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TO: Susan Lewis
Product Manager PM #21
Registration Division (H7507C)

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)

Attached, please find the EFGWB review of...

Reg./File # :128993

Common Name :Cyproconazole

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

Product Name :San 619F

Company Name :Sandoz Crop Protection Corporation

Purpose :To review bareground terrestrial field dissipation studies for new chemical registration.

Type Product :Fungicide Action Code: 116 EFGWB #(s): 92-1297 Review Time: 4.0 days

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

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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

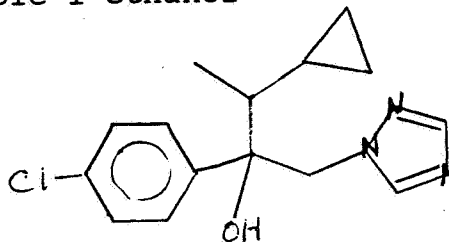
1. CHEMICAL:

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 bareground terrestrial field dissipation studies.

4. STUDY IDENTIFICATION:

(1) MRID No:42430701 (addendum to Volume 1 below)
Ali, S. Final Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in Oregon, Performing Contractors; Field Trial: Collins Agricultural Consultants, Inc. Hillsboro, Oregon. Analytical: Harris Environmental Technologies, Inc. Lincoln, Nebraska. Study Sponsor; Sandoz Crop Protection Corporation, 1300 East Toughy Avenue, Des Plaines, Illinois 60018.

MRID No: 41800701
Ali, S., Volume 1 Interim Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in Oregon, performing laboratory Sandoz Crop Protection Corporation, 1300 East Toughy Avenue, Des Plaines, Illinois 60018. (Reviewed 6/20/91, EFGWB #90-0388/0389, 90-0557, 91-0448/0449)

(2) MRID No:42430702 (addendum to Volume 2 below)
Ali, S. Final Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in North Carolina, Performing Contractors; Field Trial: Agricultural Systems Associates Cary, North Carolina. Analytical: Harris Environmental Technologies, Inc. Lincoln, Nebraska. Study Sponsor; Sandoz Crop Protection Corporation, 1300 East Toughy Avenue, Des Plaines, Illinois 60018.

MRID No: 41800702

Ali, S., Volume 2 Interim Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in North Carolina. (Reviewed 6/20/91, EFGWB #90-0388/0389,90-0557,91-0448/0449)

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*

FEB 11 1993

7. CONCLUSIONS:

Terrestrial Field Dissipation DER 1

1. Study MRID #42430701 is acceptable and can contribute towards satisfying the terrestrial field dissipation 164-1 data requirement for cyproconazole.

2. The half-life of cyproconazole 40 WG was calculated to be 252 days under field conditions (bareground plot) in Hillsboro, Oregon after four biweekly applications at 0.878-0.987 bl/A which is 91.45-102.8% of the maximum application rate for turf. The mean residue level in the 0-10 cm layer increased from 0.21 ppm post first application to 0.73 ppm on day 7 and then decreased gradually to 0.18 ppm on day 540 after the last application. Cyproconazole was detected in the 10-20 cm depth Post fourth application at a maximum 0.09 ppm at 2 months after treatment then decreased to the limit of detection at 24 months after treatment. There were occasional detections in the 20-30 cm depth at around the limit of detection 0.01-0.03 ppm and no detections in the 30-40 and 40-50 cm depths.

Terrestrial Field Dissipation DER 2

1. Study MRID #42430702 is acceptable and can contribute towards satisfying the terrestrial field dissipation 164-1 data requirement for cyproconazole.

2. Cyproconazole exhibited a half-life of 160 days in a North Carolina silty-loam soil (bareground plot) after four applications at the maximum application rate of 0.96 lb/acre (0.384 lb a.i./acre) for turf. Cyproconazole was essentially confined to the top 0-10 cm soil layer, although there were detections close to the limit of detection at pre first application at 0.02 ppm in the 10-20 cm layer, post second application at 0.02 ppm in the 10-20 cm layer,

3 days after last treatment (post fourth application) at 0.01 ppm in the 20-30 cm layer, 2 months after final treatment at 0.01 ppm in the 10-20 cm layer, and 24 months after final treatment at 0.01 ppm in the 10-20 cm layer.

