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

MAY 9 1989

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: 89-TN-06. Section 18 Specific Exemption Request for the Use of Sethoxydim (Poast^{R}) on Snap Beans in Tennessee. DEB. No. 5281.

FROM: Linda S. Propst, Chemist
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THRU: Andrew R. Rathman, Section Head
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TO: D. Stubbs/J. Tompkins, PM Team 41
Registration Support and Emergency Response Branch
Registration Division (H7505C)

Tennessee Department of Agriculture is requesting a Section 18 emergency exemption for the use of Poast^{R} (sethoxydim) on snap beans for the control of annual and perennial grasses. It is estimated that 6,100 acres will be treated with 760 gallons of Poast^{R}.

Tolerances are established for the combined residues of the herbicide sethoxydim, 2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio) propyl]-3-hydroxy-2-cyclohexene-1-one and its metabolites containing the 2-cyclohexene-1-one moiety (calculated as the herbicide) in or on numerous raw agricultural commodities (40 CFR 180.412). Permanent tolerances requested in PP#8F3640/8H5557 to cover residues of sethoxydim in or on snap beans, bean hay and forage are currently in reject status.

The proposed use was not clearly stated in this submission (i.e. PHI, number of applications). DEB contacted the Tennessee Department of Agriculture (telecon 5/5/89, L. Propst/Jace Burch) and was told the use would be a single application using 0.5 lb. a.i. per acre and no application would be made within 30 days of harvest.

The metabolism of sethoxydim has been previously reviewed and is considered adequately understood in plants and animals. The

residue of concern for plants and animals includes parent plus metabolites containing the 2-cyclohexene-1-one moiety.

Data have been generated reflecting sethoxydim residues on dry and succulent beans utilizing Methods BWC-30 and 30G, respectively. Method BWC-30 has undergone a successful method validation and is published in PAM II, as Method I for sethoxydim. Method BWC-30G has been recommended for inclusions in PAM II as a lettered supplement to Method I (PP#3F2094, S. Malak, 6/23/86). Briefly, the methods involve extraction of homogenized samples with methanol; dried commodities are soaked in water prior to extraction. Following removal of the solvent, the samples are extracted with methylene chloride, and oxidized with basic hydrogen peroxide. The resulting diacids are esterified using methanol/H^+. The parent compound and metabolites containing the 2-cyclohexen-1-one moiety are converted to DME and DME-OH which are purified by silica gel chromatography. For succulent beans, this purification step is followed by solid phase extraction using a C18 disposable column. The samples are analyzed by GLC using a sulfur specific flame photometric detector. The limit of detection for dry and succulent commodities are 0.05 and 0.1 ppm, respectively.

Data submitted in conjunction with PP#8F3640/8H5557 reflect residues of sethoxydim on succulent beans which generally had been treated with split applications using 0.5 and 0.3 lb. a.i./A applied with a variety of standard ground application techniques. The beans were harvested at normal maturity with pre-harvest intervals of 10-55 days. Treated samples as well as untreated controls were collected for analysis. Combined residues (sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety determined as DME and DME-OH) on succulent beans ranged from 0.20 - 3.6 ppm. The maximum residues found in the feed items were were 40 ppm in bean hay, 5.8 ppm in bean forage, and 3.8 ppm in cannery waste. Based on these data and for the purposes of this Section 18 only, we conclude that combined residues of Poast^R and its metabolites are not likely to exceed 5 ppm in or on snap beans, 10 ppm bean forage, and 50 ppm in or on bean hay as a result of the proposed emergency use.

The feed items in this Section 18 could contribute close to 20 ppm of sethoxydim to the diet of dairy cattle (18 ppm from bean hay and 1 ppm from the seed) and .75 ppm to the diet of poultry.

Cattle fed 50 ppm sethoxydim showed maximum combined residues of 0.03 ppm in the muscle, non-detectable residues in the fat, 0.16 ppm in the kidney, 0.20 ppm in the liver, and 0.06 ppm in the milk. Based on this data, DEB concludes that the established tolerances of 0.2 ppm to cover secondary residues of sethoxydim and its metabolites in the meat, fat and meat by-products of cattle, goats, hogs, horses and sheep, and 0.05 ppm for milk, are not likely to be exceeded as a result of livestock ingesting feed items treated as proposed with this emergency use.

Poultry fed 10 ppm of sethoxydim in their diet showed maximum residues of <0.05 ppm in the muscle, non-detectable residues in the fat and kidney, .02 ppm in liver, and 0.34 ppm in the eggs. Based on this data, DEB concludes that the established tolerances of 0.2 ppm in the meat and meat by-products of poultry and 0.5 ppm in eggs will not be exceeded as a result of the proposed emergency use.

Conclusions and Recommendations

1. The nature of the residue has been adequately delineated in plants and animals. The residues of concern are the parent and its metabolites containing the 2-cyclohexene-1-one moiety.

2. Analytical methods are available for enforcement purposes to determine residues of sethoxydim and its metabolites in snap beans. These methods have been published in PAM II.

3. For the purposes of this Section 18 only, we estimate that combined residues of sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety will not exceed 5 ppm in snap beans, 10 ppm in bean forage, and 50 ppm in bean hay.

4. Secondary residues of sethoxydim and its metabolites occurring in meat, milk, poultry and eggs as a result of livestock and poultry ingesting feed items which have been treated as proposed will not exceed the established tolerances.

5. Reference standards are available from the Pesticides and Industrial Chemical Repository.

TOX considerations permitting, Dietary Exposure Branch has no objections to this Section 18 emergency exemption. An agreement should be made with FDA regarding the legal status of the treated commodities in commerce.

cc: Reading File, Circulation, Subject File, Reviewer, Section 18 File, Branch Chief, SACB/TAS, PMSD/ISB
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