RMSD/ISB

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

AUG 21 1989

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

SUBJECT: Fonofos (Dyfonate 20-G and Dyfonate 10-G) on Sugar Beets. Amendment of 5/26/89 (Removal of Geographical Restriction, Evaluation of Residue Data).
EPA Reg. No. 10182-180 and EPA Reg. No. 10182-135
MIRD #40150106, DEB # 5420 and 5421.

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THRU: Francis B. Suhre, Acting Section Head Francis B Suhre
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TO: W. H. Miller, PM-16
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In response to deficiencies cited in DEB's review of 1/6/87 (M. S. Metzger), ICI Americas Inc. resubmitted an amendment for the registered use of Dyfonate 10G (EPA Reg. No. 10182-180), and Dyfonate 20G (EPA Reg. No. 10182-135) in or on sugar beets. The amendment proposes the elimination of current geographical restrictions for Dyfonate 10G, and 20G on sugar beets. The deficiencies cited in DEB's memo of 1/6/87 are restated below, followed by the registrant's response and DEB's comments:

Deficiency #1, Restated from DEB memo dated 1/6/87

The available residue data for applications of Dyfonate 20G as described in the proposed use are inadequate. Data are required reflecting the maximum proposed use rate from representative sugar beet growing areas (CA, MN, ID,ND, and MI).

Petitioner's Response

The petitioner,ICI Americas Inc., submitted (5/26/89) residue data (from 6 field trials) for fonofos (Dyfonate 20G) in or on sugar beets grown in CA, ID, MI, MN, and ND. Dyfonate 20G was applied in a single band application at 1.56 lbs ai/A (1X registered use) to sugar beet rows spaced 22 inches apart (except for ND field trial, which was treated at 1.74 lb ai/A). The Dyfonate was applied at planting and incorporated lightly. At maturity, sugar beet roots and tops were collected, frozen at -10 °F, and shipped to ICI Americas Inc. performing laboratory, in Richmond CA. Samples were kept frozen prior to analysis (less than 92 days). Residue data were generated utilizing a GC/MSD method entitled "Determination of Fonofos and Fonofos Oxon Residues in Corn Matrices by Gas Chromatography" ICI Americas Report No. RRC 88-23.

The analytical method is briefly summarized as follow: 50 g of sample (roots or tops) along with 50 g of sodium chloride and 200 ml of ethyl acetate are homogenized. The homogenate is centrifuged for 10 min., and 100 ml of the supernatant, (ethyl acetate extract) is transferred to a 4-oz bottle containing 10 g of anhydrous sodium sulfate. Roots extracts require no cleanup, 20 ml aliquot of the ethyl acetate extract is placed in centrifuged tube and the solvent is removed under reduced pressure. The residue is dissolved in 5.0 ml of toluene, 100 mg of anhydrous sodium sulfate is added, and the mixture is vortex for 30 seconds. An aliquot of the toluene is transferred to an autosampler vial for analysis. For tops samples, 8 ml aliquot of the ethyl acetate extract is placed in a centrifuge tube and the solvent is removed under reduced pressure. The residue is resolved in 2 ml hexane and is submitted to a silicic acid (2 g of 100-200 mesh, topped with 1 g of anhydrous sodium sulfate) column. The column is sequentially eluted with 10 ml hexane, 10 ml 5% ethyl acetate in hexane, 25 ml of 25% ethyl acetate in hexane and 10 ml of ethyl acetate. The second and last fractions contain fonofos and fonofos oxon, respectively. These fractions are collected in a single centrifuge tube, and the solvents are removed under reduced pressure. 2.0 ml toluene and about 100 mg of anhydrous sodium sulfate are added to the residue, the mixture is vortexed, and an aliquot of the toluene is transferred to an autosampler vial for analysis. The method's determinative step utilized GC/MSD with select ion monitoring at m/z 246 for fonofos and m/z 230 for fonofos oxon. Quantification is accomplished through use of external standards. The method's limit of detection is 0.01 ppm for both compounds. Recovery of fonofos and fonofos oxon from sugar beet roots and tops fortified at 0.01 ppm ranged from 68 to 114%.

