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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

Subject: EPA Reg. Nos. 279-3051 and 279-3014
Amended Registration for Permethrin
on Soybean.

From: Francis B Suhre, Chemist *Francis B Suhre*
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To: G. LaRocca/C. Dively, PM-15
Insecticide-Rodenticide Branch
Registration Division (TS-767C)

FMC Corp. has requested an amended use registration for Pounce 3.2 EC and Pounce 25 WP Insecticide on Soybeans. The registrant proposes to increase the maximum application rate from 0.1 to 0.2 lbs permethrin a.i./acre to control Beet Armyworm and Corn Earworm on soybeans. Total seasonal application will be limited to 2 treatments (0.4 lbs a.i./season/acre) with a 60 day PHI. The registrant states that, " FMC Corporation originally requested this change on May 15, 1984 and the Agency rejected it in the Residue Chemistry Branch Review of August 23, 1984." Our files indicate that on May 15, 1984 FMC requested a change in the PHI (from 60 to 40 days) for Pounce 3.2 EC on soybeans. We rejected that proposed amendment because the available residue data did not support a lowering of the PHI to 40 days (J. Garbus, memorandum of 8-25-84). In addition, we notified the registrant that the use directions for soybeans, appearing on the label submitted with the amendment request, were not consistent with the use directions on the registered label (see PP#9F2196).

Pounce 3.2 EC Insecticide, EPA Reg. No. 279-3014, is a liquid concentrate containing 38% or 3.2 lbs a.i./gallon permethrin [(3-phenoxyphenyl)methyl (+) cis-trans 3-(2,2-dichloroethenyl)-2, 2-dimethylcyclopropane carboxylate] active ingredient.

Pounce 25 WP, EPA Reg. No. 279-3051, is a powdered product containing 25% by weight permethrin as its active ingredient.

Tolerances are established (40 CFR 180.378b) for residues of permethrin and its metabolites 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid (DCVA) and (3-phenoxyphenyl) methol (MPBA) calculated as parent in or on several raw agricultural commodities, to include soybeans at 0.05 ppm.

The metabolic nature of permethrin in plants and animals has been described in connection with PP#9F2196/FAP#2H5215 (J. Onley, memorandum of 4-28-81). The residues of concern in and on soybeans are permethrin, per se, and its DCVA and MPBA metabolites.

The registered use directions for Pounce 3.2 (see PP#9F2196) on soybeans are:

"To control Beet Armyworm, Cabbage Looper, Corn Earworm, Green Cloveworm, Mexican Bean Beetle, Soybean Looper, and Velvetbean Caterpillar, Bean Leaf Beetle, and Potato Leafhopper. Use Pounce 3.2 EC at a rate of 2 to 4 ounces (0.05 to 0.1 pound active) per acre. Use higher recommended dosage rate as population pressure increases. Apply a minimum of one gallon of finished spray per acre by aircraft and five gallons with greound equipment."

Use restrictions are:

"Do not make more than two applications per season. Do not apply within 60 days of harvest. Do not graze or feed soybean forage or hay. Do not plant rotational crops within 60 days of last application."

The proposed use directions for Pounce 3.2 on soybeans are:

"To control Cabbage Lopper, Green Cloveworm, Mexican Bean Beetle, Soybean Lopper, Cutworms, Velvetbean Caterpillar, Bean Leaf Beetle and Potato Leafhopper use Pounce 3.2 EC at 2 to 4 ounces (0.05 to 0.1 pound active) per acre. To control Beet Armyworm and Corn Earworm- Use Pounce 3.2 EC at a rate of 4 to 8 ounces (0.1 to 0.2 pound active) per acre. Apply a minimum of 1 gallon of finished product spray per acre by air or 5 gallons with ground equipment."

Use restrictions are:

"Do not plant rotational crops within 60 days of last application. Do not apply more than 0.4 pound active ingredient per acre per season. Do not apply within 60 days of harvest. Do not graze or feed soybean forage or hay."

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The registered use directions for Pounce 25 WP on soybeans are:

"To control Cabbage Lopper, Corn Earworm, Green Cloveworm, Mexican Bean Beetle, Soybean Lopper, Velvetbean Caterpillar, Bean Leaf Beetle and Potato Leafhopper - Use Pounce 25 WP at 3.2 to 6.4 ounces (0.05 to 0.1 pound active) per acre. To control Beet Armyworm - Use Pounce 25 WP at a rate of 6.4 to 12.8 ounces (0.1 to 0.2 lbs. active) per acre. Use higher dosage rate as population pressure increases. Use sufficient water to obtain full coverage."

Use restriction are:

"Do not apply within 60 days of harvest. Do not graze or feed soybean forage. Do not plant rotational crops within 60 days of last application."

