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

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Pendimethalin Reregistration. Analytical Method Radiovalidation for Residues of Pendimethalin in/on Corn Plants.

CBRS No.: 13506
DP Barcode No.: D201694
MRID No.: 43185901
Chemical No.: 108501
Reregistration Case No.: 0187

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In response to data requirements specified in a previous residue chemistry review (D189207, CBRS No. 11582, 6/16/93, P. Deschamp) of a pendimethalin sweet corn metabolism study (MRID 42686401), American Cyanamid Company has submitted a single volume of analytical method radiovalidation data (MRID 43185901).



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CONCLUSIONS

The submitted radiovalidation data (MRID 43185901) indicate that Method M-458.1, which is essentially the same as PAM Vol. II, Method III, adequately recovers radiolabeled pendimethalin from corn plant samples. No additional radiovalidation data are required from the sweet corn metabolism study (MRID 42686401).

DETAILED CONSIDERATIONS

BACKGROUND

GLC methods using Florisil cleanup and electron capture detection (ECD) are the currently preferred enforcement methods for the determination of residues of pendimethalin per se and 4-[(1-ethylpropyl)-amino]-2-methyl-3,5-dinitrobenzyl alcohol in/on soybean commodities (PAM Vol. II, Methods I and II, respectively) and cotton commodities (PAM Vol. II, Methods III and IV, respectively).

Method M-458.1 is essentially the same as the currently preferred enforcement method listed in PAM Vol. II as Method III. In brief, the determination of pendimethalin in/on corn plants is achieved by extraction with aqueous acidic-methanol, liquid partitioning into hexane, adsorption chromatography on Florisil (elution with hexane-benzene), and determination by gas-liquid chromatography (GLC) using a ⁶³Ni electron capture detector (ECD). The claimed method sensitivity is 0.05 ppm.

RADIOVALIDATION DATA (MRID 43185901)

American Cyanamid Company has submitted a single volume of data (43185901) to radiovalidate GC Method M-458.1 for corn plants.

One corn plant sample (14 DAT, Post Emergence, Whole Green Corn Plant Sample; Sample ID 4068B) obtained from the sweet corn metabolism study (MRID 42686401) bearing detectable levels of field weathered residues of ¹⁴C-pendimethalin was extracted (MeOH:H₂O:CHCl₃; 11:5:5) and analyzed by radio-HPLC techniques and identical samples (Sample IDs 4068B-Replicate 1-B and 4068B-Replicate 2-B) were extracted (MeOH:H₂O:Conc.HCl; 78:20:2) and analyzed using Method M-458.1. The radio-HPLC extraction procedure extracted 55% of the radioactivity and Method M-458.1 extraction procedure extracted an average of 69% of the radioactivity. Analyses of the extracts detected pendimethalin at levels of 0.11 ppm and 0.08 ppm (average of the two duplicate sample analyses) by the radio-HPLC method (sensitivity 0.01 ppm) and Method M-458.1 (sensitivity 0.05 ppm), respectively. These data indicate that Method M-458.1, which is essentially the same as PAM Vol. II, Method III, adequately recovers

radiolabeled pendimethalin from corn plant samples.

No other samples from the sweet corn metabolism study contained detectable (>0.05 ppm) levels of ¹⁴C-pendimethalin residues. No samples from the sweet corn metabolism study contained detectable (>0.05 ppm) levels of ¹⁴C-radiolabeled 4-[(1-ethylpropyl)-amino]-2-methyl-3,5-dinitrobenzyl alcohol residues.

No additional radiovalidation data are required from the sweet corn metabolism study (MRID 42686401).

cc: BLCKohlligian (CBRS), Pendimethalin Reg. Std. File, SF, RF, Circulate.

RDI: WSmith:11/2/94 COlinger:11/2/94 PDeschamp:11/2/94 TEdwards:11/2/94 SKnizner:11/2/94
MMetzger:11/3/94 EZager:11/14/94

7509C:CBRS:BLCKohlligian:CM#2:Rm 805B:703-305-7462:11/2/94.