

US EPA ARCHIVE DOCUMENT

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TO: Susan Lewis
 Product Manager PM #21
 Registration Division (H7505C)

FROM: Akiva D. Abramovitch, Ph.D., Head
 Environmental Chemistry Review Section #3
 Environmental Fate & Ground Water Branch/EFED (H7507C)

THRU: Henry Jacoby, Chief
 Environmental Fate & Ground Water Branch/EFED (H7507C)
Henry Jacoby 6/11/93

Attached, please find the EFGWB review of...

Reg./File # :128993

Common Name :Cyproconazole

Product Name :San 619F

Company Name :Sandoz Agro, Inc.

Purpose :To review ancillary aerobic soil metabolism data.

Type Product :Fungicide Action Code: 116 EFGWB #(s): 93-0097 Review Time: 1.0 days

EFGWB Guideline/MRID/Status Summary Table: The review in this package contains...

161-1		162-4		164-4		166-1	
161-2		163-1		164-5		166-2	
161-3		163-2		165-1		166-3	
161-4		163-3		165-2		167-1	
162-1	42534801 S	164-1		165-3		167-2	
162-2		164-2		165-4		201-1	
162-3		164-3		165-5		202-1	

Y = Acceptable (Study satisfied the Guideline)/Concur P = Partial (Study partially satisfied the Guideline, but additional information is still needed)
 S = Supplemental (Study provided useful information, but Guideline was not satisfied) N = Unacceptable (Study was rejected)/Non-Concur

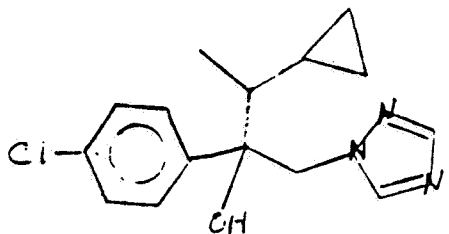
1. CHEMICAL:

Common Name: Cyproconazole

Chemical Name: alpha-(4-Chlorophenyl-alpha-(1-cyclopropylethyl)-1H-1,2,4-triazole-1-ethanol

Type of product: Fungicide

Chemical Structure:



Physical/Chemical Properties

molecular weight: 291.8

aqueous solubility: $(180 \pm 30 \text{ ppm @ } 20^\circ\text{C})$

vapor pressure: $2.6 \times 10^{-7} \text{ torr}$

Henry's constant: $7.1 \times 10^{-10} \text{ atm}\cdot\text{m}^3/\text{mol}$, calc. at water sol. = 140ppm

2. TEST MATERIAL:

See attached DERS.

3. STUDY/ACTION TYPE:

To review ancillary aerobic soil metabolism 162-1 data.

4. STUDY IDENTIFICATION:

(1) MRID No:42534801

Wilson, M., August 14, 1992. [^{14}C -Benzyl]-Cyproconazole = [^{14}C -Benzyl]- San 619F; Aerobic Degradation in Three Types of Soil (Balance Study). Completed by Sandoz Agro LTD. Development Region Basle Analytical Chemistry and Environmental Sciences, Basle, Switzerland. Submitted by Sandoz Agro, Inc. 1300 East Touhy Avenue, Des Plaines, Illinois 60018.

5. REVIEWED BY:

Kevin L. Poff, Chemist
Environmental Chemistry Review Section #3
Environmental Fate and Groundwater Branch/EFED

Kevin L. Poff

Date:

6. APPROVED BY:

Akiva Abramovitch, Ph.D., Chemist
Environmental Chemistry Review Section #3
Environmental Fate and Groundwater Branch/EFED

Date:

Akiva Abramovitch
MAY 27 1993

7. CONCLUSIONS:

1. The aerobic soil metabolism 162-1 data requirement for cyproconazole has been previously satisfied with MRID #41474401. Study MRID #42534801 may be used as additional information to the previously reviewed and accepted aerobic soil metabolism 162-1 data.

2. Cyproconazole degraded with a calculated half-life of 104 days, 124 days, and greater than 1 year in a Flaach (Zurich, Switzerland), Louisiana, and North Carolina soil respectively. CO₂ was the main degradate accounting for almost 30% of the applied radiocarbon. Volatiles accounted for an average of 32.9% (of recovered) by day 112, 26.8% by day 112, and 2.2% by day 210 in Flaach, Louisiana, and North Carolina soils respectively. Soil bound residues increased during the duration of the study and ranged from 13 to 24% (of recovered).

