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

MAR 15 1985

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: 85-MT-03. Proposed Section 18 specific exemption for the use of fenvalerate (Pydrin®) on sweetclover. RCB #683.

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THRU: Andrew R. Rathman, Section Head
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TO: Donald Stubbs, Section Head
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and
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The Montana Department of Agriculture requests a specific exemption under Section 18 of FIFRA to use fenvalerate (Pydrin® 2.4 EC) on sweetclover for the control of sweetclover weevils.

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

The proposed use would allow for two applications of Pydrin® 2.4 EC using 0.1 lb. a.i./acre or one application using 0.2 lb. a.i./acre. Ground applications would use a minimum of 20 gallons of water carrier per acre and aerial applications would use at least 3 gallons of water carrier per acre. A 14-day PHI is imposed. Treatments should be applied as soon as damage appears in the spring. Fall treatment of the first years's growth (after grain is harvested) may be necessary if beetle infestations are severe.

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#2367, 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 residues 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 fenvalerate 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-methyl ethyl)benzeneacetic acid and 3-phenoxybenzoic acid. Further metabolism produces 4-chloro-alpha-(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.

Data submitted in conjunction with PP#4F3004 reflect residues of fenvalerate on alfalfa grown in California, Texas, Kentucky, Iowa, Nebraska, New York, Ohio, and Washington.

The experiments reflected 1 to 3 applications of 0.025 to 0.4 lb active ingredient/acre via ground equipment or aircraft in 10 to 60 gallons of spray per acre as the 2.4 EC formulation. Two trials involved irrigated alfalfa. Residues of Pydrin in green alfalfa ranged from 0.3 to 32 ppm after 0 to 7 days, from 0.2 to 18 ppm with 13 to 15 day PHI's and from 0.12 to 5.8 ppm 21 to 28 days post treatment. Dry alfalfa (alfalfa hay) showed Pydrin residues in ranges of 1.3 to 78 ppm, 0.92 to 30 ppm, and 0.01 to 27 ppm after PHI's of 0 to 7, 13 to 14 and 19 to 104 days, respectively. In three studies alfalfa seed and/or screenings were analyzed for Pydrin. Residues of fenvalerate in seeds ranged from <0.01 to 0.67 ppm after 30 to 43 days. The one study where screenings were analyzed showed Pydrin residues of up to 26.1 ppm after a 30 day PHI. Also, in one of the experiments, half-lives for fenvalerate in green and dry alfalfa were determined as 7.2 to 9.4 and 9.6 to 15 days, respectively. In only one study was the photodegradate determined. Residues of this compound were 0.4 or 0.95 ppm at the 0.1 or 0.2 lb active ingredient/acre rates, respectively after a 14 day PHI.

Translating the above data on alfalfa to sweetclover, we conclude that residues of fenvalerate occurring in or on sweetclover as a result of the proposed emergency use will not exceed 30 ppm.

Sweetclover is frequently seeded with a companion crop such as wheat, barley, oats, rye, alfalfa, etc. to get an extra crop from the land as well as to keep down weeds. Since there are no tolerances established for residues of fenvalerate on these crops, the Montana Department of Agriculture should be informed that a Section 18 emergency exemption will need to be requested for each companion crop that is to be planted with sweetclover.

The above residue data were generated using analytical method MMS-R-478-1, (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.

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 0.3 ppm in whole milk). These meat and milk tolerances were established as a result of a 50 ppm tolerance for residues in corn forage and fodder (as well as some other feed items that would contribute minor amounts to an animal diet).

Sweetclover hay may constitute 80% of the diet of dairy cattle. The maximum dietary burden of fenvalerate for cattle will not change as a result of the proposed emergency exemption because the maximum intake of fenvalerate would result from a diet of 50% sweet corn cannery waste bearing residues of 50 ppm.

Sweetclover is not a poultry feed item.

We conclude that any secondary residues of fenvalerate which may occur in meat and milk as a result of the proposed exemption will be covered by the currently established tolerances.

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 sweetclover resulting from the proposed exemption will not exceed 30 ppm.

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

Recommendation

TOX considerations permitting, we have no objections to the issuance of this Section 18 exemption for the emergency use of fenvalerate on sweetclover. However, the Montana Department of Agriculture should be informed that a Section 18 emergency exemption will be needed for each companion crop that is to be planted along with the sweetclover.

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, 3/12/ 85; R.D.Schmitt, 3/12/85
TS-769:L.Propst:lsp:CM#2:Rm810:X77324:3/12/85