9/15/95

MEMORANDUM:

SUBJECT: PP#3F4187. Thiazopyr (MON13200) in/on Cotton and Citrus Crops. Field Rotational Crop Study. MRID# 430963-01. CBTS#'s 15382. DP Barcode D213927.

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Field Rotational Crop Study (MRID 430963-01)

The petitioner has submitted a field rotational crop study entitled, "Rotational Crop Residues Of Thiazopyr In Raw Agricultural Commodities", (MRID#430963-01) dated January 1994.

A confined accumulation study in rotational crops (MRID #42275515) which was previously reviewed by EFGWB indicated that thiazopyr is rapidly and extensively degraded in soil and rotational crops to a variety of polar, low-level metabolites. The major routes of metabolism include sulfur oxidation, thiazoline ring opening, and methyl ester hydrolysis. (See memo of 09/12/94, J. Stokes for discussion of metabolites and their corresponding chemical structures).

In the review of the temporary tolerance petition (PP#2G4122, J. Garbus, 6/2/93), CBTS concluded that the proposed label statements regarding rotational crops were acceptable for the purposes of an experimental use permit only. The 18-month plant-back interval was not practical, and not acceptable for a permanent tolerance. The petitioner has now proposed a 9-month plant-back interval for all crops except cotton and an 18-month plant-back interval for grain sorghum, corn, and wheat.

An aerobic soil metabolism study has shown that the predominant metabolite is a monoacid. This compound is formed by the ester hydrolysis of the parent compound thiazopyr. Therefore the harvested samples of rotational crops were analyzed for thiazopyr and this monoacid metabolite according to the proposed analytical enforcement methodology discussed previously (See memo 09/12/94, J. Stokes). The lower limited of validation (limit of quantitation, LOQ) for the method is <0.025 ppm for the parent and <0.025 ppm for the metabolites; the combined limit is <0.05 ppm. The combined limit of detection (LOD) is 0.016 ppm (0.003 ppm for AA chemophore and 0.013 ppm for SAA chemophore). This methodology will detect >70% of the thiazopyr residues. CBTS had determined that this proposed methodology was lengthy and complex and requested that the petitioner submit additional enforcement methodology for the analysis of thiazopyr and its metabolites. However, CBTS has determined that the rotational crop data obtained using this methodology are acceptable.

Study Design and Results:

Primary crops of either cotton or peanut were planted in 4 test locations [CA and MS (cotton), and GA and TX (peanut)]. The primary crop was then treated with a single preplant incorporation of thiazopyr (a.i.) into the soil to a depth of 2-4 inches at the proposed maximum label rate of 0.3 lb a.i./A and at

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a 2X rate of 0.6 lb a.i./A. In addition, an untreated control plot was maintained for each crop at each location. Each plot was subdivided to allow fall and spring rotation crops. The rotational crops were represented by a small grain (sorghum or wheat), a leafy vegetable (lettuce or spinach), and a root crop (radish, sugarbeet, or turnip). Rotational crops were planted in the fall 144-188 days after treatment, and in the spring 269-329 days after treatment. The fall planting represents the cultural practice of a crop rotation immediately after harvest; the spring planting represents the cultural practice of an annual rotation. Rotational crops were planted according to the following: lettuce, 152-188 days (fall), 289-319 days (spring); sugarbeet, 188 days (fall), 319 days (spring); winter wheat, 143-188 days; radish, 144-152 days (fall), 289-302 days (spring); spinach, 143-144 days (fall), 269-302 days (spring); turnip, 143 days (fall), 269 days (spring); sorghum, 302-319 days.

Crops rotated/planted approximately 140 days after the preplant incorporation of thiazopyr at the maximum proposed label rate of 0.3 lb a.i./A (or less) to a primary crop (cotton or peanut) have thiazopyr combined residues <0.05 ppm in the rotational crop raw agricultural commodities except for sorghum (spring planting, 289-329 days after treatment) forage (CA, 0.08 ppm), silage (TX, 0.07 ppm), fodder (GA and TX, 0.06 ppm), and hay (CA and TX, 0.07-0.08 ppm). At a 2X rate thiazopyr residues were found in sorghum forage (CA, 0.28 ppm; MS, 0.08 ppm; TX, 0.07 ppm), sorghum silage (CA, GA, MS, and TX, 0.07-0.14 ppm), sorghum hay (CA, MS, and TX, 0.08-0.41 ppm), and sorghum fodder (CA, GA, and TX, 0.09-0.47 ppm). No residues >0.05 ppm were found in harvested sorghum grain at either the proposed 1X rate of 0.3 lb a.i./A or at a 2X rate (0.6 lb a.i./A).

Thiazopyr residues were not found in harvested samples of wheat forage (fall planting, 202-273 days after treatment), wheat straw (344-377 days), wheat grain (344-377 days), or fall and spring crops of lettuce (259-397 days), spinach (241-356 days), radish (202-356 days), sugarbeet (354-397 days), or turnip (303-347 days) at the proposed maximum label rate of 0.3 lb a.i./A. Residues were found in lettuce (CA, 0.14 ppm), sugarbeet tops (CA, 0.1 ppm), and sugarbeet roots (CA, 0.1 ppm) at a 2X rate (0.6 lb a.i./A).

Conclusions/Recommendation:

Real weathered thiazopyr residues are found in sorghum raw agricultural commodities. Therefore, the petitioner must propose rotational crop tolerances for sorghum forage and fodder. The petitioner proposed a 18 month plantback label restriction for sorghum. This is not practical. CBTS will only consider up to a 12-month restriction unless phytotoxicity precludes planting at that time. Any proposed tolerance must be adequately supported by field trial residue data for sorghum. The petitioner is referred to the document entitled "EPA Guidance on Number and Location of Domestic Crop Field Trials for the Establishment of Pesticide Residue Tolerances" (June 1994).

The petitioner also proposed a 9-month plantback restriction on all other rotational crops. Since real residues were found in sorghum, CBTS can not determine with the field residue data reviewed whether other typical rotational crops such as corn, soybean, safflower, or legume crops (alfalfa, clover, lespedeza) which are planted after the harvesting of a primary crop of cotton or peanut could also have thiazopyr residues. Therefore, without additional data for other crops, CBTS can only accept plant back restrictions for the followup crops of leafy vegetables and root/tuber vegetables (5 months plantback), and wheat (5 months plantback).

The petitioner must submit a revised Section B for plantback restrictions of 6 months for crops of leafy and root/tuber vegetables and wheat. The petitioner must also include a restriction against the rotation to all other crops not listed. The petitioner must submit a revised Section F (with supporting field trial data) to propose rotational crop tolerances for sorghum forage and fodder for the combined residues of thiazopyr and its metabolites.

cc: J. Stokes (CBTS); PP#3F4187; R.F.;Circu
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