Shaughnessy No.: 122101

Date out EAB: 10 FEB 1984

#323 EE

To: Henry Jacoby
Product Manager #21
Registration Division (TS-767)

From: Samuel M. Creeger, Chief
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769c)

Attached, please find the EAB review of:

Reg./File No.: 100-617

Chemical: CGA-64250

Type Product: F

Product Name: TILT

Company Name: Ciba-Geigy

Submission Purpose: new use on pecans

ZBB Code: other

Action Code: 330

Date In: 12/19/83

EFB No.: 4131

Date Completed: 09 FEB 1984

TAIS (Level II)	Days
61	9

Deferrals To:

_____ Ecological Effects Branch

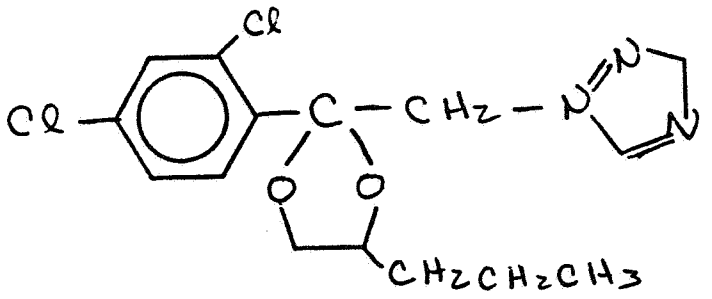
_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

Ciba-Geigy has submitted data in support of their application for the registration of CGA-64250, a fungicide, to be used on pecans. Acc. No. 072220-072225.

2.0 Tilt: Banner: CGA-64250
1-(2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl)methyl)-1H-1,2,4-triazole



3.0 DISCUSSION

CGA-64250 is a systemic fungicide with activity against pecan scab. It is applied at a rate of 0.34 lb ai/acre. A maximum of 2 lb ai/acre may be applied using up to six applications at 2-4 wk intervals.

3.1 For orchard use, the following studies are required for pesticide registration:

Hydrolysis
Water photodegradation
Soil photodegradation
Aerobic soil metabolism
Leaching/aged leaching
Soil field dissipation
Fish accumulation

3.2 In previous submissions Ciba-Geigy has satisfied a number of data requirements:

- Hydrolysis: Stable to hydrolysis.
  N. Burkhard: Rate of hydrolysis of CGA-64250 under laboratory conditions. 1/30/80; Acc. No. 244269; reviewed: 6/17/81.

- Water photodegradation: Rapid with sensitizers - $t_{1/2} < 1$ day.
  G. Miller: Photochemistry of CGA-64250. Acc. No. 244269; reviewed: 6/17/81.

- Soil photodegradation: No degradation over 24 hr time period.
  N. Burkhard: Photolysis of CGA-64250 on soil surface under artificial sunlight conditions. 3/24/80; Acc. No. 244269; reviewed 6/17/81.

- Aerobic soil metabolism: $t_{1/2}$ = 10 weeks.
  A. Keller: Degradation of CGA-64250 (Tilt) in soil under aerobic, aerobic/anaerobic and sterile/aerobic conditions. 6/24/80; Acc. No. 244269; Reviewed 6/17/81.

- o Mobility studies
  Adsorption/desorption: Tightly bound to soil.
  N. Burkhard: Adsorption and desorption of CGA-64250 in various soil types. 8/14/80; Acc. No. 244269; reviewed 6/17/81.

  Soil column: Little propensity to leach
  J. Gouth: Leaching model study with the fungicide CGA-64250 in farm standard soils. 8/27/78; Acc. No. 244269; reviewed 6/17/81 and 10/14/81.

  Aged leaching: Low leaching potential.
  A. Keller: Leaching characteristics of aged ^{14}C-CGA-64250 residues in two standard soils. 11/14/79; Acc. No. 244269; reviewed 6/17/81.

- o Fish accumulation; In muscle tissue BCF 24x; depuration almost complete in 14 days.
  EG and G, Bionomics Aquatic Toxicology Laboratory of Wareham, MA: Accumulation and elimination of ^{14}C-residues by bluegill sunfish (Lepomis Macrochivies) exposed to ^{14}C-CGA-64250. December, 1980. Acc. No. 245708; reviewed 10/14/81.

The following study was found unacceptable:

Soil field dissipation

In this study (actually several small studies under Acc. No. 250783, reviewed 10/21/83) CGA-64250 was found persistent with $t_{1/2}$ ranging from 96-306 days and to have a tendency to leach at least to the 12-18 inch level. These studies were found unacceptable, because storage stability data, climatic data, and degradation products found (if any) were not reported.

3.3 In this current submission, six volumes of data were presented to EAB for review. The status of the review for each volume (with its own Acc. No.) is given below. In some cases abbreviated titles of studies are given.

