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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MAR 8 1994

MEMORANDUM

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

TO: Nan Gray, Chemical Coordinator
Chemical Coordination Branch (7509C)

FROM: Arthur O. Schlosser, Chemist
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: D199578

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:

Fenbuconazole is a protective fungicide recommended for use on pecans for the control of a variety of plant diseases. The product name is RH-7592 2F. Application is recommended at 6 to 8 fluid oz. (0.09 to 0.125 lb active) per acre using either ground or aerial equipment. Label restrictions include: (1) Do not make more than eight applications per season. (2) Do not apply after shuck split or within 28 days of harvest. (3) Do not apply more than 2 quarts (1 lb. active) per acre per season.

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.

A unit risk, Q_1^* of 1.65 x 10-2 $(mg/kg/day)^{-1}$, was calculated for fenbuconazole based upon male rat thyroid follicular cell tumor rates (1).

B. Purpose:

Registration Division (RD) requests an exposure assessment for the use of the protective fungicide RH-7592 2F (fenbuconazole) on pecans.

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 0.108 lb ai/acre (average of recommended range-0.09 to 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 applicator = 325.98 µg/lb ai applied

Aerial Equipment

Application rate 0.108 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

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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.

III CONCLUSIONS/RECOMMENDATIONS

OREB estimates the following potential exposure values for the application of the protective fungicide, RH-7592 2F, containing the active ingredient fenbuconazole to pecans. Estimates are for Average Daily Exposure (ADE) to mixer/loaders and applicators using air-blast ground equipment and fixed-wing aircraft.

GROUND APPLICATION-Air Blast

Mixer/loader-open pour.....1.1×10^{-5} mg/kg/day.

Applicator-open cab..... 2.6×10^{-4} mg/kg/day.

AIR APPLICATION-Fixed Wing

Mixer/loader-open pour.....4.0×10^{-5} mg/kg/day.

Applicator-(pilot)..... 1.9×10^{-5} mg/kg/day.

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.

APPENDIX

Ground application-

Mixer/loader-open loading, wearing gloves

Worker body weight is taken as 70 Kg.

24 acres/day x 0.108 lbs ai/acre x 13.7 μg/lb ai handled = 35.5 μg/day ÷ 70 kg bw = 0.51 μg/kg/day

8 applications/year x 0.51 μg/kg/day = 4.1 μg/kg/year

Average Daily Exposure = 4.1 μg/kg/year ÷ 365 days/year = 0.011 μg/kg/day = 1.1×10^{-5} mg/kg/day.

Applicator-air blast, wearing gloves

24 acres/day x 0.108 lbs ai/acre x 326 μg/lb ai handled = 845 μg/day ÷ 70 kg bw = 12 μg/kg/day

8 applications/year x 12 μg/kg/day = 96 μg/kg/year

Average daily exposure = 96 μg/kg/year ÷ 365 days/year = 0.26 μg/kg/day = 2.6×10^{-4} mg/kg/day.

Aerial application-

Mixer/loader-open loading, wearing gloves

Worker body weight is taken as 70 Kg.

87 acres/day x 0.108 lbs ai/acre x 13.7 μg/lb ai handled = 129 μg/day ÷ 70 kg bw = 1.8 μg/kg/day

8 applications/year x 1.8 μg/kg/day = 15 μg/kg/year

Average daily exposure = 14 μg/kg/year ÷ 365 days/year = 0.040 μg/kg/day = 4.0×10^{-5} mg/kg/day.

Applicator-fixed wing

87 acres/day x 0.108 lbs ai/acre x 6.4 μg/lb ai handled = 60 μg/day ÷ 70 kg bw = 0.86 μg/kg/day

8 applications/year x 0.86 μg/kg/day = 6.9 μg/kg/year

Average daily exposure = 6.9 μg/kg/year ÷ 365 days/year = 0.011 μg/kg/day = 1.9×10^{-5} mg/kg/day.

REFERENCES

(1) Febuconazole: 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)

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Chemical file- fenbuconazole/129011
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