

US EPA ARCHIVE DOCUMENT

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Date out of EAB: ~~12/1/83~~

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Environmental Chemistry Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769C)

Attached please find the EAB fate review of...

Reg./File No.: 100-617

Chemical: CGA-64250

Type Product: F

Product Name: Tilt

Company Name: Ciba Geigy

Submission Purpose: HEA Review

ZBB Code: ?

ACTION CODE: 315

Date in: 9/2/83

EAB #: 3546

Date Completed: 1/4/84

TAIS (levels II) Days

Deferrals To:

 Ecological Effects Branch

 Residue Chemistry Branch

 X Toxicology Branch

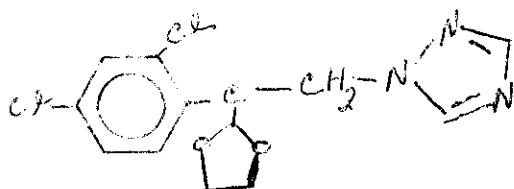
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1.0 INTRODUCTION

Ciba-Geigy has submitted an exposure evaluation for the use of Tilt® for sugarcane seed piece treatment.

2.0 Tilt: CGA - 64250

1-(2-(2,4-dichlorophenyl) 4-propyl-1,3 - dioxolan - 2 -yl methyl) - 1H - 1,2,4 - triazole.



3.0 DISCUSSION

The following exposure situations were considered:

1. Mixer/Loader for sugarcane seed treatment.
2. Planter of sugarcane seed.
3. Clean - up personnel for sugarcane seed treatment.

3.1 Mixer/Loader for sugarcane seed piece treatment.

A. Use Pattern Information

1. Application rate: 0.021 lb ai/100 gallons of water as a dip (25 ppm).
2. Exposure time 25 hrs/yr. Tilt is added to tank daily - 300 days/yr - 5 min/day
3. Mixer/loader wears rubber gloves and long sleeved shirt (compound is a potential skin sensitizer).

B. Calculations

When a worker wore rubber gloves and a long sleeved shirt, dermal exposure was 0.23 mg/hr, using data for mixer/loaders from the field exposure studies on pecans (Tilt - 3.6E Honeycutt, R.C. 1983). Inhalation exposure is negligible.

Daily Exposure

$$0.23 \text{ mg/hr} \times 5 \text{ min/day} \times \frac{1 \text{ hr}}{60 \text{ min}} = 0.02 \text{ mg/day.}$$

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Annual Exposure

$$0.02 \text{ mg/day} \times 300 \text{ days year} = 6 \text{ mg/yr}$$

Lifetime Daily Exposure

$$6 \text{ mg/yr} \times \text{yr}/365 \text{ days} \times 40 \text{ yr}/70 \text{ yr} = 0.0094 \text{ mg/day}$$

3.2 Planter

We are unable to estimate exposure to planters as we have no appropriate model.

3.3 Clean-up personnel for sugarcane seed treatment.

A. Exposure Information

1. Dermal exposure is negligible.
2. Inhalation exposure is calculated based on the vapor pressure of the compound, the ideal gas law and the breathing rate of the individual performing the task.
3. Assume a thin film of liquid covers bottom and sides of a 1600 ft³ (45,340 liters) bin [8 ft x 30 ft x 6.67 ft].
4. The vapor pressure of tilt is $< 3 \times 10^{-6}$ mm/hg.
5. The breathing rate of an average man is 1.2×10^3 liters/hr.
6. Workers perform chores 12 times/yr - 3 hr/time.

B. Calculation

Hourly Exposure

$$PV = n RT$$

$$N = \frac{3 \times 10^{-6}}{760} \times \frac{45,340}{0.0821 \times 293} = 7.4 \times 10^{-6} \text{ moles}$$

$$\frac{7.4 \times 10^{-6} \text{ moles}}{45,340 \text{ liters}} \times \frac{342.2 \times 10^3 \text{ mg}}{\text{moles}} = 5.5 \times 10^{-5} \frac{\text{mg}}{\text{liter}}$$

$$5.5 \times 10^{-5} \text{ mg/liter} \times 1.2 \times 10^3 \text{ liters/hr} = 6.6 \times 10^{-2} \text{ mg/hr.}$$

Daily Exposure

$$6.6 \text{ mg/hr} \times 3 \text{ hr/day} = 19.8 \text{ mg/day.}$$

Annual Exposure

$$19.8 \text{ mg/day} \times 12 \text{ day/yr} = 237.6 \text{ mg/yr.}$$

Lifetime Daily Exposure

$$237.6 \text{ mg.yr} \times \text{yr}/365 \text{ days} \times 40 \text{ yr}/70 \text{ yr} = 0.33 \text{ mg/yr}$$

4.0 CONCLUSIONS AND RECOMMENDATIONS

The numbers generated by Ciba-Geigy have the following problems:

No estimate of exposure can be made for planters although EAB agrees with Ciba-Geigy that exposure would be low.

Ciba - Geigy assumes a 50 year work life for a 70 year lifetime. EPA generally uses a 40 year work life for a 70 year lifetime.

A dermal absorption of 24% was assumed. EAB defers to Tox Branch on this assumption and on the risk assessment.

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