8. RECOMMENDATIONS:

Inform the registrant that the bareground terrestrial field dissipation studies MRID #42430701, and MRID #42430701 are acceptable. Inform the registrant that the previously reviewed (EFGWB #90-0388/0389,90-0557,91-0448/0449, 6/20/91) supplemental turf studies (MRID #41384102, MRID #41461501, MRID #40624301 with addendum MRID #41384101) in combination with the above bareground studies completely satisfy the terrestrial field dissipation data requirement for cyproconazole and support its use on turf.

The EFGWB currently has adequate data to determine that cyproconazole has laboratory derived mobility and persistence characteristics similar to other chemicals found in ground water. Therefore, the EFGWB is recommending a ground-water label advisory to be placed on the cyproconazole label. The following label language is appropriate:

"This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination."

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); $K_{d_{ads}}$ 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). $K_{d_{ads}}$ 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.

Reserved:

-166-1. Small Prospect.

-166-2. Small Retrosp.

ENVIRONMENTAL FATE ASSESSMENT AND GROUND WATER ASSESSMENT

Based upon data from acceptable studies cyproconazole has the following characteristics in common with those pesticides that are known to leach into ground water.

(1) A water solubility > 30 ppm (cyproconazole has a water solubility of 140 ppm).

(2) Stability to hydrolysis at pH's 5, 7, 9.

(3) Photodegradative half-life > 1 week (cyproconazole is stable to photodegradation in water and has a photodegradative half-life of > 37 days on a loam soil).

(4) Aerobic half-life > 2-3 weeks (cyproconazole has an aerobic half-life of > 1.5 years).

Cyproconazole has a number of characteristics in common with those pesticides known to leach to groundwater. Hydrolysis, photolysis, and aerobic soil data indicate that cyproconazole is very persistent, while the batch equilibrium and soil column leaching studies show cyproconazole to be moderately mobile in soils of low organic matter. Data from the terrestrial field dissipation studies demonstrated that cyproconazole essentially remains in the upper 0-10 cm layer of soil and exhibited varying half-lives of 21 through 192 days in the turf studies when comparing similar application rates/intervals, and 191 and 252 days in the bareground dissipation studies.

Cyproconazole is being registered for turf use and would be less likely to leach under turf use conditions due to the chemical and physical adsorption of the cyproconazole to the high organic matrix of the turf. However, because of the persistency of cyproconazole, and relative mobility in soils of low organic matter (<2.3% from batch equilibrium studies) other uses, ie. terrestrial food uses, etc., may increase the potential for groundwater contamination.

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 bl 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 DERS.

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: 164-1 Terrestrial Field Dissipation

MRID No: 42430701

Ali, S. Final Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in Oregon. Performing Contractors; Field Trial: Collins Agricultural Consultants, Inc. Hillsboro, Oregon. Analytical: Harris Environmental Technologies, Inc. Lincoln, Nebraska. Study Sponsor; Sandoz Crop Protection Corporation, 1300 East Touhy 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. Study MRID #42430701 is acceptable and can contribute towards satisfying the terrestrial field dissipation 164-1 data requirement for cyproconazole.
2. The half-life of cyproconazole 40 WG was calculated to be 252 days under field conditions in Hillsboro, Oregon after four biweekly applications at 0.878-0.987 bl/A which is 91.45-102.8% of the maximum application rate. The mean residue level in the 0-10 cm layer increased from 0.21 ppm post first application to 0.73 ppm on day 7 and then decreased gradually to 0.18 ppm on day 540 after the last application. Cyproconazole was detected in the 10-20 cm depth Post fourth application at a maximum 0.09 ppm at 2 months after treatment then decreased to the limit of detection at 24 months after treatment. There were occasional detections in the 20-30 cm depth at around the limit of detection 0.01-0.03 ppm and no detections in the 30-40 and 40-50 cm depths.

