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

JUN 3 1988

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Sethoxydim (Poast®; EPA Reg. No. 7969-58) on alfalfa.
Add aerial & third applications.
MIRD Nos. 405158-01 & 404829-01.
RCB Nos. 3443 & 3448.

FROM: Kenneth W. Dockter, Chemist
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

THRU: A.R. Rathman, Section Head
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: Robert J. Taylor/Vickie K. Walters, PM#25
Registration Division (TS-767)

and

Toxicology Branch
Hazard Evaluation Division (TS-769)

The Agricultural Chemicals Group, BASF Corporation Chemicals Division has submitted two supplemental amended labels for the use of Poast® Herbicide (2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio) propyl]-3-hydroxy-2-cyclohexen-1-one) for control of grassy weeds in alfalfa. One revised labelling would remove the restriction, "Poast may be applied to alfalfa by ground equipement only"; the other would allow a, "third application when regrowth (of grass species) occurs or new plants emerge". Separate residue data were provided in support of each proposed label amendment.

Tolerances have been established for combined residues of the herbicide sethoxydim and its metabolites containing the 2-cyclohexene-1-one moiety (calculated as the herbicide) as follows: alfalfa forage and hay, 40 ppm for each; milk, 0.05 ppm (N); eggs, 0.5 ppm; and the meat, fat, and meat by-products of cattle, goats, horses, poultry, and sheep, all at 0.2 ppm (40 CFR 180.412).

No Registration Standard for sethoxydim has been issued as of this writing, and none is planned. (personal communication from B. Boodee, 3-15-88).

6

33

The currently registered use for sethoxydim on alfalfa allows two treatments of up to 0.5 lb ai/A/application, i.e., a total of 1.0 lb ai/A/season (5 pints of Poast®/season), and by ground equipment only. PHIs of 7 and 20 days exist for forage and hay, respectively.

The registrant has submitted data (MRID # 405158-01) from three side-by-side California studies comparing residue levels on alfalfa forage and hay resulting from ground applications versus residue levels resulting from aerial applications. Eight of 28 samples received two applications at a rate of 0.5 lbs. ai/A/application; the others (20) received only one application of 0.3 or 0.5 lbs ai/A. When applied by air equipment, maximum total residues were 22.4 ppm in alfalfa forage at an 8-day PHI, and 13.5 ppm in hay at a 28-day PHI. The corresponding results from ground applications were: 27.9 ppm in forage at a 6-day PHI, and 46.5 ppm in hay at a 26-day PHI.

Based on the above data we estimate that the residues of sethoxydim will not exceed 40 ppm in or on alfalfa forage and hay as a result of the proposed aerial use. Previously, RCB had recommended for a similar section 18 action. (See M. Metzger memorandum of 8/11/86; 86-CA-23). However, we note that the current hay tolerance is not high enough to accommodate these new residue data in alfalfa hay resulting from ground applications of sethoxydim. Therefore, the registrant must now either propose a higher tolerance (e.g., 50 ppm) or amend the use accordingly. Additionally, we note that the current tolerances for residues of sethoxydim in meat (0.2 ppm) and in milk (0.05 ppm N) would be adequate to cover the higher alfalfa tolerance.

Also submitted by the registrant are data (MRID #404829-01) from 27 studies in 14 states (CA, ID, IL, IA, KS, MI, MN, MT, NE, NY, ND, PA, SD, & WI) of residue levels resulting from ground applications at a specified split rate of 0.5 plus 0.5 plus 0.3 lbs. ai/A at PHIs of 14 to 33 days. Reported were maximum total residues of 11.9 and 34.1 ppm, respectively in alfalfa forage and hay; both at a 21-day PHI. In one of two additional trials (in KS & MT) that received 3 treatments of 0.5 lbs. ai/A each, maximum total residues were 15.3 and 44.9 ppm, respectively in alfalfa forage and hay; both at a 22-day PHI.

Data submitted with PP#3F2904, show maximum residues of 38 ppm in alfalfa forage at a 7-day PHI; "sample had been allowed to dry prior to analysis" (approximating hay). On recent re-analysis of similarly-treated alfalfa hay, maximum residues of 28 ppm were reported; initially levels of only 12.7 were determined at a 17-day PHI. As stated above, the current (latest) levels were 46.5 ppm. Initial analyses of alfalfa hay samples showed up to 3-fold variation in residue levels reported. Therefore, these data suggest that tolerances might be exceeded.

7

24

Since no three-application data were provided at a 7-day PHI, we are unable to determine the adequacy of current tolerances for this proposed, increased usage rate.

The analytical methods for the determination of sethoxydim are BWC's method 30G(forage) and 30H(hay). The basic method was detailed in PP#3F2950 2/2/84 review of K. Arne. Briefly, forage samples are extracted with methanol (hay samples are rehydrated, then extracted), oxidized with hydrogen peroxide, and the resultant substituted pentanedioic acids converted to the dimethyl esters. These are cleaned up by solvent partitioning and column chromatography. GLC using a flame photometric detector in the sulfur mode gave recoveries of 88±5% for alfalfa forage and 86±9% for hay with the quantitation limit of 0.5 ppm.

Conclusions and Recommendations

We have no objections to removing the current label restriction, "Poast may be applied to alfalfa by ground equipment only". But, these new residue data in alfalfa hay resulting from ground application indicate that tolerances might be exceeded. Therefore, the registrant must now either propose a higher tolerance (e.g., 50 ppm) or amend the use accordingly. The current tolerances for residues of sethoxydim in meat (0.2 ppm) and in milk (0.05 ppm N) are adequate to cover the higher alfalfa tolerance.

We conclude that sufficient data are not available in support of the proposed addition of a third application and the resultant increased seasonal usage rate.

Therefore, we recommend against the proposed labelling that would add a third ground application and increase the seasonal usage rate to 1.3 lbs. ai/A.

cc: K. Dockter (RCB), Sethoxydim S.F., Amended Use file,
E. Eldredge (ISB/PMSD), Circulation (7), RF.
RDI:Section Head:ARRathman:Date:6/1/88:RDSchmitt:Date:6/1/88
TS-769:RCB:Reviewer:KWDockter:RM:802:CM#2:edited by kwd:Date:6/1/88