MARCH 6, 1986

DYNAMAC CORPORATION

ENVIRONMENTAL FATE AND EXPOSURE ASSESSMENT OF FENVALERATE

Final Report

REVIEW AND EVALUATION OF DATA SUBMITTED SUBSEQUENT TO THE INITIAL REVIEW

Contract No. 68-01-6679

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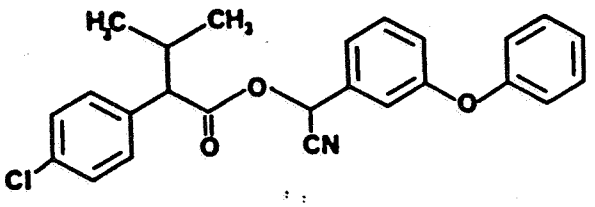
Submitted to:
Environmental Protection Agency
Arlington, VA 22202

Submitted by:
Dynamac Corporation
Enviro Control Division
The Dynamac Building
11140 Rockville Pike
Rockville, MD 20852

FENVALERATE



4''-Chloro-(2'''-isopropyl)phenylaceto-2-(3'-phenoxy)phenylacetonitrile

(All isomers; SD 43775, SD 47443)

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STUDY 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.

CONCLUSIONS:

Field Accumulation - Rotational Crops

1. This study is scientifically valid.

2. Fenvalerate and SD 47117 were not detected (<0.01 ppm) in beet root and top samples planted in soil 0 days after the last of ten applications of fenvalerate (2.4 lb/gal EC) at 0.2 lb ai/a. A total of 2.0 lb ai/A were applied to the soil; the soil contained 1.2 ppm of fenvalerate at the time of planting.

3. This study fulfills EPA Data Requirements for Registering Pesticides by providing information on the accumulation of fenvalerate in rotational root crops grown under field conditions.

MATERIALS AND METHODS:

Fenvalerate (Pydrin, SD 43775; 2.4 lb/gal EC) was sprayed ten times between July 14 and August 10, 1985, at 0.2 lb ai/A (total application 2.0 lb ai/A) onto a plot (4 x 75 feet) of sandy loam soil (65% sand, 25% silt, 10% clay, 1-2% organic matter) planted to spinach located near Woodruff, New Jersey. A similar untreated plot served as a control. Immediately following the final application of fenvalerate, the spinach was harvested, the plots were planted with "Asgrow Wonder" table beets, and the soil was sampled. The beets were harvested near maturity at 80 days postplanting. Samples were frozen until analysis ~2 months later.

Samples were extracted with hexane:IPA at high speed in a blender and filtered. The extract was partitioned with water to remove the IPA, filtered through a silica clean up column with hexane:ethyl acetate, and analyzed for fenvalerate, 4-chloro-α-(1-methylethyl)-benzeneacetic acid (SD 44064), and 4-chloro-α-(1-methylethyl)(aminocarbonyl)(3-phenoxyphenyl) methyl ester benzeneacetic acid (SD 47117) using GC with electron-capture detection. Recovery from fortified samples was 90 and 92% for SD 43775 and 86% for SD 47117. The detection limit was 0.01 ppm.

REPORTED RESULTS:

Immediately following the final application of fenvalerate, 1.2 ppm of fenvalerate, 0.02 ppm of SD 44064, and 0.01 ppm of SD 47117 were detected in the soil.

Fenvalerate and SD 47117, the major degradate in the aerobic soil metabolism studies, were not detected (<0.01 ppm) in beet root and top samples from either the control or treated samples.

DISCUSSION:

1. Although the report stated meteorological data from New Jersey was included, there was no meteorological data in the report.

2. Soil pH and CEC were not reported.

STUDY 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.

CONCLUSION:

Field Accumulation - Rotational Crops

This study cannot be validated because no data were provided on the concentration of fenvalerate in the soil. If adequate soil data are provided, this study will fulfill EPA Data Requirements for Registering Pesticides by providing information on the accumulation of fenvalerate in rotational root crops grown under field conditions.

MATERIALS AND METHODS:

Fenvalerate (Pydrin, SD 43775; 2.4 lb/gal EC) was sprayed ten times between July 20 and September 21, 1982, at 0.2 lb ai/A (total application 2.0 lb ai/A) onto a plot (10 x 65 feet) of Hanford sandy loam soil (65% sand, 25% silt, 10% clay, 1% organic matter) planted to cotton located near Modesto, California. A similar untreated plot served as a control. The plots were planted with "Red Detroit" table beets on May 25, 1983, 287 days after the final treatment. The beets were harvested near maturity at 41 days postplanting. Samples were frozen until analysis ~2 weeks later.

Plant samples were extracted with hexane:IPA at high speed in a blender and filtered. The extract was partitioned with water to remove the IPA, filtered through a silica clean up column with hexane: ethyl acetate, and analyzed for fenvalerate using GC with electron-capture detection. Recovery from fortified samples was 93 and 97%. The detection limit was 0.01 ppm.

REPORTED RESULTS:

Fenvalerate was not detected (<0.01 ppm) in beet root and top samples from either the control or treated samples.

DISCUSSION:

1. No soil data were provided to confirm the application of fenvalerate to the soil. Soil analyses from the dates of treatment, planting, and harvest should be provided in order to determine whether the absence of fenvalerate residues in the beet tissue resulted from extremely low concentrations of the pesticide in the soil or from no uptake of the pesticide from the soil by the plant. If the soil data were not supplied because fenvalerate could not be detected in any samples due to low levels of treatment, this information should be supplied to EPA with supporting evidence. If the soil data were previously submitted to EPA, the data should be resubmitted.

2. Adequate meteorological data were provided with the report.

3. Soil pH and CEC were not reported.

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