MATERIALS AND METHODS:

Cyproconazole (40 WG, Batch No. P. 89/0027/02) was applied at maximum application rate of 0.384 lb. a.i./acre/application at four biweekly applications, (9/26, 10/10, 10/24, and 11/7) representing the maximum number and shortest application interval to a silty clay loam, bare ground plot (16% sand, 56% silt, and 28% clay, O.M. 2.1%, pH 5.5, 0-1% slope) in Hillsboro, Washington County, Oregon. There was one untreated check plot and the depth to the water table at a distance 1000 feet from the treated plot was 45 feet. Applications were made with a 4 wheel Honda equipped with a rear mount boom. Soil samples were taken from the treated and untreated plot at before the first application then at days 3, 7, 14 and 1, 2, 3, 4, 6, 9, 12, 18 and 24 months after the last application. The five year crop and pesticide history was given as was the daily weather (as well as monthly weather data vs. 41 year averages) and meteorological conditions. Irrigation was used to supplement rainfall. Samples were stored frozen and shipped to Sandoz then to Harris Environmental Technologies for analysis (analysis was completed after 2-8 months of frozen storage). Samples were composited prior to analysis. To reduce variability in the 0-10 cm depth soil layer compositing was used in this layer at 6, 9, 12, and 18 month sampling intervals. Soil sample analysis was completed by hydrolyzing 20g subsamples of soil in 50 ml of 1N HCL for 1 hour at 95°C then the hydrolysates were cooled and extracted with ethanol. The filtrates were acidified with 1N HCL and cleaned up using reverse phase chromatography. Cyproconazole was then quantiated by G.C. equipped with nitrogen/phosphorus detector. The limit of detection was 0.01 ppm.

RESULTS:

1. The half-life of cyproconazole 40 WG was calculated to be 252 days under field conditions in Hillsboro, Oregon after four biweekly applications at 0.878-0.987 bl/A which is 91.45-102.8% of the maximum application rate (After the 9 month interim report, the half-life of cyproconazole was estimated at 213 days).
2. The mean residue level in the 0-10 cm layer increased from 0.21 ppm post first application to 0.73 ppm on day 7 and then decreased gradually to 0.18 ppm on day 540 after the last application. Cyproconazole was detected in the 10-20 cm depth Post fourth application at a maximum 0.09 ppm at 2 months after treatment then decreased to the limit of detection at 24 months after treatment. There were occasional detections in the 20-30 cm depth at around the limit of detection 0.01-0.03 ppm and no detections in the 30-40 and 40-50 cm depths. In the combined three 10 cm soil segments cyproconazole reached a maximum of 0.78 ppm on day 7, then decreased to 0.19 ppm after 24 months.
3. Cyproconazole was detected in the check plot at 0.01 ppm and 0.02 ppm in the 0-10 cm segments of samples corresponding to the post second application and 7 days after the last application samples, and at 0.02 and 0.03 ppm in the 10-20 cm segments of samples corresponding to the post fourth application and 14 days after the last application samples.
4. The study period had a total of 62.8 inches of rain, 11 inches below the average 41 year normal for the area. Irrigation supplemented rainfall during times of dry months and added an additional 9.4 inches of rainfall to the site.
5. Average recovery from spiked samples was $85.0 \pm 12.5\%$ (N=33).

DISCUSSION:

1. A previous storage stability study indicates that cyproconazole is stable to freezer storage in soil at below 20°F for periods up to 14 months.
2. The method of analysis was unspecific, but a previously submitted aerobic soil metabolism 162-1 study indicates that the only metabolite that should have been monitored for was triazolyl alanine (2-amino-3-(1-H1, 1, 2, 4-triazol-1-yl)

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propanoic acid (0.6% of applied radioactivity at day 365).