3.3.1 Acc. No. 072220, Vol. 1 of 6

Ref 1 Nixon et al: Environmental impact statement, 1981. Acc. No. 244269 - 244270. Presents environmental overview.

Ref 2 Rhoades: Isolation and identification of photolysis products of CGA-64250, 1982. Shorter halflives for both sensitized and unsensitized solutions than reported and reviewed before (see section 3.2 this review).

Ref 3 Honeycutt: Laboratory and field soil metabolism studies. A review of previously submitted studies. Studies referenced were found incomplete when reviewed by EAB. (Reviewed 10/21/83 Acc. No. 250783; see section 3.2 this review).

Ref 4 Honeycutt: Environmental fate and toxicology of 1,2,4-Htriazole, 1983. Summary is given under Acc. No. 072223 (Vol. 4 of 6).

Ref 5 Keller: Degradation in aerobic soil. 8/27/79. Half-life of CGA-64250 under these conditions in about 10 weeks. This study not reviewed. Another similar study reviewed previously. (See section 3.2 this reivew and Ref 7 below).

Ref 6 Keller: Degradation in two German standard soils under laboratory conditions. 8/28/79. Reviewed 10/21/83; Acc. No. 250783.

Ref 7 Keller: Degradation in soil under aerobic, aerobic/anaerobic and sterile/aerobic conditions. 6/24/80. Reviewed 6/17/81; Acc. No. 244269.

Ref 8-10 Reviewed 10/21/83. Acc. No. 250783.

Ref 11 Mumma: Effect of Tilt on nitrogen fixation. 1/12/82. Not required, not reviewed.

3.3.2 Acc. No. 072221 Vol. 2 of 6

Ref 12-38 These contain residue chemistry and ecological effects data as well as data for field studies referenced above and previously reviewed.

3.3.3 Acc. No. 072222 Vol. 3 of 6

Ref 39-42 Exposure studies for use in pecans, grass grown for seed, rice and soybeans. Not reviewed at this time since risk assessment is currently not needed. These studies are not required by EAB for registration.

Ref 43-45 Journal articles concerning exposure during reentry of treated fields. Used to support exposure studies above.

Ref 46 Thompson: ABC report #27570, Residue bioconcentration of CGA-64250 by catfish in a static aquatic system. 4/22/82.

This study was recommended in a review dated 2/24/82 by S. Creeger to support rotation of rice treated with Tilt to fish farming. This study will not be reviewed at this time since it does not relate to current submission for use on pecans.

Ref 47-51 These references deal with potential exposure to nontarget organisms. Not reviewed, deferred to EEB for review.

Ref 51 Ross: Stability of resdiues under freezer storage conditions in crop samples. Not reviewed, deferred to RCB for review.

3.3.4 Acc. No. 072223 Vol. 4 of 6

Ref 1-24 This volume is concerned with the environmental fate and toxicology of 1,2,4-H-triazole, the major metabolite of CGA-64250.

This data, not thoroughly reviewed since not directly required by environmental fate guidelines, are summarized:

1,2,4-H-triazole: 1) does not hydrolyze
2) does not photolyze
3) leaches
4) persistent in soil

3.3.5 Acc. No. 072224 Vol. 5 of 6

This volume repeats the pecan worker exposure study in Vol. 3 and provides hard copy of all references listed in the study. This study will not be reviewed until a risk assessment is needed.

3.3.6 Acc. No. 072225 Vol. 6 of 6

This volume repeats the worker exposure studies in grass grown for seed and rice and provides hard copy of all references listed in the studies (see Vol. 3).

These studies will not be reviewed until a risk assessment is needed.

4.0 CONCLUSION and RECOMMENDATION

With the exception of a field dissipation study on American soil, the data requirements for use of CGA-64250 have been satisfied. The environmental fate of this fungicide is, with the exception noted, reasonably well defined. CGA-64250 appears to be stable to hydrolysis, soil photolysis, metabolizes slowly aerobically, becomes tightly bound to soil and is relatively persistent near the soil surface. It accumulates in fish to a moderate extent but the rate of depuration is rapid.

The main metabolite is 1,2,4-H-triazole. Its environmental fate (not thoroughly reviewed) indicates that it does not hydrolyze or photolyze in water, but can leach and will remain persistent in soil.

A recent phone conversation with the registrant (1/20/84, C. Fletcher) discussed the field dissipation study. To summarize, a field study already underway will define, with adequate sampling and analysis for both parent and metabolite to depths sufficient to define extent of leaching, the dissipation characteristics of CGA-64250. In addition, climatic data and storage stability data should be included.

EAB concurs with the conditional registration of this fungicide pending completion and review of the field study.

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EAB/HED