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

DEC 15 1982

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: EPA Reg. Nos 464-448 and 464-523. Chlorpyrifos on sorghum.

FROM: Edward Zager, Chemist
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

THRU: Charles L. Trichilo, Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: Jay Ellenberger, Product Manager #12
Insecticide-Rodenticide Branch
Registration Division (TS-767)

The Dow Chemical Co. requests amended registrations for its products Lorsban 4E Insecticide (4 lbs at/gallon) and Lorsban 15G Granular Insecticide (15% chlorpyrifos) to permit at plant applications and increase the rate for post-emergence applications to grain sorghum.

Tolerances for residues of chlorpyrifos and its metabolite 3,5,6-trichloro-2-pyridinol have been established at 0.75 on sorghum grain 1.5 ppm on sorghum forage and at 6 ppm on sorghum fodder (40CFR 180.342).

The currently registered use of Lorsban 4E on sorghum is as follows:

Up to 3 post-emergence applications at the rate of 0.5 pint (0.25 lb act) per acre. The treated crop is not to be used for forage, fodder, hay or silage within 14 days after the last treatment. Do not treat sweet varieties of sorghum.

Lorsban 15G is not registered for use on sorghum.

The proposed use for Lorsban 15G would permit a single application at planting time at the rate of 4-12 oz per 1,000 ft of row applied in a 5-8 inch band over the row and lightly incorporated. Assuming 20 inch spacing, the minimum for sorghum, this rate is equivalent to 20 lbs of Lorsban 15G/A (3 lbs act/A).

The proposed use of Lorsban 4E would permit 3 post-emergence applications at the rate of 0.5-2 pints (0.25 -1 lb act) per acre with a maximum of 3 pints of Lorsban 4E (1.5 lb act) per acre/season. The treated crop is not to be used for forage, fodder, hay or silage within 30 days after last treatment. Do not use on sweet varieties of sorghum.

Residue data submitted with this request reflect 6 studies from IL, MI, NE and TX. Residues of 3,5,6-trichloro-2-pyridinol were measured by Method VII PAM II while residues of chlorpyrifos were determined by a method essentially identical to Method VI of PAM II. Recoveries depending on the substrate ranged from 72-105% for chlorpyrifos at fortification levels of 0.01-5.0 ppm and 76-111% for 3,5,6-trichloro-2-pyridinol at fortification levels of 0.05-5.0 ppm.

Only one study (Genesco, IL) reflects the combined at-plant and post-emergence applications. In this study Lorsban 15G was applied at-plant at the rate of 1.1 lb act/A which is lower rate than the maximum proposed rate of 3.0 lbs act/A. Three aerial post-emergence applications of Lorsban 4E were also made at the rate of 0.5-1.0 lb act/A.

In the other 5 studies 2-3 post-emergence applications of Lorsban 4E were made at the rate of 0.5-1.0 lb act/A. However, in none of the studies was the last application made at the maximum proposed rate of 1 lb act/A. We consider this a major deficiency since the amount of chlorpyrifos applied in the last application would be the principal determinant of the level of residues remaining on the crop.

Combined residues of chlorpyrifos and its metabolite 3,5,6-Trichloro-2-pyridinol ranged from 0.16-0.65 ppm in sorghum grain, 0.24-0.64 in sorghum forage and 0.49-4.6 ppm in sorghum fodder at PHI's of 31-36 days.

However, because of the deficiencies noted above we are unable to conclude whether residues from the proposed uses would exceed the established tolerances for residues of chlorpyrifos on sorghum.

Conclusions

1. The submitted residue data are inadequate for the following reasons:

Only one study reflects combined at-plant and post-emergence applications.

In none of the studies was the last post-emergence application made at the maximum proposed rate of 1 lb act/A.

2. In the absence of adequate residue data reflecting the proposed uses of Lorsban 15G and Lorsban 4E we are unable to determine whether residues of chlorpyrifos and its metabolite resulting from the proposed uses will exceed the established tolerances of 0.75 ppm on sorghum grain, 1.5 ppm on sorghum forage and 6 ppm on sorghum fodder (40 CFR 180.342).

Recommendation

For reasons listed in Conclusions 1 and 2 we recommend against the proposed amended registration of Lorsban 15G and Lorsban 4E.

For a further consideration of this request we will require additional residue data reflecting combined applications of Lorsban 15G and 4E. In these studies at-plant applications of Lorsban 15G should be made at the maximum proposed rate of 3 lbs act/A and the last of the post-emergence applications of Lorsban 4E should be made at the maximum proposed rate of 1 lb act/A; there should be a 30 day PHI.

cc: Amended use file S.F.
Chlorpyrifos S.F.
R.F.
Circu
Edward Zager
RDI:Section Head:RJH:Date:12/8/82
TS-769:RCB:Reviewer:E.Zager:LDT:X77324:CM#2:RM:810:Date:12/14/82