The proposed use directions for Pounce 25 WP on soybeans are:

"To control Cabbage Lopper, Green Cloveworm, Mexican Bean Beetle, Soybean Lopper, Cutworms, Velvetbean Caterpillar, Bean Leaf Beetle and Potato Leafhopper - Use Pounce 25 WP at 3.2 to 6.4 ounces (0.05 to 0.1 pound active) per acre. To control Beet Armyworm and Corn Earworm- Use Pounce 25 WP at a rate of 6.4 to 12.8 ounces (0.1 to 0.2 pound active) per acre. Apply a minimum of 1 gallon of finished spray per acre by air or 5 gallons with ground equipment. "

Use restriction:

"Do not plant rotational crops within 60 days of last application. Do not apply more than 0.4 pound active ingredient per acre per season. Do not apply within 60 days of harvest. Do not graze or feed soybean forage or hay."

Note to PM: The registered and proposed use of Pounce 25 WP on soybeans are very similar. The registered label allows application of 0.2 lbs. permethrin a.i. per acre to control Beet Armyworm.

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Analytical methods adequate for enforcement of permethrin, DCVA and MPBA tolerances in or on soybeans are available and described in Accession No. 253285. A brief summary of each method is provided below:

Permethrin: The sample is extracted with hexane/propanol, cleaned up with gel permeation and florisil column chromatography and analyzed by gas chromatography using electron capture detection. Method sensitivity was reported to be 0.05 ppm with a limit of detection of 0.01 ppm. Average recovery of samples fortified at 0.05 ppm were 79% and 87% for the cis and trans isomers respectively

DCVA: The sample is extracted with methanol/water, pH adjusted to 8.3, partition against methylene chloride, acid hydrolyzed, and cleaned up on C-18. After C-18 cleanup the analyte is derivatized with pentafluorobenzylbromide, eluted through a Florisil column and analyzed by capillary column gas chromatography using a mass select detector. Method sensitivity was reported to be 0.05 ppm with a detection limit of 0.01 ppm. Average recoveries of 101% and 109% were reported for samples fortified at 0.05 ppm cis and trans-DCVA respectively.

MPBA: The sample is extracted with methanol/water, pH adjusted to 8.3, partition against hexane, acid hydrolyzed, and cleaned up on C-18 and Florisil. After column cleanup the analyte is derivatized with heptafluorobutyric anhydride, eluted through a Florisil column and analyzed by capillary column gas chromatography using an electron capture detector. Method sensitivity was reported to be 0.05 ppm with a detection limit of 0.01 ppm. Average recovery was 62% for a sample fortified at 0.05 ppm.

No new residue data were provided, however, soybean residue field trials were conducted in support of PP#9F2196, PP#8F2099, and FMC's amended registration dated 5-15-84 (Accession No. 253285). FMC has been authorized by ICI Americas, Inc. to cite the data provided in support of ICI's registration of Ambush (PP#8F2099).

The data provided in support of PP#9F2196 reflects 27 field trials conducted in 10 States. Soybean plots were treated (2 applications) with 0.1 lb permethrin a.i./A ; PHI's ranged from 14 to 49 days. All soybean samples were initially analyzed for parent compound only. Permethrin residues ranged from ND (<0.01) to 0.03 ppm. A representative number of the samples were reassayed for MPBA and DCVA metabolites. No residues of MPBA were found (ND<0.01 PPM). Residues for DCVA ranged from ND (<0.01 ppm) to 0.02 ppm.

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The residue data provided in support of PP#8F2099 reflects 4 field trials in GA(1), AR(1), WI(1), and IL(1). Soybean plots were treated (2 applications) with 0.2 lb permethrin a.i. per acre; PHI's ranged from 39 to 62 days. The data is summerized below:

Sample	PHI	Permethrin	DCVA	MPBA
20GA76-025	50	0.01 ppm	ND	ND
06AR76-044	62	ND	ND	ND
13WI76-001	40	0.02 ppm	ND	ND
13IL76-014	39	0.05 ppm	ND	ND

With the exception of sample 13IL76-014 all residues are below the 0.05 ppm tolerance for soybeans.

The residue data provided in support of FMC's amended registration dated 5-15-84 reflects 3 field trials in IL(1), NJ(1), and AR(1). Soybean plots were treated (2 applications) with 0.2 lb permethrin a.i. per acre and harvested 40 days after the last treatment. No residues of permethrin or its MPBA metabolite were found (ND<0.01 ppm). Residues of DCVA ranged from ND to 0.02 ppm.

Conclusions

1. The metabolic nature of permethrin in plants is adequately understood. The residues of concern in and on cabbage are permethrin, per se, and its DCVA and MPBA metabolites.
2. Analytical methods for determining residues of permethrin, DCVA and MPBA in or on soybeans are described in Accession No. 253285). The methods are adequate for enforcement purposes.
3. Residue data, provided in support of PP#9F2196, PP#8F2099, and Accession No. 253285, indicates that residues of permethrin, per se, and its DCVA and MPBA metabolites will not exceed the established tolerance (40 CFR 180.378b) of 0.05 ppm in or on soybeans as a result of this proposed amended use.

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Recommendation

We have no objection to the proposed amended registration.

cc:R.F.,Circu,Reviewer,S.F.,Amended use file, PMSD/ISB
RDI:EZ:11/6/86:RDS:11/6/86
TS-769:RCB:FBS:fbs:557-3044:CM#2:RM#710:11/10/86

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