UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

JUN 27 1994

MEMORANDUM

SUBJECT: REVISED (LESS THAN LIFETIME) EXPOSURE ASSESSMENT FOR THE USE OF RH-7592 2F (FENBUCONAZOLE) ON PECANS

TO: Cynthia Giles-Parker, Product Manager 22
Fungicide-Herbicide Branch
Registration Division (7509C)

FROM: Arthur O. Schlosser, Chemist Arthur O. Schlosser
Special Review and Registration Section II

THRU: Mark Dow Ph.D. Section Head
Special Review and Registration Section II

Larry Dorsey, Chief
Occupational and Residential Exposure Branch
Health Effects Division (7509C)

Please find below review of:

DP Barcode: D202558

Pesticide Chemical Code: 129011

EPA Reg. No.: 707-231

EPA MRID No.: None

PHED: YES Version 1.01 PHED: Mixer/loader Run #11; Applicators, air-blast run #2; Applicator, aerial run #10.

I INTRODUCTION:

A. Background:

Registration Division (RD) has requested short and intermediate term occupational exposure assessments for the use of fenbuconazole on pecans. OREB has already provided an exposure assessment for this use and active ingredient for cancer risk (DP Barcode D199578, A. Schlosser/OREB to N. Gray/CCB, March 8, 1994). The present short/intermediate term exposure assessment will include much of the input information from the previous assessment for cancer risk.

The toxicology concerns for this assessment are based on information found in the Meeting Minutes of the Less than Lifetime Committee, April 4, 1994 (copy appended to this review). For short term exposure the endpoint of concern is the developmental NOEL of 30 mg/kg/day. For intermediate term exposure the endpoint of concern is the NOEL of 1.3 mg/kg/day from a 90 day oral toxicity study in rats. A dermal absorption of 12.35% is reported.

Personal Protective Equipment (PPE)- Applicators and other handlers must wear: Long-sleeved shirt and long pants. Shoes and socks. Waterproof gloves. Protective eyewear. Chemical-resistant headgear for overhead exposure. A notation included with this request for exposure assessment states that the label has been reviewed and accepted for Worker Protection Standard requirements.

B. Purpose:

Assessment of short and intermediate term exposure to applicators treating pecans with the protective fungicide RH-7592 2F (fenbuconazole).

II DETAILED CONSIDERATIONS:

OREB uses the assumptions given below and the Pesticide Handlers Exposure Database, Version 1.01 (PHED) to develop the exposure assessments for the use of fenbuconazole on pecans.

Ground Equipment

Application rate taken as 0.125 lb ai/acre.
Eight applications per year.
24 acres treated per day
Unit of exposure for mixer/loader = 13.7 μg/lb ai handled
Unit exposure for air blast application = 326 μg/lb ai applied

Aerial Equipment

Application rate 0.125 lb ai/acre.
Eight applications per year.
87 acres treated per day
Unit of exposure for mixer/loader = 13.7 μg/lb ai handled
Unit exposure for applicator = 6.4 μg/lb ai applied

The Worker Protection Standard (WPS) for any agricultural pesticide is as a minimum: long pants,long-sleeved shirt, shoes and socks. The RH-7592 label specifies use of waterproof gloves and protective eyewear. See appendix for calculations.

A total of eight applications at 10 to 14 day intervals may be applied with a maximum of 1.0 lb ai/acre per season. Therefore, the 1.0 lb maximum can be applied within a 90 day period.

III CONCLUSIONS/RECOMMENDATIONS

OREB estimates exposure values shown in Table I for the application of the protective fungicide, RH-7592 2F, containing the active ingredient, fenbuconazole, to pecans. Estimates are for short term and intermediate term (90 days) exposures to mixer/loaders and applicators using air-blast ground equipment and fixed-wing aircraft. The intermediate health effect is assumed to be reversible and not cumulative from year to year. The values given are not corrected for the reported dermal absorption of 12.35%

TABLE I. Worker Exposure to Fenbuconazole from Application of the Fungicide, RH-7592 2F, to Pecans.

TASK	Short Term Exposure mg/kg/day	Intermediate Term Exposure mg/kg/day
Ground Application		
Mixer/Loader	6.9×10^{-4}	5.2×10^{-5}
Applicator	1.6×10^{-2}	1.2×10^{-3}
Aerial Application		
Mixer/Loader	2.5×10^{-3}	1.9×10^{-4}
Applicator	1.2×10^{-3}	8.8×10^{-5}

Short term exposures are for one day (maximum application rate). Intermediate term exposures are the daily average for 90 days.

Estimates are based on all workers wearing long pants, long-sleeved shirt, shoes and socks. All workers except the aerial applicators wore gloves.

Based on the recommended Pre-Harvest Interval of 28 days, significant post-application exposure to harvesters is expected to be unlikely.