3. Study MRID #42430701 is acceptable and partially fulfills the Subdivision N guideline requirement on the terrestrial field dissipation 164-1 for cyproconazole.

RIN 0655-94 CYPROCONAZOLE REVIEWS

Page _____ is not included in this copy.

Pages 10 through 23 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.
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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.

DATA EVALUATION RECORD
DER 2

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: 164-1 Terrestrial Field Dissipation

MRID No: 42430702
Ali, S. Final Report on Dissipation and Mobility of Cyproconazole in Soil after Four Applications to Bare Ground in North Carolina, Performing Contractors; Field Trial: Agricultural Systems Associates Cary, North Carolina. Analytical: Harris Environmental Technologies, Inc. Lincoln, Nebraska. Study Sponsor; Sandoz Crop Protection Corporation, 1300 East Toughy Avenue, Des Plaines, Illinois 60018.

REVIEWED BY: Kevin L. Poff
Chemist EFGWB/EFED

Signature: *Kevin Poff*

Date:

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

Signature:

Date:

CONCLUSIONS:

1. Study MRID #42430702 is acceptable and can contribute towards satisfying the terrestrial field dissipation 164-1 data requirement for cyproconazole.
2. Cyproconazole exhibited a half-life of 160 days in a North Carolina silty-loam soil 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, although there were detections close to the limit of detection at pre first application at 0.02 ppm in the 10-20 cm layer, post second application at 0.02 ppm in the 10-20 cm layer, 3 days after last treatment (post fourth application) at 0.01 ppm in the 20-30 cm layer, 2 months after final treatment at 0.01 ppm in the 10-20 cm layer, and 24 months after final treatment at 0.01 ppm in the 10-20 cm layer.

MATERIALS AND METHODS:

Cyproconazole (40 WG, Batch No. P.89/0027/02) was applied at maximum application rate of 0.96 lb/acre (0.384 lb a.i./acre) four times at 14 days between each application starting on September 9 and ending on October 21, 1989 to a sandy loam (sand 58%, silt 30%, clay 12%, O.M. 2.0%, pH 5.5, <1% slope) bare ground plot in Hobgood, Halifax County, North Carolina. The trial consisted of 3 treated and 1 untreated plot and the depth to the water table was 10 feet in September. Applications were made using a backpack sprayer. Soil samples were taken from the treated and untreated plot at before the first application, after each application and on days 3, 7, 14 and 1, 2, 3, 4, 6, 9, 12, 18 and 24 months after the last application. The five year crop and pesticide history was given as was the daily weather (as well as monthly weather data vs. 30 year averages) and meteorological conditions. The test site received adequate rainfall and no irrigation was used at the site. Soil samples were kept frozen in freezers at temperatures -14 to -25°C until shipped to Sandoz where they were logged then shipped to Harris Environmental Technologies, Inc for analysis (analysis was completed within 8 months of collection). Samples were analyzed only to a depth of 30 cm up to 3 and 4 month sampling where they were taken to 60 and 90 cm depths respectively and were composited prior to analysis. Soil sample analysis was completed by hydrolyzing 20g subsamples of soil in 50 ml of 1N HCL for 1 hour at 95°C then the hydrolysates were cooled and extracted with ethanol. The filtrates were acidified with 1N HCL and cleaned up using reverse phase chromatography. Cyproconazole was then quantiated by G.C. equipped with nitrogen/phosphorus detector. The limit of detection was 0.01 ppm.

