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

SEP 7 1984

Review given to BASF not required to meet

MEMORANDUM

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

SUBJECT: EPA Reg. No. 7969-58. Sethoxydim (Poast) on legume cover crops and fallow land. Letter received 5/3/84. Accession Number 253601.

FROM: Richard Loranger, Chemist
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R. Loranger

THRU: Charles L. Trichilo, Chief
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TO: R. Taylor/V. Walters, PM Team 25, FHB,
Registration Division (TS-767)

In our latest memo concerning the use of the herbicide sethoxydim (tradename Poast) on legume cover crops and fallow land we stated this represents a food use requiring tolerances for subsequent crops due to the presence of detectable residues in soil up to one year after treatment (L. Propst, 2/24/84). In response the registrant (BASF Wyandotte Corp.) has submitted a copy of rotational crop studies (accession number 253601) which were previously reviewed by EAB. In the accompanying letter Donald Yoder states "This report proved that no residues would result in any of a large number of representative crops grown in soil treated 30-360 days prior to seeding". On this basis the current label for Poast does not have any limitations concerning rotated crops. Since the proposed use patterns for cover crops and legumes are the same as that approved for soybeans, the registrant feels the subject label should be acceptable.

The rotational crop studies involved treatment of soybeans and cotton in MS and NJ. Soybeans were treated with 0.89-1.0 lb ai per acre of ^{14}C-Poast while cotton received 0.5 lb ai/A (MS only). To simulate emergency replants various crops were seeded 30-45 days after the Poast applications. Thirty days following treatment of cotton (0.5 lb ai/A) radishes were planted and found to contain <0.005 ppm total ^{14}C in roots and 0.01-0.02 ppm in tops. Sorghum shoots had up to 0.05 ppm activity while mature samples (grain, stalk) had 0.006-0.009 ppm. Following application to soybeans (0.89-1.0 lb ai/A) emergency replants were conducted 35-45 days later for red beets, radishes, carrots, cabbage, spinach, lettuce, oats and spring wheat. The leafy vegetables had 0.006-0.012 ppm total activity while the small grains and root crops had <0.005-0.01 ppm with the exception of 0.06 ppm in one beet top sample.

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To simulate fall rotational crops winter wheat, mustard greens and turnips were planted 134 days after Poast application of 1.0 lb ai/A. Although most samples contained 0.01-0.02 ppm total activity, one wheat straw sample contained 0.05 ppm. Finally, studies were conducted to represent annual rotations with various crops planted 267-328 days after Poast treatments (0.5-1.0 lb ai per acre). Lettuce and sugar beets seeded following 0.5 lb per acre had 0.01-0.02 ppm total ^{14}C. Green samples of spring wheat also contained up to 0.02 ppm, while the mature straw and grain had 0.06 and 0.024 ppm, respectively. Annual rotations to corn, oats, cabbage and red beets following the 0.89 lb use resulted in a maximum of 0.024 ppm total activity in cabbage.

Soil samples were also collected in the above studies. All 0-4" samples contained detectable radioactivity (0.01-0.11 ppm). Most 4-8" and 8-12" samples also had measurable activity with maximum levels of 0.07 and 0.04 ppm, respectively.

We have also been informed of an earlier greenhouse study in which soil was treated with the equivalent of 0.44 lb ai/A (4/26/84 memo from S. Creeger)(accession no. 099539). The soil was aged 120 days prior to seeding with wheat and radishes. Harvested radish leaves and roots were found to have 0.03 and 0.02 ppm ^{14}C. The levels in wheat were as follows: grain-0.03 ppm, husk-0.15 ppm, straw-0.09 ppm, and root-0.16 ppm. Further analysis of the husk and straw revealed that known metabolites of Poast comprised the primary residues. Although we acknowledge that the higher residues found in this experiment could be due to the greenhouse, the application rate was only about half that proposed and the soil was aged 120 days prior to seeding.

The finding of detectable residues in soil and rotated crops in the above studies (especially the wheat study in the previous paragraph) confirms that the proposed use of sethoxydim on fallow land is a food use requiring tolerances.

Conclusion and Recommendation

The proposed use of sethoxydim (Poast) on legume cover crops and fallow land will result in detectable residues in soil up to one year later and in rotated crops planted 120 days later. Therefore, this represents a food use requiring tolerances for residues of the herbicide 2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one and its metabolites in subsequent crops. We continue to recommend against this amended registration in the absence of tolerances. The registrant should submit a revised label indicating which crops may be planted following treatment and the minimum interval to be observed until such planting. Appropriate data and tolerance requests will then be needed for those crops not currently having tolerances for residues of Poast.

cc: Circu, RF, Sethoxydim (Poast) SF and amended use, Loranger, EAB
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