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APPENDIX

GROUND APPLICATION-

MIXER/LOADER-open loading, wearing gloves

Worker body weight is taken as 70 Kg (60 kg for developmental effects).

Short term exposure-one day (high exposure) for developmental effects. Application rate taken as 0.125 lb ai/acre.

24 acres/day x 0.125 lbs ai/acre x 13.7 µg/lb ai handled = 41 µg/day. 41 µg/day ÷ 60 kg bw = 0.69 µg/kg/day = 6.9×10^{-4} mg/kg/day.

Intermediate term exposure-

Eight applications/year permitted at intervals of 10 to 14 days. Maximum dosage is one lb ai/acre per year. For intermediate term (90 days), exposure to one pound of active ingredient per acre treated is assumed.

24 acres treated x 1.0 lbs ai/acre/90 day period x 13.7 µg/lb ai handled = 329 µg/90 day period
329 µg/90 day period ÷ 90 days = 3.7 µg/day (90 day average)
3.7 µg/day ÷ 70kg = 0.052 µg/kg/day = 5.2×10^{-5} mg/kg/day (average for 90 days).

APPLICATOR-air blast, wearing gloves

Worker body weight is taken as 70 Kg (60 kg for developmental effects).

Short term exposure-one day (high exposure) for developmental effects. Application rate taken as 0.125 lb ai/acre.

24 acres/day x 0.125 lbs ai/acre x 326 µg/lb ai handled = 978 µg/day. 978 µg/day ÷ 60 kg bw = 16 µg/kg/day = 1.6×10^{-2} mg/kg/day.

Intermediate term exposure-

Eight applications/year permitted at intervals of 10 to 14 days. Maximum dosage is one lb ai/acre per year. For intermediate term (90 days), exposure to one pound of active ingredient per acre treated is assumed.

24 acres treated x 1.0 lbs ai/acre/90 day period x 326 μg/lb ai handled = 7800 μg/90 day period
7800 μg/90 day period ÷ 90 days = 87 μg/day (90 day average)
87 μg/day ÷ 70kg = 1.2 μg/kg/day = 1.2×10^{-3} mg/kg/day (average for 90 days)

AERIAL APPLICATION-

Mixer/loader-open loading, wearing gloves

Worker body weight is taken as 70 Kg (60 kg for developmental effects).

Short term exposure-one day (high exposure) for developmental effects. Application rate taken as 0.125 lb ai/acre.

87 acres/day x 0.125 lbs ai/acre x 13.7 μg/lb ai handled = 149 μg/day. 149 μg/day ÷ 60 kg bw = 2.5 μg/kg/day = 2.5×10^{-3} mg/kg/day.

Intermediate term exposure-

Eight applications/year permitted at intervals of 10 to 14 days. Maximum dosage is one lb ai/acre per year. For intermediate term (90 days), exposure to one pound of active ingredient per acre treated is assumed.

87 acres treated x 1.0 lbs ai/acre/90 day period x 13.7 μg/lb ai handled = 1200 μg/90 day period
1200 μg/90 day period ÷ 90 days = 13 μg/day (90 day average)
13 μg/day ÷ 70kg = 0.19 μg/kg/day = 1.9×10^{-4} mg/kg/day (average for 90 days).

APPLICATOR-fixed wing aircraft

Worker body weight is taken as 70 Kg (60 kg for developmental effects).

Short term exposure-one day (high exposure) for developmental effects. Application rate taken as 0.125 lb ai/acre.

87 acres/day x 0.125 lbs ai/acre x 6.4 μg/lb ai handled = 70 μg/day. 70 μg/day ÷ 60 kg bw = 1.2 μg/kg/day = 1.2×10^{-3} mg/kg/day.

Intermediate term exposure-

Eight applications/year permitted at intervals of 10 to 14 days. Maximum dosage is one lb ai/acre per year. For intermediate term

(90 days), exposure to one pound of active ingredient per acre treated is assumed.

87 acres treated x 1.0 lbs ai/acre/90 day period x 6.4 µg/lb ai handled = 557 µg/90 day period
557 µg/90 day period ÷ 90 days = 6.2 µg/day (90 day average)
6.2 µg/day ÷ 70kg = 0.088 µg/kg/day = 8.8×10^{-5} mg/kg/day (average for 90 days).

REFERENCES

(1) Fenbuconazole: Quantitative Risk Assessment, Two-Year Rat (Charles River Sprague-Dawley, MRID Nos. 416353-01 & 416353-02) Dietary study. (B. Fisher SAB/HED to S, Williams Tox II/HED, 2/2/94)

CC: A.Schlosser, OREB
Nan Gray, CCB
Chemical file- fenbuconazole/129011
Correspondence