RESULTS:

1. Cyproconazole exhibited a half-life of 160 days in a North Carolina silty-loam soil after four applications at the maximum application rate for turf
2. Cyproconazole was essentially confined to the top 0-10 cm soil layer, although there were detections close to the limit of detection at pre first application at 0.02 ppm in the 10-20 cm layer, post second application at 0.02 ppm in the 10-20 cm layer, 3 days after last treatment (post fourth application) at 0.01 ppm in the 20-30 cm layer, 2 months after final treatment at 0.01 ppm in the 10-20 cm layer, and 24 months after final treatment at 0.01 ppm in the 10-20 cm layer.
3. The study period had a total of 108.07 inches of rain, 5.35 inches above the average 30 year normal for the area. The excess rainfall fell in the summer months of June, July and August where 11.98 inches of rain above normal fell.
4. Cyproconazole was detected at 0.02 and 0.03 ppm in the 10-20 cm soil segment collected from the untreated plot 3 days after the last application.
5. Mean cyproconazole recoveries from spiked soil samples at 0.05, 0.1, 0.2 and 0.5 ppm were $83.7 \pm 14.4\%$ (N=27)

DISCUSSION:

1. Positive GC (NPD) detections were noted at pre application intervals as well as detections in the check plot. These detections were more than likely a residual remanent of the somewhat recent use of a triazine containing herbicide (atrazine).
2. A previous storage stability study indicates that cyproconazole is stable to freezer storage in soil at below 20°F for periods up to 14 months.
3. The method of analysis was unspecific, but a previously submitted aerobic soil metabolism 162-1 study indicates that the only metabolite that should have been monitored for was triazolyl alanine (2-amino-3-(1-H1, 1, 2, 4-triazol-1-yl) propanoic acid (0.6% of applied radioactivity at day 365).

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4. Study MRID #42430702 is acceptable and partially fulfills the Subdivision N guideline requirement on the terrestrial field dissipation 164-1 for cyproconazole.

RIN 0655-94

CYPROCONAZOLE REVIEWS

Page _____ is not included in this copy.

Pages 27 through 36 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.
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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.

Environmental Fate & Effects Division
 PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
CYPROCONAZOLE

Last Update on October 29, 1992

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

LOGOUT	Reviewer:	Section Head:	Date:
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Common Name: CYPROCONAZOLE

Smiles Code:

PC Code # : 128993

CAS #: 94361-06-5

Caswell #:

Chem. Name : (α -(4-CHLOROPHENYL)- α -(1-CYCLOPROPYLETHYL)-1H-
 1,2,4-TRIAZOLE-1-ETHANOL

Action Type: FUNGICIDE

Trade Names: SAN 619 F

(Formul'tn): WETTABLE DISPERSABLE GRANULE 40%

Physical State:

Use : TURF
 Patterns :
 (% Usage) :
 :

Empirical Form: $15H_{18}1ON_3$
 Molecular Wgt.: 291.77 Vapor Pressure: 2.60E -7 Torr
 Melting Point : °C Boiling Point: °C
 Log Kow : pKa: @ °C
 Henry's : 7.10E-10 Atm. M3/Mol (Measured) 7.13E-10 (calc'd)

Solubility in ...					Comments
Water	1.40E	2	ppm	@25.0 °C	
Acetone	E		ppm	@ °C	
Acetonitrile	E		ppm	@ °C	
Benzene	E		ppm	@ °C	
Chloroform	E		ppm	@ °C	
Ethanol	E		ppm	@ °C	
Methanol	E		ppm	@ °C	
Toluene	E		ppm	@ °C	
Xylene	E		ppm	@ °C	
	E		ppm	@ °C	
	E		ppm	@ °C	

Hydrolysis (161-1)

[V] pH 5.0: STABLE 14 DAYS 80C
 [V] pH 7.0: STABLE 14 DAYS 80C
 [V] pH 9.0: STABLE 14 DAYS 80C
 [] pH :
 [] pH :
 [] pH :

Environmental Fate & Effects Division
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
CYPROCONAZOLE

Last Update on October 29, 1992

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

Photolysis (161-2, -3, -4)

[V] Water: STABLE 40 DAYS IN SUNLIGHT
[] : FOR 8-10 HRS/DAY
[] :
[] :

[V] Soil : >37 DAYS ON LOAM; SUNLIGHT
[] Air :