8. RECOMMENDATIONS:

Inform the registrant that study MRID #42534801 may be used as additional data to the previously reviewed and accepted aerobic soil metabolism 162-1 data.

The current status of environmental fate data requirements to support the registration of cyproconazole for use on turf is as follows:

Satisfied:

-161-1. Hydrolysis

(MRID # 40607706) Cyproconazole Registration Standard of 12/5/88. Stable to hydrolysis at pH's 5, 7, and 9.

-161-2. Photodegradation in Water

(MRID # 40607707) Cyproconazole Registration Standard of 12/5/88. Stable; does not degrade.

-161-3. Photodegradation on Soil

(MRID # 40607707) Cyproconazole Registration Standard of 12/5/88. Half-life > 37 days.

-162-1. Aerobic Soil Metabolism

(MRID # 41474401) EFGWB #90-0568-0569, 90-0520-0521 4/20/91. Half-life >693 days.

-163-1. Leaching and Adsorption/Desorption

(MRID # 40607709) Cyproconazole Registration Standard of 12/5/88. (MRID # 41441301) EFGWB #90-0568-0569, 90-0520-0521 4/20/91. 74% of applied radioactivity remained in the top 6-cm of the Gilroy loam after 20 inches of water passed through the column (2.3% OM); Kd_{ads} were Gilroy loam 4.1 (2.3% OM), Gilroy sediment 4.9 (2.3% OM), Keaton sandy loam 1.3 (1.3% OM), Biggs clay 17 (11.4% OM), German loamy sand 16 (3.9% OM). Kd_{ads} values in sand were too low to calculate.

-165-4. Laboratory accumulation in fish

(MRID # 40624302, 40624303) Cyproconazole Registration Standard of 12/5/88. (MRID #41220801) EFGWB #89-0785 12/20/89. Edible 15X, Non-edible 59X, Whole 34X after exposure to 0.24-0.30 ppm for 28 days.

-164-1. Terrestrial Field Dissipation

(MRID #41384101, addendum to MRID #40624301); The registrant calculated half-life was 42.5 days when cyproconazole (40% WG) was applied once a month at 131 g ai/acre/application for 6 consecutive months to a turf-covered (1.2% OM) field plot (sandy loam soil) located in Watsonville, California.

(MRID #41384102); The registrant calculated half-life was 192 days when cyproconazole (40% WG) was applied 4x's at 14 day intervals at 0.381 lbs. ai/A/application to a turf (3.2% OM) plot located in Salisbury, Maryland.

(MRID #41461501); The registrant calculated half-life was 21 days when cyproconazole (40%WG) was applied in four broadcast sprays at 0.381 lb a.i./A/application to turfgrass (0.7%OM) in Louisiana.

(MRID #41800701 and MRID #42430701); The half-life of cyproconazole 40 WG was calculated to be 252 days under field conditions in Hillsboro, Oregon (silty clay loam, 2.1% OM) after four biweekly applications at 0.878-0.987 lb/A (0.381 lb ai/A) which is 91.45-102.8% of the maximum application rate to a bareground plot.

(MRID #41800702 and MRID #42430702); Cyproconazole exhibited a half-life of 160 days in a North Carolina silty-loam soil (2.0% OM) bareground plot after four applications at the maximum application rate 0.96 lb/acre (0.384 lb a.i./acre) for turf. Cyproconazole was essentially confined to the top 0-10 cm soil layer.

Supplemental/Ancillary (additional data):

-162-1. Aerobic Soil Metabolism

(MRID #42534801) This review. Cyproconazole degraded with a calculated half-life of 104 days, 124 days, and greater than 1 year in a Flaach (Zurich, Switzerland), Louisiana, and North Carolina soil respectively. CO₂ was the main degradate accounting for almost 30% of the applied radiocarbon.

Reserved:

-166-1. Small Prospect.

-166-2. Small Retrospect.

9. BACKGROUND :

Cyproconazole is a broad spectrum systemic triazole fungicide currently proposed for use only on golf course and sod farm turf to control dollarspot and brown patch. It is effective against a wide range of fungal diseases caused by ascomycetes, basidiomycetes and deuteromycetes. Cyproconazole 40 WG contains 6.1 oz ai/lb. Application rates are 0.14 oz. ai/1000 ft² (0.38 lb ai/acre) for turf to control Brown Patch, Rhizoctonia Solani, Rust, Puccinia Sp. and Helminthosporium and 0.07 oz. ai/1000 ft² (0.19 lb ai/acre) to control Dollar Spot and Sclerotinia. Repeated applications at 14-28 day intervals as needed.

