Chemical Code: 129032 Date Out:

ENVIRONMENTAL FATE AND GROUND WATER BRANCH

Review Action

To: Rick Keigwin, PM #10
Special Review and Reregistration Division (7508W)

From: Akiva Abramovitch, Section Chief
Chemistry Review Section #3
Environmental Fate & Ground Water Branch/EFED (7507C)

Thru: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (7507C) 11/7/95

Attached, please find the EFGWB review of...

DP Barcode: D217065, D217076, 217083, 217270

Common Name:	Pyriproxyfen	Trade name:	Nylar 10EC
Company Name:	Sumitomo Chemical Co., Ltd.		
ID #:	010308-RR; 001021-EUP-GN		
Purpose:	EUP field trials for 71.1 lbs. ai on 1,422 acres in eight states to confirm lab. data		

Type Product:	Action Code:	EFGWB #(s):	Review Time:
Insecticide	701, 116		3 days

STATUS OF STUDIES IN THIS PACKAGE:

Guideline #	MRID	Status[1]
162-4	436687-01,02	U
165-4		U

STATUS OF DATA REQUIREMENTS ADDRESSED IN THIS PACKAGE:

Guideline #	Status[2]
161-1	A

[1]Study Status Codes: A=Acceptable U=Upgradeable C=Ancillary I=Invalid.
[2]Data Requirement Status Codes: S=Satisfied P=Partially satisfied N=Not satisfied R=Reserved W=Waived.

1. CHEMICAL name:

pyriproxyfen

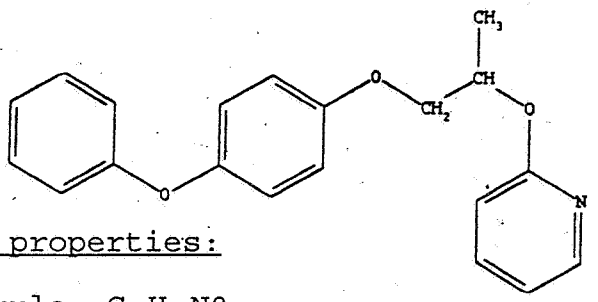
Chemical name:

2-(1-Methyl-2-(4-phenoxyphenoxy)ethoxy pyridine

TRADE name(s):

Nylar 10EC

Structure:



Physical/Chemical properties:

Molecular formula: $C_{20}H_{19}NO_3$
Molecular weight: 321
Physical state: Pale yellowish solid
Vapor pressure: < 1.0 X 10^{-7} at 22.8°
Solubility: 0.37 ppm in water (25° C), 8g/100 ml in hexane (20° C), 6g/100 ml in methanol at 20° C.

2. TEST MATERIAL:

10% EC

3. STUDY/ACTION TYPE:

EUP for mosquito adulticide

4. STUDY IDENTIFICATION:

Steginsky, C.A., et al. 1994. Characterization of ^{14}C-Residues in Bluegill Sunfish Treated with ^{14}C-Pyriproxyfen. Battelle Metabolism Chemistry No. SC900032. Submitted by Sumitomo Chemical Co., Ltd., MRID No. 436687-02.

Fathulla, R. N., and D. Brookman. 1994. Sumilarv- Aerobic Aquatic Metabolism of ^{14}C-pyriproxyfen (Supplement to MRID No. 429020-01). Hazelton Laboratories America, Submitted by Sumitomo Chemical Co., Ltd., MRID No. 436687-01.

Katagi, T., and N. Takahashi. 1989a . Hydrolysis of S-31183 in buffered aqueous solutions. Laboratory Project ID NNM-90-0015. Unpublished study performed and submitted by Sumitomo Chemical Co. Ltd., Osaka, Japan. 42343201

Katagi, T., and N Takahashi. 1989b. Supplement to "Hydrolysis of S-31183 in buffered aqueous solutions". Laboratory Project ID NNM-90-0015. Unpublished study performed and submitted by Sumitomo Chemical Co. Ltd., Osaka, Japan.

