MAR 30 1988

Shaughnessy No.: 109301

Date Out of EAB: MAR 30 1988

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

From: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section #3
Exposure Assessment Branch/HED (TS-769C)

Thru: Paul F. Schuda, Chief
Exposure Assessment Branch/HED (TS-769C)

Attached, please find the EAB review of...

Reg./File # : 352-502

Common Name : Fenvalerate

Type Product : Insecticide

Product Name : DuPont Asana®

Company Name : E.I. du Pont de Nemours and Company

Purpose : Review study on Photodegradation of Fenvalerate in Water (§161-2) for acceptability under 40 CFR 158.130.

Date Received: 1/5/88 Action Code: 570

Date Completed: 3/30/88 EAB # (s): 80286

Monitoring Study Requested: ____ Total Reviewing time: 1 day

Monitoring Study Volunteered: ____

Deferrals to: ____ Ecological Effects Branch

____ Residue Chemistry Branch

____ Toxicology Branch

1. CHEMICAL:

Common name:

Fenvalerate

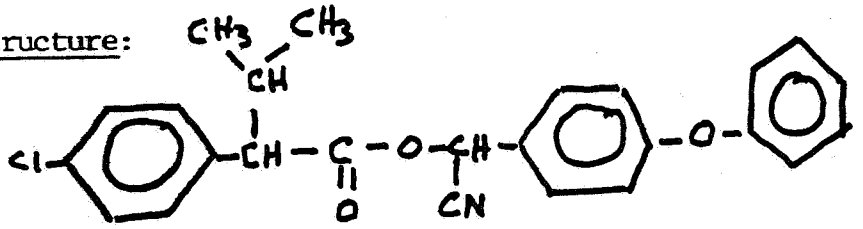
Chemical name:

Cyano (3-phenoxyphenyl)methyl4-chloro- -(1-methylethyl)benzeneacetate

Trade name(s):

Belmark, Fenkill, Pydrin, S-5602, Sanmarton, Sumicidin, Sumifly, Sumipower, Asana.

Structure:



Formulations:

G, Impr, EC, SC, RTU, PrL

Physical/Chemical properties:

Molecular 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} mm Hg at 25°C.
Solubility:	in water, <1 mg/L at 20°C; in acetone, chloroform, cyclohexane, ethanol, and xylene, >1 kg/kg; in hexane, 155 g/kg at 23°C.
Stability:	Stable to heat, sunlight, and moisture; More stable in acid (pH 4) than alkaline.

2. TEST MATERIAL:

Active ingredient ([^{14}C]fenvalerate, radiochemical purity 97%).

3. STUDY/ACTION TYPE:

Addendum to Standard : Photodegradation of Fenvalerate in Water (§161-2).

4. STUDY IDENTIFICATION:

Stevenson, I.E. 1987. Photodegradation of [chlorophenyl(u)-^{14}C] DPX-GB800 (fenvalerate) in Water at pH 5. DuPont Report No. AMR-868-87. Prepared and submitted by E.I. du Pont de Nemours and Company, Inc., Wilmington, DE.

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5. REVIEWED BY:

P. Datta
Chemist
Review Section #3
EAB/HED/OPP

Signature: PRDatta

Date: 3/30/88

6. APPROVED BY:

Emil Regelman
Section Chief
Review Section #3
EAB/HED/OPP

Signature: ERegelman

Date: MAR 30 1988

7. CONCLUSIONS:

The study on photodegradation in water (§161-2) of fenvalerate is acceptable to EAB for the following reasons:

1. The test substance (fenvalerate) has limited water solubility (0.002 ppm) but DuPont conducted the study using 0.0015 ppm of fenvalerate in an aqueous pH 5 solution.

2. The applied radioactivity was measured in the solvent extract, aqueous solution, and on the glass surface of the test tubes (95% recovery) and was accounted for as $^{14}CO_2$ and volatile(s) which were negligible (0.47% of the initial radioactivity).

3. The degradation pathways for photolysis and hydrolysis have been proposed.

4 The stereoisomerization of fenvalerate was elucidated.

5. The half-lives for photolysis and hydrolysis were calculated using rate constants (k) and found to be 6 days and 13.8 days, respectively.

6. DuPont made a good faith effort to complete this study using the best available analytical methodology.

Therefore, this study fulfills the data requirement for the photodegradation of fenvalerate in water (§161-2) under 40 CFR §158.130.

8. RECOMMENDATIONS:

EAB recommends RD inform E. I. du Pont de Nemours and Company, Inc. that the study on the photodegradation in water at pH 5 is acceptable to EAB and fulfills the data requirement for the photodegradation of fenvalerate in water (§161-2) in accordance with 40 CFR §158.130.

9. BACKGROUND:

In 1985, E. I. du Pont de Nemours & Company submitted two studies (Fan, H. Y., TIR-22-101-76, Acc. No. 096386; and, Mikami,N.,et al., 1980, J. Pest. Sci. 5: 225-236) re photodegradation of fenvalerate in water to fulfill the data gap for §161-2. Both studies were rejected by EAB because of inadequate data to determine the photolysis rate of fenvalerate in water. On 6/30/86, du Pont resubmitted the Mikami,N., et al., study to fill the data gap re photodegradation of fenvalerate in water. EAB returned the study to RD stating it had been previously reviewed by EAB/HED and found to contain insufficient data. (For details, see EAB review #6682, 8/6/86).

On 12/14/87, E. I. du Pont de Nemours & Company submitted a new study entitled "Photodegradation of [chlorophenyl(U)-^{14}C] DPX-GB800 (fenvalerate) in water at pH 5" (§161-2), as required to support registration of fenvalerate under 40 CFR §158.130. DuPont conducted this study (§161-2) in accordance with the guidance in Subdivision N of the Pesticide Assessment Guidelines.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See the attached individual DER.

11. COMPLETION OF ONE-LINER: N/A.

12. CBI APPENDIX: N/A.