10. DISCUSSION:

See attached DER.

11. COMPLETION OF ONE-LINER:
Attached.

12. CBI INDEX:
Not Applicable.

DATA EVALUATION RECORD
DER 1

SHAUGHNESSY No. 128993
COMMON NAME: Cyproconazole
CHEMICAL NAME: alpha-(4-Chlorophenyl-alpha-(1-cyclopropylethyl)-
1H-1,2,4-triazole-1-ethanol
FORMULATION: 40% WG
DATA REQUIREMENT: 162-1 Aerobic Soil Metabolism

MRID No: 42534801
Wilson, M., August 14, 1992. [¹⁴C-Benzyl]-Cyproconazole = [¹⁴C-Benzyl]- San
619F; Aerobic Degradation in Three Types of Soil (Balance Study). Completed
by Sandoz Agro LTD. Development Region Basle Analytical Chemistry and
Environmental Sciences, Basle, Switzerland. Submitted by Sandoz Agro, Inc.
1300 East Toughey Avenue, Des Plaines, Illinois 60018.

REVIEWED BY: Kevin L. Poff
Chemist EFGWB/EFED

Signature: *Kevin L. Poff*

Date:

APPROVED BY: Akiva Abramovitch, Ph.D.
Chemist EFGWB/EFED

Signature:

Date:

CONCLUSIONS:

1. The aerobic soil metabolism 162-1 data requirement for cyproconazole has been previously satisfied with MRID #41474401. Study MRID #42534801 may be used as additional information to the previously reviewed and accepted aerobic soil metabolism 162-1 data.
2. Cyproconazole degraded with a calculated half-life of 104 days, 124 days, and greater than 1 year in a Flaach, Louisiana, and North Carolina soil respectively. CO₂ was the main degradate accounting for almost 30% of the applied radiocarbon. Volatiles accounted for an average of 32.9% (of recovered) by day 112, 26.8% by day 112, and 2.2% by day 210 in Flaach, Louisiana, and North Carolina soils respectively. Soil bound residues increased during the duration of the study and ranged from 13 to 24% (of recovered).

MATERIALS AND METHODS:

¹⁴C benzyl labeled cyproconazole (specific activity 188.3 uCi/mg, radiochemical purity 98.6%) was applied at a concentration of 0.25 ppm to a Flaach sandy loam (1.94% OM), Louisiana 90 (3.62%), and North Carolina 90 (0.68%) in Erlenmeyer flasks and brought up to 75% moisture content at the 0.33 bar. The soils were incubated at $21.6 \pm 3.2^{\circ}\text{C}$ in the dark for up to 16 or 30 weeks. Samples were taken immediately after treatment and then at 2, 4, 8, 12, and 16 weeks, in the North Carolina soil incubation continued for 30 weeks. Wet soil samples taken at 0, 2, 4, 8, and 12 weeks were extracted with MeOH and filtered through a Buchner funnel. Samples taken at 16, 20, and 30 weeks were centrifuged and decanted. The soils were extracted a second time with MeOH:water 5:1, aliquots were analyzed for total radiocarbon. Cyproconazole was determined by radio TLC. Unextractable radiocarbon was determined by combustion.

RESULTS:

1. Cyproconazole degraded with a calculated half-life of 104 days, 124 days, and greater than 1 year in a Flaach, Louisiana, and North Carolina soil respectively. CO_2 was the main degradate accounting for almost 30% of the applied radiocarbon.
2. Volatiles accounted for an average of 32.9% (of recovered) by day 112, 26.8% by day 112, and 2.2% by day 210 in Flaach, Louisiana, and North Carolina soils respectively.
3. Soil bound residues increased during the duration of the study and ranged from 13 to 24% (of recovered).

DISCUSSION:

1. The Flaach soils were not adequately compared to those soils of US domestic origin.
2. Cyproconazole and degradates were reported as percentage to average recovered radioactivity and not as to percent of applied.

RIN 0655-94

CYPROCONAZOLE REVIEWS

Page _____ is not included in this copy.

Pages 8 through 27 are not included.

The material not included contains the following type of information:

- Identity of product inert ingredients.
 - Identity of product impurities.
 - Description of the product manufacturing process.
 - Description of quality control procedures.
 - Identity of the source of product ingredients.
 - Sales or other commercial/financial information.
 - A draft product label.
 - The product confidential statement of formula.
 - Information about a pending registration action.
 - FIFRA registration data.
 - The document is a duplicate of page(s) _____.
 - The document is not responsive to the request.
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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.
