

Shaughnessy No.: 122101

Date Out of EFGWB: JUN 20 1989

TO: S. Lewis/Stone, PM 21  
Registration Division (H7507C)

FROM: Emil Regelman, Supervisory Chemist  
Environmental Chemistry Review Section #2  
Environmental Fate and Ground Water Branch/EFED (H7507C)

THRU: Hank Jacoby, Chief (acting)  
Environmental Fate and Ground Water Branch/EFED (H507C)

Attached, please find the EFGWB review of . . .

Reg./File #: 100-617

Chemical Name: Propiconazole; 1-[2-(2,4-dichlorophenyl)4-propyl-1,3-  
dioxolan-2-ylmethyl]-1H-1,2,4-triazole.

Type Product: Fungicide

Product Name: Tilt

Company Name: Ciba-Geigy

Purpose: Review of aerobic and anaerobic aquatic metabolism studies.

Date Received: 3/10/89 Total Reviewing time (days): 1.3

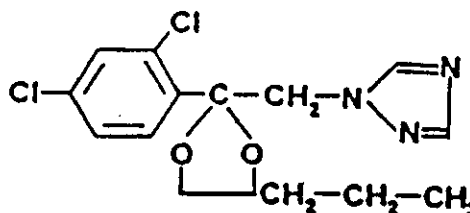
EFGWB # (s): 90416 Action Code: 400

Deferrals to: ☐ Ecological Effects Branch, EFED  
☐ Science Integration & Policy Staff, EFED  
☐ Non-Dietary Exposure Branch, HED  
☐ Dietary Exposure Branch, HED  
☐ Toxicology Branch 1, HED  
☐ Toxicology Branch 2, HED

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1. CHEMICAL:

Common Name: Propiconazole  
Chemical Name: 1-[2-(2,4-dichlorophenyl)4-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole  
Trade Names: Tilt; Embolden; Banner  
Company: Ciba-Geigy  
Structure:



Formulations: 3.6 lb/gal EC (Tilt) and 1.125 EC (Banner)

Physical/Chemical properties:

Empirical formula:  $C_{15}H_{17}O_2N_3Cl_2$   
Molecular weight: 341  
Physical state: pale liquid  
Boiling point: 180 deg. C. at 0.1 mm Hg  
Solubility: 110 ppm in water; well miscible with most organic solvents

2. STUDY/ACTION TYPE: Review of aerobic aquatic (§165-1) and anaerobic aquatic (§165-2) metabolism studies.

3. STUDY IDENTIFICATION:

Das, Y.T., 1987. Anaerobic aquatic soil metabolism of CGA-64250 (propiconazole). Unpublished study performed by Biospherics, Inc., Rockville, MD, and submitted by Ciba-Geigy Corp., Greensboro, NC. MRID 41013001

Das, Y.T., 1988. Aerobic aquatic soil metabolism of CGA-64250 (propiconazole). Unpublished study performed by Biospherics, Inc., Rockville, MD, and submitted by Ciba-Geigy Corp., Greensboro, NC. MRID 41013002

4. REVIEWED BY:

A. Reiter, Chemist  
Environmental Chemistry Review Section 2  
EFGWB/EFED/OPP

A. Reiter  
Date: June 15, 1989

5. APPROVED BY:

E. Regelman, Supervisory Chemist  
Environmental Chemistry Review Section 2  
EFGWB/EFED/OPP



Date: JUN 20 1989

6. CONCLUSIONS:

Both aquatic metabolism studies are found to be unsatisfactory and provide only supplemental data. In both studies there was too much variability to accurately assess the half-life of the parent propiconazole. Likewise, in both studies the single degradate detected was inadequately characterized. See Discussion of individual studies (Section 9) below for further detail.

7. RECOMMENDATION:

The registrant is advised that neither aquatic metabolism study meets the data requirement as set forth in the Subdivision N guidelines.

8. BACKGROUND:

A. Introduction:

Propiconazole is a broad spectrum foliar fungicide with systemic and eradivative properties registered for use on pecan trees (both bearing and nonbearing), wheat, barley, rye, and to grasses grown for seed.

The following environmental fate studies (and results) have been considered fulfilled by EFGWB:

- o hydrolysis (stable)
- o aqueous photolysis (rapid with sensitizers;  $t_{1/2} < 1$  day)
- o soil photolysis (none over 24 hr period)
- o aerobic soil metabolism ( $t_{1/2} = 10$  wks)
- o mobility, adsorption/desorption (tightly bound to soil)
- o mobility, column leaching (little propensity of both aged and non-aged residues to leach)
- o field dissipation,  $t_{1/2} < 1$  month in sandy loam soils.
- o fish accumulation (BCF 24X in muscle; depuration almost complete in 2 weeks).
- o field rotational crop accumulation. Considered fulfilled in EAB Memo of 3/23/87 for 3 standard crop groupings. Two major metabolites found to be taken up by plants: the alanine and acetic acid triazole conjugates. No rotational crop intervals were established at that time. Tolerances have been established on the crops appearing on the label.

The following environmental fate requirement has not been satisfied. The registrant was advised that these data are required in EAB memoranda of 6/20/86 and 5/18/87:

- o confined rotational crop accumulation

The following studies were required postregistration based upon a letter from the registrant to H. Jacoby dated 4/15/85:

- o aerobic aquatic metabolism
- o anaerobic aquatic metabolism.

The registrant estimated completion by September 1986. They have recently been received by EFGWB and are the subject of the current review.

B. Directions for use:

According to the approved label received by RD on 6/22/88 propiconazole may be applied at 0.11 to 0.22 lb ai/A in 20 gal of water per application to pecans (bearing); 0.11 to 0.15 lb ai/A to pecans (nonbearing) up to four applications per season; one application at 0.11 lb ai/A to wheat, barley, and rye; and, up to two applications at 0.16 to 0.275 lb ai/A on rice.

9. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

The follow studies received preliminary review by Dynamac Corp. and were return as unacceptable. A summary of the deficiencies found is included herein.

A. Anaerobic aquatic (§165-1) metabolism study (MRID 41013001)

1 - concentrations of parent propiconazole detected at various sampling intervals were too variable to accurately establish its  $t_{1/2}$  (Table 2). A registrant-calculated correlation coefficient of -0.84 was made from the initial six sampling intervals (days 0-21 posttreatment). There were also large differences in total radiolabeled residues in duplicate samples (e.g., days 1, 7 and 273, Appendix I).

2 - the only degradate (0.18 ppm) was only partially identified using TLC in a single solvent system.

B. Aerobic aquatic (§165-2) metabolism study (MRID 41013002)

1 - incomplete data (no analysis for day 10 water sample) and incomplete material balance at final sampling interval (only 79.6% at day 37) both significantly affect the calculated  $t_{1/2}$ .

2 - the only degradate (0.19 ppm) was only partially identified using TLC in a single solvent system.

10. COMPLETION OF ONE-LINER: updated with this review.

11. CBI APPENDIX: not applicable.