  
Received by EPA 19 July 1990.

4. REVIEWED BY:

Gail Maske  
Chemist, Review section #2  
OPP/EFED/EFGWB

Signature: 

Date: 

5. APPROVED BY:

Emil Regelman  
Supervisory Chemist  
Review section #2  
OPP/EFED/EFGWB

Signature: 

Date: AUG 30 1990

6. CONCLUSIONS:

The registrant is correct in stating that the Rotational Crops-Field Dissipation data requirement has been fulfilled (meeting 1 May 1990) as was indicated in the 9 May 1990 (WGM) review.

In response to the volatility data requirement, the waiver correspondencies attached were not included in our file. Therefore, EFGWB had no knowledge that the waivers had been granted for cotton use. However, there is sufficient environmental fate data to support a waiver of the volatility-lab, volatility-field, and the photodegradation in air (163-2, 163-3, and 161-4) for current use patterns because of low vapor pressure ( $3.3 \times 10^{-8}$  mmHg) and because inhalation toxicity is in category II.

7. RECOMMENDATIONS:

The registrant should be informed of the following:

- a. The Rotational Crops-Field Dissipation data requirement has been fulfilled (meeting 1 May 1990) as was indicated in the 9 May 1990 (WGM) review.
- b. The photodegradation in air, volatility-lab, volatility-field data requirements (161-4, 163-2, 163-3) are waived for current use patterns.
- c. The status of cyfluthrin Environmental Fate Data Requirements for registration for terrestrial food crop use is as follows:

<u>Environmental Fate Data Requirements</u>	<u>Status of Data Requirement</u>	<u>MRID No.</u>
Degradation Studies-Lab		
161-1 Hydrolysis	Fulfilled (SH;5/9/85)	00131493 00137539
161-2 Photodegradation in water	Fulfilled (SH;5/9/85;JHJ;2/20/86)	00149595
161-3 Photodegradation on soil	Fulfilled (JHJ;3/2/87)	00157043 00137543
161-4 Photodegradation in air	Waived; this review (JHJ;04/08/87MEMO)	

<u>Environmental Fate Data Requirements</u>	<u>Status of Data Requirement</u>	<u>MRID No.</u>
<b>Metabolism Studies-Lab</b>		
162-1 Aerobic (Soil)	Fulfilled (JHJ;2/20/86:CF;6/13/84:SH;5/9/85)	00131494
162-2 Anaerobic (Soil)	Fulfilled (JHJ;2/20/86:CF;6/13/84:SH;5/9/85)	00131494
<b>Mobility Studies</b>		
163-1 Leaching, Adsorption/ Desorption	Fulfilled (CF;6/13/84)	00131495 00137540 00137544
163-2 Volatility-lab	Waived; this review (JHJ;04/08/87MEMO)	
163-3 Volatility-field	Waived; this review (JHJ;04/08/87MEMO)	
<b>Dissipation Studies-Field</b>		
164-1 Terrestrial	Fulfilled (JHJ;2/20/86)	00149547
<b>Accumulation Studies</b>		
165-1 Rotational crops-confined	Fulfilled (CF;1/3/84)	00137541
165-2 Rotational crops-field	Fulfilled (AR;4/4/89:HN;9/5/89) (WGM;11/14/89) (WGM;03/06/90) (meeting 1 May 1990)	41190201 41190202 40942701 00137541
165-4 In fish	Fulfilled (CF;6/13/84:SH;5/9/85)	00143143 00137547

8. BACKGROUND:

Cyfluthrin was registered as an unconditional indoor use general pesticide and for use on cotton crops on 30 December 1987. In August 1989 it was registered for use in imported German hops. TEMPO 2 was registered 3 March 1988 for use on trees, ornamentals, and home lawns.

Baythroid 2 is an emulsible concentration herbicide currently registered for use on cotton (classified as a terrestrial food crop) at a single application rate of 0.0125-0.1 lbs ai/acre/application and a maximum total seasonal application of 0.89 lbs ai/acre/season and for use in German hops. An application by the registrant to amend the Baythroid 2

label to allow applications to alfalfa, soybeans, sunflowers, sweet corn, broccoli, brussel sprouts, cabbage, cauliflower, carrots, celery, lettuce, peppers, radish, spinach, and tomatoes at single application rates of 0.012-0.050 lbs ai/acre/application and a maximum total seasonal application of 0.13-0.44 lbs ai/acre/season was conditionally concurred by EFGWB providing the registrant agrees to satisfy the remaining outstanding data requirements.

TEMPO 2 is an emulsible concentration herbicide currently registered as a general use insecticide for broad-spectrum control of insect pests on trees, ornamentals, and home lawns. The use of TEMPO 2 Ornamental Insecticide for the control of ants, crickets, spiders, midges, wasps, flies, and mosquitoes is limited to ornamental areas and areas adjacent to buildings. Application is by general spray equipment at a rate of 1.0 to 1.5 oz/100 gals. When applied to home lawns, TEMPO 2 is applied when pests first appear at a rate of 4 to 6 mLs. per 1000 sq. ft.. TEMPO is reapplied when necessary based on pest reinfestation.

Mobay applied to add turfgrass use directions to the TEMPO 2 labelling on 14 August 1986. EEB feels that turf use is not permissible until completion and reviewing the mesocosm study and the full life cycle study. EFGWB deferred (Feb. 1990) the terrestrial field dissipation on turf requirement until completion of the mesocosm study and EEB's decision on the ecological concerns of cyfluthrin for turf use.

Cyfluthrin is toxic to fish, aquatic organisms, and honey bees. However, cyfluthrin appears to be low in mammalian toxicity.

9. DISCUSSION:

None

10: COMPLETION OF ONE-LINER:

See attached one-liner.

