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

JAN 14 1994

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM:

SUBJECT: CYFLUTHRIN AND beta-CYFLUTHRIN INHALATION EXPOSURE ASSESSMENT

FROM: Bruce F. Kitchens, Chemist Bruce F. Kitchens

TO: Karen Hammernick, Toxicologist
Toxicology Branch I
Health Effects Division 7509C

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

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

Please find below, the OREB review of:

DP Barcode: D196654

Pesticide Chemical Code: 128831

EPA Reg. No.: N/A

EPA MRID No.: N/A

Review Time: 3 days

PHED: YES: Version 1.01 Run # 14

I. INTRODUCTION:

A. Background:

Toxicology Branch I requests an inhalation exposure assessment be conducted on the active ingredients cyfluthrin and beta-cyfluthrin. The tox endpoint of concern is inhalation developmental toxicity with a maternal NOEL of 0.0011 mg/l and a developmental NOEL of 0.00059 mg/l. Cyfluthrin is a tox category II compound for acute inhalation toxicity.

Cyfluthrin is the active ingredient in the following formulations:

- Tempo®10WP insecticide (10% a.i.)
- Tempo®10WP insecticide in packets (10% a.i.)
- Tempo®1 insecticide (1 lb ai/gal)

Cyfluthrin is a synthetic pyrethroid used as an insecticide for broad spectrum control of crawling and flying insects. Use sites include but are not limited to buildings and structures and their immediate surroundings and on various modes of transport. The maximum application rates for Tempo® 10WP insecticide and Tempo® 10WP insecticide in packets is 19 g/1000 sq.ft under heavy pest pressure. The maximum application rate for Tempo® 1 insecticide is 16 ml/1000 sq.ft. under heavy pest pressure.

Each of the Tempo® formulations is applied with hand pressurized or power operated sprayers. Applications can be made to walls, floors, ceilings, in and around cupboards, between, behind, and beneath equipment, appliances, around floor drains, window and door frames, on the undersides of shelves, drawers and in similar areas. Applications may also be made to floor surfaces along walls and around air ducts, however, do not treat entire area of floor or floor covers

B. Purpose:

This assessment estimates the mixer/loader/applicator inhalation exposure expected from the specified use of the previously mentioned Tempo® formulations.

II. DETAILED CONSIDERATIONS:

This exposure assessment is conducted on cyfluthrin since its chemical structure is similar to beta-cyfluthrin's chemical structure. The PHED exposure scenario used in calculating inhalation exposure consists of a low pressure hand wand treatment in which the mixer/loader and the applicator are the same individual. The Personal Protective Equipment (PPE) worn by the mixer/loader/applicator (M/L/A) are:

- long sleeved shirt
- long pants
- gloves

Of the three labels submitted to OREB, Tempo® 10WP insecticide and Tempo® 10WP insecticide in packets allow the most active ingredient to be dispensed by the M/L/A during a treatment period. Consequently, the calculations will be based on the wettable powder.

Calculations :

OREB uses the following assumptions to calculate inhalation exposure estimates.

Table 1. Assumptions

No. of Applications	1
M/L/A weighs	60 kg
Max application rate	19 g/1000 sq ft
PHED unit exposure	30 µg/lb ai handled
Area treated	400 ft^2 (20' x 20')
Application method	Hand wand low press.

Application Rate :

19 g/1000 ft^2 x 10% a.i. = 1.9 g ai/1000 ft^2

Amount Handled per Treatment :

400 ft^2 x 1.9 g ai/1000 ft^2 x 1 lb/454 g = 0.002 lb ai

Calculations :(con't)

Mixer/loader/applicator Inhalation Exposure is :

30 μg/lb ai x 0.002 lb ai ÷ 60 kg = 1×10^{-6} mg/kg/day

III. CONCLUSIONS:

OREB concludes that the mixer/loader/applicator inhalation exposure resulting from the specified use of cyfluthrin is

1.0×10^{-6} mg/kg/day.

cc: B. Kitchens
John Redden (7509C)
Chemical File: **CYFLUTHRIN**
Circulation
Correspondence