Aerobic Soil Metabolism (162-1)

[S] >1.5 YR VARIOUS SOILS
[V] > 693 days, loamy sand
[]
[]
[]
[]
[]

Anaerobic Soil Metabolism (162-2)

[]
[]
[]
[]
[]
[]
[]

Anaerobic Aquatic Metabolism (162-3)

[]
[]
[]
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[]

Aerobic Aquatic Metabolism (162-4)

[]
[]
[]
[]
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[]

Environmental Fate & Effects Division
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY
CYPROCONAZOLE

Last Update on October 29, 1992

[V] = Validated Study [S] = Supplemental Study [U] = USDA Data

Soil Partition Coefficient (Kd) (163-1)

- [V] In 5 soils ranging from sand to clay, organic matter from 0.0% to
- [] 11.4%, pH 5.1 to 7.4, K(ads) and 1/N values ranged from 1.3 to 17
- [] and 0.84 to 0.90 respectively.
- []
- []
- []

Soil Rf Factors (163-1)

- [V] IN AN ELUTION OF 42 CM LOAM,
- [] WITH 20" OF WATER IN 7 DAYS,
- [] <1% WAS IN THE LEACHATE AND
- [] 74% WAS IN TOP 6 CM
- []
- []

Laboratory Volatility (163-2)

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- []

Field Volatility (163-3)

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- []

Terrestrial Field Dissipation (164-1)

- [S] NON-DETECTABLE RESIDUES IN SOIL UNDER GRAPE VINES TREATED
- [] 4 TIMES AT 21 DAY INTERVALS, 5 G AIA.
- [V] 4 applications at 14 day intervals (0.381 lb/A) at 0-10cm depth
- [] max. con. reached 1.58 ppm on day 14 after the last application
- [] and declined to 0.33 ppm on day 350 after the last application.
- [] Calc. Half-life= 192 days.
- [V] (.381 lb ai/A) 4x's, 14 day intervals t1/2=21 days on turf.
- [V] (.381 lb ai/A) 4x's, 14 day intervals t1/2=252 days on bareground
- [V] (.381 lb ai/A) 4x's, 14 day intervals t1/2=160 days on bareground
- []

Aquatic Dissipation (164-2)

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- []
- []
- []

Forestry Dissipation (164-3)

- []
- []

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Long-Term Soil Dissipation (164-5)

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[]

Accumulation in Rotational Crops, Confined (165-1)

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[]

Accumulation in Rotational Crops, Field (165-2)

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[]

Accumulation in Irrigated Crops (165-3)

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[]

Bioaccumulation in Fish (165-4)

[V] BLUEGILL SUNFISH BCF AFTER EXPOSURE TO .24-.30 PPM FOR
[] 28 DAYS: EDIBLE 15 X; NONEDIBLE 59 X; WHOLE 34 X

Bioaccumulation in Non-Target Organisms (165-5)

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[]

Ground Water Monitoring, Prospective (166-1)

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Ground Water Monitoring, Small Scale Retrospective (166-2)

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[]

Ground Water Monitoring, Large Scale Retrospective (166-3)

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Ground Water Monitoring, Miscellaneous Data (158.75)

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[]
[]

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Field Runoff (167-1)

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Surface Water Monitoring (167-2)

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[]

Spray Drift, Droplet Spectrum (201-1)

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[]

Spray Drift, Field Evaluation (202-1)

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[]
[]
[]

Degradation Products

p-chlorobenzoic acid (photodeg.)
3-(4-chlorophenyl)-2-cyclopropyl-1-(1H-1,2,4-triazol-1-yl)-
1,3-butanediol (fish)
triazolyl alanine (2-amino-3-(1-H1,1,2,4-triazol-1-yl) propanoic
acid (aerobic soil metabolism)

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Comments

Limited data indicate that cyproconazole is not readily susceptible to leaching over periods of less than 14 months.

References: EFGWB REVIEWS
Writer : HN, KLP