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

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MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: EPA Registration No. 241-243. Pendimethalin on cotton and soybeans.

FROM: Sami Malak, Chemist
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

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

TO: Robert J. Taylor, Product Manager #25
Fungicide-Herbicide Branch
Registration Division (TS-767)

American Cyanamid Company is requesting an amended registration of pendimethalin (Prowl) allowing a single preplant incorporated application in each of two consecutive years for control of rhizome Johnsongrass in cotton and soybeans. The use is identical to the current federally registered use except that the registered use does not specify that application be made for two consecutive years.

The proposed use of pendimethalin on cotton and soybeans would allow 2-4 pts/A (1-2 lbs ai/A) depending upon soil texture; excluding use on soils containing more than 3% organic matter. The dosage is to be repeated for a second consecutive year for the purpose of accomplishing complete control of rhizome Johnsongrass which may be suppressed after the first year. Use is not recommended for Arizona, New Mexico and California. There is a replanting restriction against all crops except cotton and soybeans. There is a grazing restriction against feeding forage or grazing by livestock in treated cotton; whereas, no restrictions are imposed for soybeans.

The proposed label allows planting other crops the following year on land treated for rhizome Johnsongrass control while restricting fall planting of winter wheat or winter barley after pendimethalin application; and imposing a 12 months waiting period after pendimethalin application and before planting sugar beets, red beets or spinach.

Permanent tolerances are established for the combined residues of pendimethalin [N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzeneamine] and its metabolite 4-[(1-ethylpropyl)amino]-2-methyl-3,5-dinitrobenzyl-alcohol at 0.1 ppm in or on cottonseed, soybean seed, soybean forage and soybean hay (40 CFR 180.361, PP#5F1556 for cotton and PP#6F1704 for soybeans).

Analytical Method

The analytical method for determination of pendimethalin and its metabolite 4-[(1-ethylpropyl)amino]-2-methyl-3,5-dinitrobenzyl alcohol in or on cotton foliage, seed, oil and meal; soybean foliage, green seeds, dry seeds, oil and meal; corn foliage; wheat foliage; oat foliage; and beet foliage and roots is essentially the same as that described in connection with PP#9F2134, A. Smith, 1/22/79 and PP#9F2246, E. Leovey, 1/21/80.

In this method, the parent compound, pendimethalin, is determined as such following extraction and cleanup. The benzyl alcohol metabolite is determined as the ethyl derivative following extraction and cleanup.

Samples are chopped or ground then extracted in aqueous acidic methanol. Cleanup from tissue matrix is achieved by liquid partitioning into hexane and adsorption chromatography on Florisil. Quantitation is effected by gas chromatgraphy using electron capture detector.

The validated sensitivity of the method was 0.05 ppm for pendimethalin and its benzyl alcohol metabolite. At the 0.05-1.0 ppm fortification levels, pendimethalin recovery ranged from 73.6-142% and that for its benzyl alcohol metabolite ranged from 70.6-138.6% for all commodities. Samples from non-treated controls had no pendimethalin (<0.02 ppm), nor benzyl alcohol metabolite (<0.003 ppm).

We believe that the results of the method trials are adequate for enforcement.

Residue Data

Data submitted reflect five field trials from Minnesota, Tennessee, kentucky, Texas and North Carolina. Cotton and soybean plots received a preemergence or a preplant incorporated application of

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pendimethalin for 2-3 consecutive years at 1.5-3 lbs ai/A/year for a maximum of 6 lbs ai/A. Soybean foliage were sampled at 41 days; whereas, soybeans and soybean straw as well as cottonseed were sampled at maturity, 127-180 days after last pendimethalin application. Analysis was effected for pendimethalin and its benzyl alcohol metabolite.

Results showed no pendimethalin or the benzyl alcohol metabolite in or on any of the samples analyzed (<0.05 ppm).

Based on these data we conclude that residues of pendimethalin and its benzyl alcohol metabolite in or on cottonseed, soybeans and soybean forage and/fodder will not exceed the established tolerances of 0.1 ppm.

Conclusions

1. Adequate analytical methods are available for determination of pendimethalin and its benzyl alcohol metabolite in plants.

2. Pendimethalin and its benzyl alcohol residues in or on soybeans, soybean forage, soybean fodder and cottonseed resulting from the proposed use will not exceed the currently established tolerances of 0.1 ppm.

Recommendations

We have no objections to the proposed label amendment.

cc: R.F.
Circu
Reviewer
Subject file
Amended use file
RDI:Section Head:RJH:Date:10/29/82:RDS:Date:10/29/82
TS-769:RCB:Reviewer:S.Malak:LDT:X77324:CM#2:RM:810:Date:11/1/82