PMSD/ISB 153

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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

Memorandum

Subject: 87-MN-05. Proposed Section 18 for the Use of Sethoxydim (Poast®, EPA Reg. No. 7969-58) on Snap Beans.
No MRID Number
RCB #2256

From: Michael S. Metzger, Chemist
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Thru: Edward Zager, Section Head, SRS 2
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To: Emergency Response and Minor Use Section
Registration Division (TS-767C)

and

Toxicology Branch
Hazard Evaluation Division (TS-769C)

The Minnesota Department of Agriculture requests a Section 18 specific exemption authorizing application of the herbicide sethoxydim (Poast®, 20% a.i. emulsifiable concentrate) to snap beans to control wild proso millet. Applications would be made to approximately 600 acres of the total 200 acres of snap beans throughout the state.

Tolerances are established for residues of the herbicide Poast® (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) ranging from 0.05(N) ppm for milk to 75(FA) ppm for peanut soapstock. Numerous tolerances are pending (40 CFR 180.412; 21 CFR 561.430). A Registration Standard has not been completed for sethoxydim.

The proposed use was not clearly stated in this submission (i.e. PHI, number of applications). RCB contacted George Klacan (Senior Research Scientist, Ag. Research Department,

The Pillsbury Company, LeSueur, MN; telecon, 5/12/87) who provided this information. A single application of Poast® is to be made to snap beans at a rate of 0.5 lbs.a.i./A using ground or aerial equipment. A 30-day PHI will be imposed.

The metabolism of sethoxydim has been discussed previously (see J. Onley, 12/15/82; M.J. Nelson, 3/8/83). The residue of concern for plants and animals includes parent plus metabolites containing the 2-cyclohexene-1-one moiety.

Residue data have been generated reflecting sethoxydim application to peas (succulent), green and lima beans and soybeans using BWC Agricultural Chemicals Method Number 30. This method involves extraction of the rac with organic solvents and water, clean-up by alkaline precipitation, oxidation to pentanedioic acids, derivatization to the dimethyl esters, silica gel clean-up, HPLC clean-up (animal tissues only) and GLC analysis using a sulfur-specific detector. The limit of detection for the method is 0.05 ppm. Method Try-Outs have been performed successfully for soybeans and soybean commodities, eggs, milk, beef tissue and chicken tissue. Recoveries for soybean commodities were 74 $\pm$ 10%.

Residue data for "dry beans" were submitted with this Section 18 (2 values from CA and MS). The analytical method used was not stated. Residue values were 1.22 ppm and 0.38 ppm for a single application at 0.5 lbs.a.i./A and PHIs of 61 and 62 days.

In another study, residue values were non-detectable (<0.05 ppm) at 0.18, 0.44 ad 0.90 lbs.a.i./A and 23-day PHIs. Other data for green beans and peas is summarized below (from R. Loranger, 6/27/83).

Crop	Application Rate (lbs.a.i./A)	PHI (days)	Residues (ppm)
Green Beans	0.5	34	0.66
	"	14	0.11
	"	32	<0.05
Peas	0.18	23	<0.05
	0.44	23	0.42
	0.90	23	0.76

Residue data for soybeans were submitted with PP#2F2670 (Acc. No. 070821). Two applications of Poast® were made to soybeans at 0.5 lbs.a.i./A. Seed samples were taken at 17-122 day PHIs showing residues of 0.07-42.8 ppm. The company (BASF Wyandotte) performed statistical analyses of these data (see M.J. Nelson, 7/23/82). The average and 95% confidence limit for these data at a 30-day PHI are 15 ppm and 58 ppm respectively.

Based on these data, and for the purposes of this Section 18 only, we conclude that combined residues of Poast® and its metabolites in or on snap beans are not likely to exceed 6 ppm as a result of the proposed use.

No residue data are available for snap bean vines or hay. In the conversation between RCB (M. Metzger) and George Klacan (Pillsbury, telecon 5/12/87), Mr. Klacan stated that a grazing/feeding restriction for vines and hay would be acceptable for the purposes of this Section 18. Therefore, a grazing/feeding restriction should be imposed for snap bean vines and hay treated with sethoxydim under the authority of this Section 18.

Residue data are not available for snap bean cannery waste. Cannery waste to be used as feed is comprised of 82-92% (18-24% gross load) snips, defective pods and spills and 8-18% (2-4% gross load) vines and leaves which have been thoroughly washed and separated from unusable product (W. Anthony, 6/27/85). Based on this, we conclude that combined residues of sethoxydim and its metabolites containing the 2-cyclohexene-1-one moiety are not likely to exceed 10 ppm in snap bean cannery waste as a result of the proposed use.

Meat, Milk, Poultry and Eggs

Snap bean cannery waste is the only animal feed item (cattle and swine only) associated with this use. However, the maximum dietary intake for residues of sethoxydim in animals will not increase as a result of the proposed use since cannery waste in the diet would substitute for some other commodity in the diet having a higher tolerance. Therefore, the tolerances of 0.05(N) ppm for milk, 0.5 ppm for eggs and 0.2 ppm for the meat, fat and meat by-products of cattle, goats, hogs, horses poultry and sheep are not likely to be exceeded as a result of the proposed use.

Conclusions

(1) The metabolism of sethoxydim is adequately understood. The residue of concern in plants and animals includes parent plus metabolites containing the 2-cyclohexene-1-one moiety.

(2) Analytical methods are available for enforcement (Method No. 30, "Determination of BAS 9052H and Its Metabolite Residues in Soybean Seed, Soybean Seed Processed Fractions, Chicken Tissues, Beef Tissues, Milk and Eggs"; PAM II, Method I).

(3) Combined residues of sethoxydim and its metabolites are not likely to exceed 6 ppm in or on snap beans, and 10 ppm in snap bean cannery waste as a result of the proposed use.

(4) A grazing/feeding restriction should be imposed for snap bean vines and hay.

(5) Combined residues are not likely to exceed the tolerances of 0.05(N) ppm for milk, 0.5 ppm for eggs and 0.2 ppm for the meat, fat and meat by-products of cattle, goats, hogs, horses, poultry and sheep as a result of the proposed use.

(6) Analytical reference standards are available from the Pesticides and Industrial Chemicals Repository.

Recommendations

TOX considerations permitting, and provided that a grazing/feeding restriction for snap bean vines and hay is imposed, RCB has no objections to this Section 18. An agreement should be made with the FDA regarding the legal status of the treated commodities in commerce.

cc: Sethoxydim (Poast®) S.F., R.F., Section 18 S.F., Circu,
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