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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: EPA Reg No. 464-448. Chlorpyrifos on cotton. Amended registration to allow for tank mix combinations with or without certain pyrethroid insecticides plus vegetable oil.

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TO: Jay Ellenberger, Product Manager #12
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Dow Chemical is requesting an amended registration which would allow for the chlorpyrifos formulation LORSBAN® 4E to be applied to cotton in tank mix combinations with or without certain pyrethroid insecticides plus vegetable oils.

We have recommended that the tolerance established to cover combined residues of the pesticide chlorpyrifos (O,O-diethyl O-(3,5,6-trichloro-2-pyridylphosphorothioate and its metabolite 3,5,6-trichloro-2-pyridinol (TCP) in or on cottonseed at 0.5 ppm be revised so that no more than 0.2 ppm of the 0.5 ppm tolerance is chlorpyrifos. (see 1/24/84 memo of K.A. Arne).

The currently registered chlorpyrifos label for cotton allows for multiple applications at rates up to 1 lb. active/acre to be applied alone or in combination with certain pyrethroid insecticides. For aerial applications, use at least 1 gallon of spray per acre. No application is to occur within 14 days of harvest. Livestock are not to be grazed in treated areas, and gin trash or treated forage is not to be fed to livestock.

The proposed use would allow up to 0.5 lb. active/acre to be applied with the same pyrethroid insecticides using 1 qt/acre of vegetable oil as a carrier. The remaining pertinent labeling

contains the same application rates and restrictions as the current label.

Data from four studies conducted in Arizona, California, and Mississippi (2) reflecting residues of chlorpyrifos on cotton were submitted with this request. Of these studies one reflected treatment with Lorsban® 4E while the remaining three were treated with the experimental chlorpyrifos formulation XRM-4656.

Cotton plants in Mississippi received two aerial applications using 0.5 lb. active/acre of LORSBAN® 4E plus 0.1 lb. active/acre of Pydrin and sufficient soybean oil to make a total spray volume of 1 qt./acre. Cottonseed samples were collected 24, 25, and 31 days following the last treatment. Analyses of the cottonseed showed all residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol were non-detectable (<0.02 ppm).

The second study was conducted in California. The cotton plants received four applications of 0.5 lbs active/acre of XRM-4656 with 0.15 lb active/acre of Pydrin using a spray volume of 1 qt./acre. Cottonseed samples were collected 14 and 21 days after the last application. At 14 days the maximum residues reported were 0.18 ppm chlorpyrifos and 0.16 ppm 3,5,6-trichloro-2-pyridinol; at 21 days maximum residues were 0.07 ppm chlorpyrifos and 0.11 ppm 3,5,6-trichloro-2-pyridinol.

In the second Mississippi study, residues on cottonseed from plants receiving 8 applications of 0.5 lbs. active/acre of XRM-4656 14 and 21 days after the last treatment showed a maximum of 0.17 ppm of chlorpyrifos and 0.13 ppm 3,5,6-trichloro-2-pyridinol.

Cotton plants in Yuma, Arizona received 10 applications of 0.5 lbs. active/acre of XRM-4656 using either 1 qt/acre or 5 gal/acre as a final spray volume. Cottonseed samples were collected 21 and 28 days after the last application. Maximum residues reported for samples which received a spray volume of 1 qt/acre were 0.30 ppm for chlorpyrifos and 0.24 ppm for the metabolite. Maximum residues reported for samples which received a spray volume of 5 gal/acre were 0.63 ppm chlorpyrifos and 0.55 ppm for the metabolite.

From the data submitted, we conclude that the tolerance of 0.5 ppm established in or on cottonseed will not be adequate to cover the combined residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol in or on cottonseed from the currently registered uses or the proposed amended registration.

CONCLUSIONS AND RECOMMENDATIONS

1. The established tolerance of 0.5 ppm is not adequate to cover combined residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol in or on cottonseed which could result from the currently registered uses.

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2. Combined residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol resulting in or on cottonseed from the proposed amended registration are likely to exceed the established tolerance of 0.5 ppm.

For the reasons given in Conclusions 1 and 2, we recommend against the proposed amended registration. The registrant should be advised to submit both additional residue data from Arizona reflecting the maximum registered use (multiple applications of chlorpyrifos at 1 lb. active/A with a 14 day PHI) and a petition for higher tolerances for residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol in or on cottonseed.

cc: Reading File
Circulation
Reviewer
Amended Use File
Subject File

TS-769;RCB;L.S.PROPST:lsp:X77324:CM#2:Rm.810:2/14/84
RDI: R.J.Hummel, 2/13/84; R.D.Schmitt,2/13/84