11: CBI APPENDIX:

This information is considered to be CBI by the registrant and should be treated as such.

ENVIRONMENTAL FATE & GROUND WATER BRANCH  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY

Page 1

Common Name: **CYFLUTHRIN** Date: 11/01/89  
Chem. Name : CYANO (4-FLUORO-3 PHENOXYPHENYL) METHYL-3(2 2-DICHLORO-  
: ETHENYL) 2 2-DIMETHYL-CYCLOPROPANECARBOXYLATE  
Shaugh. # : 128831 CAS Number. 68359-37-5  
Type Pest. PYRETHROID; INSECTICIDE  
Formulation WATER-SOL. CONC.; EMULSIFIABLE CONC. ULV FORMULATION,  
Uses : FOLIAR INSECTICIDE FOR CONTROL OF CHEWING INSECTS ON A  
: VARIETY OF CROPS SUCH AS CORN COTTON PEANUTS  
:

Empir. Form.  $C_{22}H_{18}FNO_3Cl_2$  VP (Torr) 3.3E-8  
Mol. Weight: 434.27 Log Kow : 5.62  
Solub. (ppm). .01 @ 20 C Henry s

Hydrolysis (161-1) Photolysis (161 2, 3 4)  
pH 5:[\*] STABLE Air :[ ]  
pH 7:[\*] 193 DAYS Soil :[\*] 48-72 HRS, SdLm, Hg LAMP  
pH 9:[\*] < 2 DAYS Water:[\*] ABOUT 1 DAY IN NATURAL SUN  
pH :[ ] :[ ]  
pH .[ ] .[ ]  
pH :[ ] :[ ]

**MOBILITY STUDIES (163-1)**

Soil Partition (Kd) Rf Factors  
1.[ ] 1.[\*] AGED AND UNAGED RESIDUES  
2.[ ] 2.[ ] IMMOBILE IN AGRIC SAND (FL)  
3.[ ] 3.[ ] SdLm (OR) SdClm (IN) SiLm  
4.[ ] 4.[ ] (NB) SiCl (MD)  
5.[ ] 5.[ ]  
6.[ ] 6.[ ]

**METABOLISM STUDIES (162-1,2,3,4)**

Aerobic Soil (162-1) Anaerobic Soil (162-2)  
1.[\*] 56 DAYS IN GERMAN LOAM SOIL 1.[\*] SAME AS WITH AEROBIC SOILS  
2.[\*] 63 DAYS " " SANDY LOAM 2.[ ]  
3.[ ] 3.[ ]  
4.[ ] 4.[ ]  
5.[ ] 5.[ ]  
6.[ ] 6.[ ]  
7.[ ] 7.[ ]

Aerobic Aquatic (162-4) Anaerobic Aquatic (162-3)  
1.[ ] 1.[ ]  
2.[ ] 2.[ ]  
3.[ ] 3.[ ]  
4.[ ] 4.[ ]

---

[\*] Acceptable Study. [#] = Supplemental Study

6

Common Name: **CYFLUTHRIN**

Date 11/01/89

**VOLATILITY STUDIES (163-2,3)**

- Laboratory
- Field.

**DISSIPATION STUDIES (164-1,2,3,5)**

Terrestrial Field (164-1)

1. [\*] <31 DAYS IN UPPER 6" IN EIGHT DIFFERENT STUDIES. DEGRADATES
2. [ ] WERE NOT PERSISTENT AND DID NOT ACCUMULATE SIGNIFICANTLY
3. [ ]
4. [ ]
5. [ ]
6. [ ]

Aquatic (164-2)

1. [ ]
2. [ ]
3. [ ]
4. [ ]
5. [ ]
6. [ ]

Forestry (164-3)

1. [ ]
2. [ ]

Other (164-5)

1. [ ]
2. [ ]

**ACCUMULATION STUDIES (165-1,2,3,4,5)**

Confined Rotational Crops (165-1)

1. [\*] WITH .72 PPM IN SOIL AT DAY 0, CONC. DROPPED TO
2. [ ] .10 PPM BY DAY 359; RESIDUE MOSTLY PARENT COMPD.

Field Rotational Crops (165-2)

1. [#] WHEAT STALKS MAY CONTAIN RESIDUES IF PLANTING IS
2. [ ] DONE LESS THAN 9 MONTHS AFTER TREATMENT.

Irrigated Crops (165-3)

1. [ ]
2. [ ]

Fish (165-4)

1. [\*] BLUEGILL SUNFISH BCF: 550-850 X; WITH DEPURATION, T/12 FOR
2. [ ] RESIDUES = ABOUT 9 DAYS.

Non-Target Organisms (165-5)

1. [ ]
2. [ ]

Common Name: **CYFLUTHRIN**

Date. 11/01/89

**GROUND WATER STUDIES (158.75)**

1. [ ]
2. [ ]
3. [ ]

**DEGRADATION PRODUCTS**

1. CO2
2. 4-FLUORO-3 PHENOXYBENZALDEHYDE (FCR 1260)
3. 4 FLUORO-3-PHENOXYBENZOIC ACID (FCR 3191)
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

**COMMENTS**

SOIL Koc = 10,000.

RAT TOXICITY STUDIES INDICATE THAT THE FPB ACID IS MUCH LESS TOXIC THAN THE PARENT COMPOUND.

THE TECHNICAL GRADE OF CYFLUTHRIN CONSISTS OF FOUR ISOMERS, ALL HAVING ROUGHLY THE SAME SOLUBILITY AND VAPOR PRESSURE.

References. FARM CHEMICALS HANDBOOK; EPA REVIEWS  
Writer J. HANNAN ...

8