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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: **Oxyfluorfen. Soybean Processing Study. Reregistration Case No. 2490.**
Chemical No. 111601 MRID #43764901 DP Barcode D220316 CBRS #16374

FROM: Steven A. Knizner, Chemist
Special Review Section I
Chemistry Branch II - Reregistration Support
Health Effects Division (7509C)

THRU: Andrew Rathman, Section Head
Special Review Section I
Chemistry Branch II - Reregistration Support
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TO: Mark Wilhite, PM Team 53
Accelerated Reregistration Branch
Special Review and Reregistration Division (7508W)

Below find a review of a oxyfluorfen soybean processing study (MRID #43764901) submitted by Rohm and Haas Co. in response to the Phase 4 Review (S.Funk, 3/16/91).

Tolerances are established for residues of the herbicide oxyfluorfen [2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene] and its metabolites containing the diphenyl ether linkage in or on numerous commodities, including soybeans at 0.05 ppm [40 CFR §180.381 (a)] and soybean oil at 0.25 ppm [40 CFR §185.4600].

Recommendations

The submitted study adequately fulfills requirements for a soybean processing study. The oxyfluorfen soybean oil food additive tolerance at 0.25 ppm [40 CFR §185.4600] is not required and should be revoked.

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MEMORANDUM

SUBJECT: Oxyfluorfen. Soybean Processing Study. Reregistration Case No. 2490
Chemical No. 111601 MRID #43764901 DP Barcode D218842 CBRS #16139

FROM: Steven A. Knizner, Chemist *St. A. Knizner*
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TO: Mark Wilhite, PM Team 53
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Special Review and Reregistration Division (7508W)

CBRS has already reviewed this data package (see S.Knizner, 10/25/95,
DP Barcode D220316, CBRS #16374).

cc: S.F., circ., R.F., List B File, S.Knizner
RDI: A.Rathman, 11/20/95 R.Perfetti, 11/21/95 E.Zager, 11/21/95
H7509C:CBRS:CM#2:305-6903:SAK:sak:oxyflsoy:11/6/95

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Conclusions

Dry seed obtained from soybeans treated at a 5x maximum application rate, had non-detectable oxyfluorfen residues (<0.01 ppm). Soybeans (dry seed) contain 20% oil by weight, resulting in a maximum concentration factor of 5x for oil. Because non-detectable residues were found in dry soybean seeds following treatment at a rate equal to the maximum theoretical concentration factor, a processing study is not required. Additionally, the oxyfluorfen soybean oil food additive tolerance at 0.25 ppm [40 CFR §185.4600] is not required and should be revoked.

Background

In conjunction with PP#8F2058 (R.Perfetti, 2/13/79) residue data were submitted from 19 field trials conducted in 6 states. For pre-emergent applications at 0.12 to 1.75 lb ai/A (0.24 to 3.5x), residues in soybeans ranged from <0.01 to 0.02 ppm, with PHIs of 118 to 165 days. Post-emergence directed spray application trials reflected 1 or 2 applications at 0.031 to 0.626 lb ai/A. Residues in soybeans ranged from <0.01 to 0.02 ppm, with PHIs of 85 to 131 days.

In data summarized in MRID #92136053, oxyfluorfen was applied at rates of 0.12 to 1.0 lb ai/A (0.24 to 2.0x), with PHIs ranging from 85-200 days. A total of 79 trials were conducted in 21 states. Of the 223 samples analyzed, 10 samples had detectable residues (5 at 0.01 ppm and 5 at 0.02 ppm), with the remaining 213 samples having non-detectable residues (<0.01 ppm).

In three studies (AR, GA, IN) (data summarized in MRID #92136086), beans containing residues of <0.01 ppm were processed into meal and oil. Residues in oil were reported as <0.01 ppm. This processing study was cited as being deficient in the review of PP#8F2058 (R.Perfetti, 2/13/79) because for all trials the rac had non-detectable residues. The maximum application rate was 1.0 lb ai/A (2x). The registrant proposed that the concentration factor obtained from the cottonseed processing study (approximately 5x) be used for soybeans and the Agency agreed (R.Perfetti, 8/31/79).

Detailed Considerations (MRID #43764901)

Use on Soybeans

Currently, Goal 1.6E (EPA Reg. No. 707-174) is registered for use on fallow beds to be planted to soybeans. Applications are to be made at 0.25 to 0.5 lb ai/A. Do not apply oxyfluorfen within 7 days prior to planting. Prior to planting, fallow beds should be worked to a depth of at least 2 inches.

Field Trial

Soybeans grown in Missouri were treated with a single preemergence application of Goal

1.6E (lot no. 2-2090, 20.1% by analysis) at a rate of either 0.5 lb ai/A (1x) or 2.50 lb ai/A (5x). Application was made one day after planting, using a CO₂ backpack sprayer. Samples were harvested at 136 days after treatment using a combine. Samples were shipped frozen to Rohm and Haas Research Laboratories, Spring House, PA for analysis.

CBRS notes that not only were soybeans treated at an exaggerated rate (5x), but also application timing was later than that called for by label instructions (1 day after planting versus 7 days prior to planting).

Analytical Method

Samples were analyzed using analytical method TR34-94-150. This procedure involves extraction of residues from soybeans with ACN, followed by liquid-liquid partition, silica gel cleanup, and basic alumina solid phase extraction. Residues are quantified by GC/ECD. The standard curve was constructed using standards ranging from 0.005 ug/mL to 0.15 ug/mL. Concurrent fortifications were analyzed with samples. The registrant stated that the limit of quantitation was 0.01 ppm and the limit of detection was 0.003 ppm.

Results

Standards - Adequate representative chromatograms for standards and an adequate standard curve was provided. Response was linear over the standard concentration range (0.005 ug/mL to 0.150 ug/mL).

Fortifications - Percent recoveries for the 0.010, 0.050, and 0.50 ppm fortifications were 62.3, 93.3, and 104% respectively. Chromatograms were provided for all fortification samples. Sufficient data were presented to support 0.01 ppm as the limit of quantitation. However, no data were presented to support 0.003 ppm as the limit of detection.

Field Trial Samples - Duplicate samples of untreated control and treated (1x and 5x) dried soybean seeds were analyzed. No detectable residues were observed in any of the samples. Chromatograms for all samples were supplied.

Storage Stability

Samples were stored approximately 2 years from harvest to analysis. Storage stability data were not presented, but the registrant noted that a 3 year storage stability for numerous races is underway and will be submitted later this year. According to the registrant, the preliminary two year results for this study indicate no significant decline in oxyfluorfen residues.

Concentration Factors

Georgia Soybean Culture, D. Adams, U.Ga. Cooperative Extension Service, 1987, noted that a bushel of soybeans (dried beans) weighs 60 pounds and contains approximately 12 pounds (20%) oil. The Encyclopedia of Chemical Technology, Vol. 18, 2nd Ed., John Wiley & Sons, 1969, also noted that soybeans contain 21% fat, on a moisture free basis. The CRC Handbook of Processing and Utilization In Agriculture, Vol II, 1983, gives an approximate