Terrestrial field dissipation Protocols:

ABC Laboratories. 1993. Dissipation of Sumilarv Applied to Bare Ground (Georgia). ABC Protocol no. 41013 BG. Submitted by Sumitomo Chemical Co. Ltd., Osaka, Japan.

ABC Laboratories. 1993. Dissipation of Sumilarv applied to Bare Ground (California). ABC Protocol No. FS-41014 . BG. Submitted by Sumitomo Chemical Co. Ldt., Osaka, Japan.

5. REVIEWED BY:

John H. Jordan, Ph.D.
Microbiologist
EFGWB/EFED/OPP
Review Section #3

John H. Jordan
11/6/95

6. APPROVED BY:

Akiva D. Abramovitch, Ph.D.
Chief
EFGWB/EFED/OPP
Review Section #3

Akiva Abramovitch
NOV 3 1995

7. CONCLUSIONS:

The supplemental studies by Steginsky (MRID 436687-02) and Fathulla (MRID 436687-01) have upgraded the fish residue bioaccumulation and aerobic aquatic metabolism studies to an acceptable status. Steginsky's supplemental study upgraded the fish bioaccumulation study by characterizing fish residues which will be reported in DERs. Fathulla showed that the unknown polar degradate in the aerobic aquatic metabolism study (Area 4 of subarea 9) was only 5.1% of the applied, and characterization of the polar degradate was, therefore, not required.

The full compliment of requirements for this EUP would ordinarily be as follows: hydrolysis, aerobic aquatic metabolism, leaching ads/des, aerobic soil metabolism, and accumulation in fish. Terrestrial field dissipation is not required for the EUP, but will be required for registration; a protocol was reviewed. We have an acceptable hydrolysis study, and also an acceptable aerobic aquatic metabolism and fish accumulation study.

Additional studies, i.e., aerobic soil metabolism, aerobic aquatic metabolism, anaerobic aquatic metabolism, adsorption/desorption, aged column leaching, and terrestrial field dissipation were recently received to support registration of pyriproxyfen end-use products. Because of the low poundage requested and the dispersion of the material in eight states, we recommend that the EUP can be approved now, and review of the studies submitted for registration be deferred. Review of the studies will require substantial time and would delay the EUP.

We have limited data on which to base our opinion on the acceptability of the proposed EUP, however, a total of only 71.1 lbs. of ai are to be used in 8 states (AK, CA, FL, LA, MD, MI, OR, and UT) on 1,422 acres. Because of the relatively low volume of ai to be used and dispersion of the chemical in eight states, there would seem to be a low potential for soil/water contamination. However, the ai pyriproxyfen is registered for non-food uses, only, and its toxicity is unknown. Acceptable aerobic aquatic metabolism data indicate that much of the fish bioresidue from depuration is incorporated into the humic portion of the soil.

Environmental Fate Assessment

The hydrolysis study indicated that the parent does not hydrolyze in sterile water. However, pyriproxyfen's t-1/2 in aerobic aquatic systems is 16 to 21 days. Parent bioaccumulates in fish with factors of 465 - 478 X in edible tissues, 2390 - 2482 X in non-edible tissues and 1379 - 1495 in whole fish. Depuration occurred rapidly, with residues dropping by one-third in 3 days after exposure. After 14 days, percentages of elimination were 98.1 for whole body tissues, and 93 for edible tissues.

Background

Nylar is a juvenile hormone mimic insecticide registered for non-food uses.

The MKG Co. has requested this EUP for a new mosquito adulticide ai, pyriproxyfen, trade name is Nylar 10 EC. Parent is an insect growth regulator which interferes with insect metamorphosis. Normal processes of insect development are disrupted which result in pupal mortality or abnormal adults. Activity has been demonstrated on fleas, cockroaches, ticks and mosquitoes.

The purpose of the EUP is to develop efficacy data to supplement the laboratory data; several species of mosquito larvae would be tested in natural breeding sites.