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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: 85-DE-01. Proposed Section 18 specific exemption for the use of fenvalerate (Pydrin®) on carrots in Delaware.

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THRU: Andrew R. Rathman, Section Head
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ARR

TO: Donald Stubbs, Section Head
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The Delaware Department of Agriculture requests a specific exemption under Section 18 to use fenvalerate (Pydrin®) insecticide on carrots for the control of carrot weevil. This exemption would involve the treatment of 1000 acres (statewide) of carrots in Delaware.

Tolerances have been established for residues of the insecticide cyano(3-phenoxyphenyl)methyl-4-chloro-alpha-(1-methylethyl) benzeneacetate (Pydrin, fenvalerate) for a variety of raw agricultural commodities at residue level ranging from 0.02 ppm on potatoes to 50 ppm on corn fodder (see 40 CFR 180.379).

PP#5F3171 proposing a tolerance of 0.5 ppm for residues of fenvalerate in or on carrots is currently under review.

The proposed use would allow for applications of Pydrin 2.4 EC to be made at rates of 0.1-0.2 lb ai/acre as needed by ground or aircraft equipment for the period of May 15 to September 30, 1985. Total amount of active ingredient is not to exceed 2 lbs per acre and no more than eight applications are to be made. A 7 day PHI is imposed. The label restricts the use of treated carrot tops for food or feed. Do not plant root crops other than those on the label within 12 months after last application.

Radiolabelled metabolism studies have been carried out on cotton (PP#6G1755, see review of May 14, 1978, E. L. Gunderson), apples and lettuce (PP#8E2024, memo of June 21, 1978, E.L. Gunderson), tomatoes (PP#1F2367, memo of January 7, 1981, K. Arne), and soybeans (PP#0F2375, memo of December 23, 1980, K. Arne). These studies show the predominate residue is the parent compound; however, a photodegradation product, 4-chloro-beta-(1-methylethyl)-alpha-(3-phenoxyphenyl) benzene-propane-nitrile has been found in various rac's.

TOX has concluded that reisudes of the photodegradate, from currently registered uses are not significant (memo dated July 19, 1984, Albin Kocialski). Therefore, the parent compound is the residue of concern in plants.

Studies of Pydrin metabolism in cattle were reviewed in conjunction with PP#7F2013 (E. L. Gunderson, memo of 6/15/78) and PP#0F2367/FAP#0H5266 (K. Arne memo of 1/5/82). These studies indicate that the major metabolic pathway in liver and kidney is cleavage at the ester linkage to produce 4-chloro-alpha-(1-methylethyl) benzeneacetic acid and 3-phenoxybenzoic acid. Further metabolism produces 4-chloroalpha-(2-hydroxy-1-methylethyl) benzeneacetic acid.

TOX has concluded that these metabolites are not of toxicological concern (see A. Kocialski memo of 2/8/82). For the purposes of this emergency use, the residue of concern in animals is fenvalerate, per se.

A comparative study of the metabolites of various synthetic pyrethroids, including fenvalerate, is being undertaken by RCB to determine which, if any, metabolites are to be regulated. Depending on the outcome of that review, the fenvalerate tolerance expression may be revised in the future.

Field trials treating carrots with fenvalerate were conducted in Michigan, California, Texas, Oregon, New York, and Ohio and were submitted in conjunction with PP#5F3171. The maximum residue detected on carrots receiving 10 ground applications of 0.2 lb ai/acre was 0.27 ppm 7 days after receiving the last application. There were no aerial applications.

The above residue data were generated using analytical method MMS-R-478-1A, (PAM II). A successful method trial was carried out on cottonseed in conjunction with PP#7F2013 (J. H. Onley, memo dated July 24, 1978). The minimum detectable limit (MDL) is 0.01 ppm.

Based on the residue data submitted in conjunction with PP#5F3171, we estimate that residues of fenvalerate on carrots will not exceed 0.4 ppm at a PHI of 7 days.

Meat, Milk, Poultry and Eggs

There are currently established tolerances for residues of fenvalerate at 1.5 ppm in the meat, fat and meat by-products of cattle, goats, hogs, horses, and sheep, and a tolerance of 7 ppm for residues in milk fat (reflecting a 0.3 ppm in whole milk). These meat and milk tolerances were established as a result of a 50 ppm tolerance for residues in forn forage and fodder (as well as some other feed items that would contribute minor amounts to an animal diet).

These tolerances will cover any secondary residues of fenvalerate which may occur in meat, milk, poultry, and eggs as a result of this proposed exemption.

Conclusions

1. The residue of concern in plants and animals is fenvalerate, per se.

2. Method MMS-R-478-1 published in PAM II may be used for enforcement purposes.

3. Residues of fenvalerate on carrots resulting from the proposed exemption will not exceed 0.4 ppm.

4. Any secondary residues of fenvalerate which may occur as a result of this emergency exemption will be adequately covered by the established tolerances for meat, milk, poultry, and eggs.

Recommendation

TOX considerations permitting, we have no objections to the issuance of this Section 18 exemption. An agreement should be made with FDA regarding the legal status of the treated commodity in commerce.

cc: R.F., Circu., Reviewer, Fenvalerate S.F., Section 18 S.F.
RDI: A.R.Rathman, 2/11/85; R.D.Schmitt, 2/11/85
TS-769:L.Propst:lsp:CM#2:Rm810:557-7324:2/11/85