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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM:

SUBJECT: ID #264-379 Thiodicarb[LARVIN®-3.2]: Amended use to permit low volume spray with vegetable oil on soybeans.
[DEB: #4810]
[MRID: #40926801]

William L. Anthony

FROM: William L. Anthony
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THRU: Francis B. Suhre, Acting Section Head
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TO: G.Werdig/ B.Crompton PM #15
Data Call-in
Registration Division (TS-767c)

The Rhone-Poulenc Ag Co. at Research Triangle Park, N.C. requests an ammended registration to permit low volume spray application of their product [LARVIN®-3.2, EPA Reg.#264-379] with vegetable oil on soybeans. LARVIN®-3.2 is an insecticide/ ovicide containing the active ingredient thiodicarb.

Tolerances

Tolerances are established (40 CFR 180.407) for the combined residues of thiodicarb [DimethylN,N-[thiobis[[(methylimino)carbonyl]oxy]]bis[ethanimidothioate]] and its metabolite methomyl, [(S-methyl-N](methylcarbamoyloxy]thioacetimidate)], in/on: Corn, sweet(kernels + cobs with husks removed) at 2.0 ppm; and soybeans at 0.2 ppm. Tolerances in annimal feeds are also established [21 CFR 561.386] for the combined residues of thiodicarb and its metabolite, methomyl, in/on cottonseed and soybean hulls at 0.8 ppm, each.

The metabolite methomyl is an insecticide with established tolerances [40 CFR 180.253] on a variety of commodities at levels ranging from 0.1 ppm to 40 ppm. These tolerances include residues in/on soybeans at 0.2 ppm and in/on soybean forage at 10 ppm.

Temporary tolerances for the combined residues of thiodicarb and methomyl, due to expire June 8, 1989, are established for broccoli, cabbage, and cauliflower, at 7 ppm each and head lettuce at 25 ppm. Furthermore, permanent tolerances are pending for combined residues of thiodicarb and methomyl in/on corn (grain, fodder, forage, and canning waste); tomatoes; and tomato paste.

There is no registration standard for thiodicarb.

This submission provides residue data in support of the amended use request for soybeans.

Registered Use

LARVIN®-3.2 is registered for use on soybeans at the maximum rate of 0.75 lb a.i. in a minimum finished spray volume of two gallons per acre by air application or a minimum finished spray volume of five gallons per acre by ground application. Under extreme pest populations, a minimum spray volume of 5 gallons per acre by air or 10 gallons per acre by ground application may be applied. There is a 28 day PHI in effect.

RESTRICTION: Do no feed forage, hay, or straw to livestock.

Proposed Use

The proposed, low volume aerial treatment calls for application of up to 0.45 lb of thiodicarb/per acre in a minimum finished spray volume of one gallon per acre by air. When applying one gallon of spray volume by air, use one quart of emulsified crop or vegetable oil as a spray additive.

RESTRICTIONS: (1) For use only in the states of Maryland, Virginia, North Carolina, Delaware, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Arkansas, and Missouri. (2) Do not feed forage, hay, or straw to livestock. (3) A 28 day PHI will remain in effect.

The nature of the residue resulting from the metabolism and/or degradation of thiodicarb was fully discussed in DEB's review of PP #9G2152/FAP #0H5275 [Memo: A.Smith, 1/21/81].

Analysis

The treated samples were harvested from experimental plots with the control samples taken from nearby untreated plots. All samples were frozen at ⩽20° C soon after harvesting or processing. All samples were analyzed by the THIODICARB-FPO-COTTONSEED method described in PP #0F2413 and in PAM II, Method I.

Briefly, the residues were extracted with methanolic acetone; subjected to liquid-liquid partitioning; hydrolyzed to methomyl oxime, and analyzed by GC using a FP detector operated in the sulfur mode. The limit of detection was determined to be 0.04 ppm. Five control samples were fortified with 0.04 ppm or 0.08 ppm; recoveries varied from 82% to 95%, with a 89% average.

Residue Data

Soybean plants were treated with two aerial applications of LARVIN®-3.2, each at the rate of 0.45 lb a.i./plus one quart of commercially available vegetable oil† per acre. Applications were made six or seven days apart, with a PHI of 28 to 1 days after the second application.

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† Commercial vegetable oils used in these field studies included: Agridex; Soy-Dex; emulsified soybean oil; Senders Soysurf.

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Residue samples were collected from 10 trials in seven states which included: Arkansas(1), Georgia(1), Mississippi(2), Missouri(1), North Carolina(2), South Carolina(1), and Virginia(2). Raw data were submitted from five of the seven states. The lapse time from harvest to analysis was 5 to 6 months.

Two representative chromatograms were submitted for a treated sample along with a representative chromatogram for the control and the fortified samples.

Analytical results showed only two soybean samples [total=30 samples] with finite residues of thiodicarb (both at 0.05 ppm); the remaining samples contained no measureable thiodicarb residues (ND $\leq$0.04 ppm).

Based on these data, we conclude that combined residues of thiodicarb and its metabolite methomyl will not exceed the established tolerance of 0.2 ppm in/on soybeans.

No thiodicarb processing data were provided with this amended registration request, however, a soybean processing study was conducted in connection with PP #0F2413. Soybeans containing an average residue of 0.52 ppm thiodicarb were processed into kernels, hulls, meal, crude oil, refined oil, and soapstock. All fractions with the exception of soybean hulls, contained <0.52 ppm (1X concentration); soybean hulls contained 2.1 ppm thiodicarb (4X concentration).

The current thiodicarb tolerance (40 CFR 561.386) in/on soybean hulls (0.8 ppm) was determined by applying a 4X concentration factor to the soybean residue data (maximum reported value was 0.19 ppm) submitted in connection with the establishment of the thiodicarb tolerance at 0.2 ppm.

Since the maximum thiodicarb residue on soybeans resulting from this proposed amended use was 0.05 ppm, we conclude that thiodicarb residues on soybean hulls will not exceed the established tolerance of 0.8 ppm as a result of this amended use.

Conclusions

1. The residue of concern is thiodicarb and its metabolite, methomyl.

2. Analytical methods (PAM II, Method I) are available for enforcement.

3. The application of thiodicarb as a low volume spray utilizes vegetable vegetable oil as a spray additive, as proposed by this amended use request, is not expected to result in residues exceeding the existing tolerances, in/on soybean beans at 0.2 ppm and soybean hulls at 0.8 ppm, providing the maximum number of applications are limited to two per season and a 28 day PHI remains in effect.

Recommendation

DEB has no objection to this amended registration, provided the label directions stipulate that the maximum number of applications be limited to two per season and a 28 day PHI is imposed.

CC:Reviewer;SF[Thiodicarb];RF;ISB/PMSD/Circulation.
RDI: F.Suhre,Act.Sec.Head,2/15/89;E.Zager,2/15/89
TS-769:W.Anthony;wla;CM-2,Rm812;X557-435;2/15/89.

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