Summary of the field trial residue data for fonofos and fonofos oxon in sugar beet roots and sugar beet tops is provided below:

Sample Type	Location State	Rate lb ai/A	PHI Days	Fonofos/fonofos oxon ppm found
roots	CA	1.56	161	<0.01/<0.01
tops	CA	1.56	161	<0.01/<0.01
roots	ID	1.56	136	<0.01/<0.01
tops	ID	1.56	136	<0.01/<0.01
roots	MI	1.56	128	<0.01/<0.01
tops	MI	1.56	128	<0.01/<0.01
roots	MN	1.56	156	<0.01/<0.01
tops	MN	1.56	156	<0.01/<0.01
roots	MN	1.56	156	<0.01/<0.01
tops	MN	1.56	156	<0.01/<0.01
roots	ND	1.74	154	<0.01/<0.01
tops	ND	1.74	154	<0.01/<0.01

Storage stability data for fortified samples on potatoes (a root crop), and alfalfa(a none-grass forage crop) were also submitted. These data indicated that fonofos is stable up to two years, under frozen atorage conditions, with recoveries ranges from 72% to 97% for potatoes and 82% to 89% for alfalfa.

DEB'S Comments:

1. The submitted residue data are adequate to support a national registration for the use of Dyfonate 10G, and 20G on sugar beets.

2. Established tolerances (40 CFR 180.221) for fonofos and its metabolite fonofos oxon in or on sugar beet tops (0.1 ppm) and root crop vegetables (0.1 ppm) are adequate to cover this proposed amended registration.

3. Deficiency #1 is resolved.

Deficiency #2 Restated from DEB's memo dated 1/6/87

A sugar beet processing study is required in order to estimate residues in dehydrated pulp, molasses and refined sugar.

Petitioner's Response

The petitioner, ICI America's Inc., in their cover letter of 5/26/89, state that a sugar beet processing study was submitted to

the Agency on 5/9/88 (MIRD #40620403).

DEB's Comment

DEB has no record of having received the above cited sugar beet processing study. Deficiency #2 has not been resolved.

Deficiency #3, Restated from DEB's memo dated 1/6/87

Sugar beet commodities are used as ruminant and poultry feed items. Ruminant and poultry metabolism and feeding studies required by the Fonofos Registration Standard must be submitted.

Petitioner's Response

The petitioner in their cover letter 5/26/89 states that poultry and goat feeding studies have been submitted to the Agency [poultry, 7/15/88 (MIRD 40749501), and goat 6/10/99 (MIRD # 4057501)].

DEB'S Comment

The above cited studies are currently under review by DEB (personal communication with W. Smith, DEB). Deficiency #3 has not yet been resolved.

Conclusion

1. The submitted residue data are adequate to support a national registration for Dyfonate 10G and 20G on sugar beets.

2. Established tolerances (40 CFR 180.221) for fonofos and its metabolite fonofos oxon in or on sugar beet tops (0.1 ppm) and root crop vegetables (0.1 ppm)are adequate to cover this proposed amended registration.

3. Sugar beet processing studies have not yet been received by DEB.

4. Ruminant and poultry feeding studies for fonofos are currently under review by DEB.

Recommendation

For the reasons cited in conclusions 3 and 4 above, we continue to recommend against this proposed amendment at this time. The registrant should be made aware of our conclusions.

cc: Fonofos (Dyfonate) RF, SF, Reg. Standard File, Circ., Freshteh Toghrol, ISB/PMSD
RDI: F. B. Suhre Acting Section Head(8/21/89), E. Zager Acting Deputy Branch Chief(8/21/89).
H7509C DEB: F.T., CM#2: RM:802: 557-7887 , F.T. (8/21/89).