Shaughnessy No.: 109301

Date Out of EAB: MAR 26 1986

Signature: [signature]

To: George LaRocca
Product Manager #15
Registration Division (TS-767)

From: Emil Regelman, Supervisory Chemist
Review Section #3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769) [signature]

Attached, please find the EAB review of...

Reg./File # : 201-401

Chemical Name: Fenvalerate

Type Product : Insecticide

Product Name : Pydrin

Company Name : Shell Oil Co

Purpose : Data to remove 12 month crop rotation restriction.

Action Code(s): 305

EAB #(s) : 6283

Date Received: 2/4/86 and 2/18/86

TAIS Code: 61; 65

Date Completed: 2/21/86

Total Reviewing Time: 2.0 days

Deferrals to:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

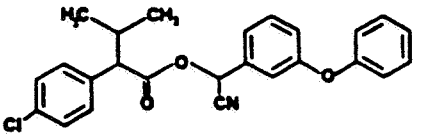
_____ Toxicology Branch

1. CHEMICAL: Common name: Fenvalerate

Chemical name: 4"-Chloro-(2'''-isopropyl)phenylaceto-2-(3'-phenoxy)phenylacetonitrile

Trade name(s): Pydrin, SD 43775 (Shell Chemical Co.); Belmark (Shell International Chemical Co.); Sumicidin, Sumitly, Sumipower (Sumitomo Chemical Co.).

Structure:



Formulations: Pydrin (SD 43775) formulations 2.4 lb ai/gal EC and 4 lb ai/gal ULV concentrate (Shell Chemical Co.).

Physical/Chemical properties:

Emperical formula: $C_{25}H_{22}ClNO_3$
Molecular weight: 419.9
Physical state: Clear viscous yellow or brown liquid at 23°C; mild chemical odor.
Density: 1.17 g/ml at 23°C
Vapor pressure: 1.1×10^{-8} at 25°C
Solubility: in water, <1 mg/l at 20°C
in acetone, chloroform, cyclohexane, ethanol, and xylene, >1 g/kg
in hexane, 155 g/kg at 23°C

Stability: Stable to heat and sunlight
Stable to moisture
More stable in acid (pH 4) than alkaline solution

2. TEST MATERIAL: 2.4 lb/gal EC

3. STUDY/ACTION TYPE: Submission to obtain permission to remove the rotational crop restriction for root crops and to insert "Rotational crops may be planted immediately after last application."

4. STUDY IDENTIFICATION: (1) Crop Testing Services of NJ, Inc. 1985. 1985--Residue data for SD 43775 and SD 47117 in table beets following ten applications of SD 43775 to spinach, a New Jersey study. RIR-24-220-85. Shell Oil Company, Washington, D.C. Acc. No. 261050.

(2) Skelsey, J.J. 1983. 1983--Residue data for SD 43775 in table beets grown in soil which had previously received ten applications of SD 43775, a California study. RIR-24-142-83. Shell Oil Company, Washington, D.C. Acc. No. 261050.

(3) Lee, P.W, S.M. Stearns, and W.R. Powell. 1982. A 30 and 120-day Rotation Crop Study Using ^{14}C-SD-4375 following a single soil treatment at a dosage rate of 2 lb. ai/acre. RIR-22-044-83 Acc. No. 248812.

5. REVIEWED BY:

John H. Jordan, Ph.D.
Microbiologist
EAB/HED/OPP

Signature: John H. Jordan

Date: 3/26/86

6. APPROVED BY:

Emil Regelman, Supervisory Chemist
Review Section #3, EAB/HED/OPP

Signature: Emil Regelman

Date: MAR 26 1986

7. CONCLUSIONS:

Data are inadequate to support any change in the existing 12-month rotation crop restriction for root crop. Studies (1),(2) (Section 4) were not acceptable for removal of the crop rotation restriction, because they did not identify/quantitate crop (plant) degradates. We are especially concerned about the identification/quantification of degradates in a typical root crop under field conditions, since a previously reviewed confined ^{14}C study (3) indicated that (uncharacterized) residues up to 2.44 ppm (fenvalerate equivalents) were present in beet roots and (to date) there is no tolerance for this crop. [The New Jersey Study (1), identified a soil degradate (SD-47117 and another (SD-44064) otherwise uncharacterized.]

The California Study (2) was deficient as follows: (a) the soil (samples) was not analyzed for fenvalerate, and (b) the interval from final fenvalerate application to plant (crop) residue sampling was too long (287 days).

8. RECOMMENDATIONS:

Two studies must be conducted (or a tolerance obtained) to remove the 12-month root crop rotation restriction.

Rotation Crop Residue Uptake Studies

(1) Confined (^{14}C) Study:

A confined plant residue uptake study (table and sugar beets) must identify and quantify parent and degradates according to 165-1 of subdivision N.

(2) Field Crop Study: California -

A California field crop rotation study (table and sugar beets) must be conducted on soils typical of the beet area according to 165-2 of Subdivision N.

Parent and degradates identified in the (^{14}C) confined study above must also be identified/quantified in the California field crop rotation study.

9. BACKGROUND:

A. Introduction

The rotational crop restriction for grains and leafy vegetable crops has been previously removed (letter dated 5/2/84). Only the restriction on rotational root crops remains at this time. Two studies, (1) and (2) under Section 4, were recently submitted for supplying data to remove the rotation crop restriction. The third study was submitted at an earlier date and was considered in this action as part of the rotation crop data base.

B. Directions for Use

Fenvalerate is a contact insecticide for use on a variety of field, vegetable, and orchard crops, ornamentals, forests, terrestrial noncrop sites, and domestic and commerical indoor and outdoor sites. Application rates range from 0.05 to 0.75 lb ai/A. Fenvalerate may be formulated with petroleum distillates. Single active ingredient formulations consist of 2.4 lb ai/gal EC, 8.6% impregnated materials, and 0.01% RTU. Fenvalerate is generally surface applied by ground equipment or aircraft. The 2.4 lb ai/gal EC is a restricted use pesticide and applicators must be certified or under the direct supervision of applicators certified to apply fenvalerate. Fenvalerate is highly toxic to bees.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See attached reviews dated March 6, 1986.

11. COMPLETION OF ONE-LINER:

One liner has not been initiated.

12. CBI APPENDIX:

No CBI is included except the hard copy in the original (complete) package.