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

JUL 8 1993

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: REVIEW OF EXPOSURE DATA SUBMITTED IN SUPPORT OF MAT
7484 TECHNICAL AND AZTEC 2.1% GRANULAR INSECTICIDE
(PHOSTEBUPIRIM/CYFLUTHRIN). USE ON CORN

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Please find below the OREB review of:

DP Barcode: D192483

Pesticide Chemical Code: 128831

EPA Reg. No.: 3125-URR and 3125-URE

EPA MRID No.: NONE

PHED: NO

I. INTRODUCTION:

Chemical Coordination Branch (CCB) requests an estimate of worker exposure to cyfluthrin one of the active ingredients in the product, AZTEC 2.1G. OREB has previously made an exposure assessment for the other active ingredient in this product, the new chemical, phostebupirim (OREB review-D189956, 6/2/93). AZTEC 2.1 contains 2.0% phostebupirim and 0.1% cyfluthrin. Inhalation developmental toxicity has been identified as a possible health effect of concern. AZTEC 2.1 is a granular formulation insecticide that will be applied at a maximum rate of 0.16 lbs total a.i./acre at planting time using band or in-furrow application. This exposure assessment is based on many of the assumptions used for the exposure assessment for phostebupirim.

A. Background:

An exposure assessment has already been made for the other active ingredient in this product, namely, phostebupirim.

B. Purpose:

Estimate exposure of handlers to cyfluthrin when AZTEC 2.1G is used as a soil insecticide on corn.

II. DETAILED CONSIDERATIONS

An exposure assessment for cyfluthrin can be made based on the previous OREB exposure assessment for phostebupirim since both chemicals are present in the same product. AZTEC contains 2.0% phostebupirim and 0.1% cyfluthrin. Since the possible tox endpoint of concern for cyfluthrin is developmental toxicity, the worker body weight used for exposure calculation will be 60 Kg instead of 70 Kg. (See APPENDIX for assumptions and calculations).

III CONCLUSIONS/RECOMMENDATIONS

OREB estimates exposure to cyfluthrin for mixer/loader/applicators from the use of AZTEC 2.1G on corn as given below.

Daily Exposure to Mixer/loader/applicator of Cyfluthrin			
Typical Exposure- $\mu\text{g}/\text{kg}/\text{day}$		High Range Exposure- $\mu\text{g}/\text{kg}/\text{day}$	
Dermal	Inhalation	Dermal	Inhalation
0.066	0.01	0.13	0.02

These estimations are for workers wearing coveralls for all tasks and gloves for mixing and loading. If conditional registration is granted based on the above exposure estimations, the label must require coveralls and gloves as indicated above.

Since significant post-application exposure is not expected from the proposed use on corn, reentry data will not be required.

APPENDIX

Estimation of exposure to mixer/loader/applicators of a granular insecticide formulation using surrogate data found in the following literature study; Farm Worker Exposure to Terbufos [phosphorodithioic acid, S-(tert-butylthio)methyl O,O-diethyl ester] During Planting Operations of Corn, Arch. of Environ. Contam. Toxicol. 15, 113-119, 1986.

Application: At-planting treatment of granular insecticide, terbufos (COUNTER 15G), to corn. This can be considered as a reasonable surrogate for (AZTEC 2.1) use. In the study cited above, the body areas used by the investigators for exposure estimation were not exactly the same as those recommended in Subdivision U. They are about 10% lower. Also, hand exposure was estimated from lower arm data. However, the OREB assessment will tend to compensate for this by assuming a maximum application rate and a higher number of acres treated per day.

Number of replicates: 11

The same individual performs mixing/loading and application tasks.

Worker body weight is taken as 60Kg.

Workers wear coveralls for all tasks and gloves for mixing and loading.

Closed cabs were used in four replications, however, this did not appear to reduce worker exposure.

Unit dermal exposure was estimated as 72 $\mu\text{g/hr}$ and unit inhalation exposure was estimated as 11 $\mu\text{g/hr}$ at an application rate of 1.3 lbs ai/acre and treatment of 17 hectares or 42 acres per day..

For purposes of this assessment, OREB will assume treatment of 50 acres per day to be typical and 100 acres per day as a reasonable worst case maximum.

The maximum application rate for AZTEC 2.1G gives an equivalent of 0.0075 lbs cyfluthrin/acre.

CALCULATIONS:

Typical average daily dermal exposure to cyfluthrin for mixer/loader/applicator of AZTEC 2.1 = $72 \mu\text{g/hr} \times (0.0075 \text{ lbs ai/acre} \div 1.3 \text{ lbs ai/acre}) \times (50 \text{ acres/day} \div 42 \text{ acres/day}) \times 8 \text{ hours exposure/day} \div 60 \text{ kg Bw}$
 = 0.066 $\mu\text{g/kg/day}$.