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OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

Subject: EPA Registration No. 241-243.  
Pendimethalin on grain sorghum.

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American Cyanamid Company is requesting amended registration of pendimethalin (Prowl) as a culti-spray (postemergence incorporated) to grain sorghum on a national basis. The Federally registered use permits single application of pendimethalin or pendimethalin/atrazine tank mix for culti-spray (postemergence incorporated) use on grain sorghum in Colorado, Kansas, Nebraska, New Mexico, Oklahoma and Texas. Registered dosages are dependent upon soil texture and use location which range from 1-3 pts./A for pendimethalin (0.5-1.5 lbs. a.i./A) and 1.25 lb./A for atrazine 80W (1.0 lb. a.i./A).

The posposed rates and use pattern for national labeling are the same as those currently registered. There is a 21-day PGI (pre-grazing interval) on the proposed label amendment for pendimethalin and pendimethalin/atrazine tank mix which is the same as the PGI on the registered label for pendimethalin/atrazine tank mix; whereas, no grazing restriction is currently imposed on the use of pendimethalin alone.

Tolerances for 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] are currently established in or on grain sorghum, sorghum fodder and sorghum forage at 0.1 ppm (40 CFR 180.361, PP# 9F2134).

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Tolerances for residues of atrazine (2-chloro-4-ethylamino-6-isopropylamino-s-triazine) are established in or on grain sorghum at 0.25 ppm; sorghum fodder and sorghum forage at 15 ppm (40 CFR 18.220, PP# 7F0525).

#### Analytical Method

The analytical method for determination of pendimethalin and its metabolites: 4-[(1-ethylpropyl)amino]-2-methyl-3,5-dinitrobenzyl alcohol in or on grain sorghum is essentially the same method discussed in connection with PP# 9F2134, A. Smith, 1/22/79. 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 were taken at maturity and extraction is accomplished in aqueous acidic methanol. Cleanup from tissue matrix is achieved by liquid partitioning into hexane and absorption chromatography on Florisil. Quantitation is effected by gas chromatography using electron capture detector.

The validated sensitivity of the method was 0.05 ppm for pendimethalin and its benzyl alcohol metabolite. At the 0.05-5 ppm fortification levels, pendimethalin recovery ranged from 73-128% and that of its metabolite ranged from 63-134%. With the exception of one control straw sample which had 0.16 ppm pendimethalin, the remaining non-treated controls had no pendimethalin (<0.003 ppm) nor benzyl alcohol metabolite (<0.007 ppm). We will discard the one straw sample containing 0.16 ppm pendimethalin because the petitioner claims that this was the result of contamination.

The method have been sucessfully tested with pendimethalin and its benzyl alcohol metabolite on cottonseed at levels of 0.05 and 0.1 ppm (PP# 5F1156, W. J. Boodee, 3/26/76).

The method for determination of atrazine have been approved for enforcement and are included in PAM II.

#### Residue Data

Data submitted reflect 5 field trials from Arkansas, California, Louisiana, South Dakota and Virginia. The culti-spray use is a postemergence incorporated application of pendimethalin to grain sorghum when the crop is at the 4-inch state of growth and up to layby, before crop close in between rows. In these trials, only pendimethalin was applied at dosages from 0.75-1.5 lb ai/A. Tests from Arkansas and Virginia were previously submitted in connection with PP#9F2246.

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Results showed no detectable pendimethalin nor the benzyl alcohol metabolite in the grain or straw (<0.05 ppm) at harvest. Based on these data, we conclude that residues of pendimethalin and its benzyl alcohol metabolite in or on sorghum grain, forage and fodder resulting from the proposed use will not exceed the established tolerance of 0.1 ppm.

Conclusions and Recommendations

1. Residues of pendimethalin and its benzyl alcohol metabolite in or on sorghum grains, forage and fodder resulting from the proposed use will not exceed the currently established tolerance of 0.1 ppm.
2. We recommend for national use of pendimethalin to grain sorghum as proposed.

TS-769:RCB:SMalak:MH:CM#2:RM810:X77377:11/1/82  
cc: RF, Circ., Malak, SF, Amended Use  
RDI: Hummel, 10/28/82; Schmitt, 10/28/82