FILE

114402

Date Out EFB: 19 APR 1984

TO: Richard Mountfort
Product Manager
Registration Division
TS-767

FROM: Samuel Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 707-149 and -150

Chemical: Acifluorfen, sodium salt

Type Product: Herbicide

Product Name: Blazer

Company Name: Rohm and Haas

Submission Purpose: Reduce root crop rotational restriction

ZBB Code: 3(c)(5)

ACTION CODE: 305

Date in: 2/22/84

EFB # 4203-4204

Date Completed: 4/13/84

TAIS (level II)	Days
63	2

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

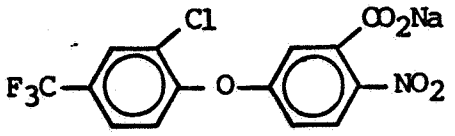
Rohm and Haas Company has submitted a request to amend the current labels for Blazer 2L and Blazer 2S Herbicide (Acifluorfen, sodium salt as a. i.), Reg. Nos. 707-149 and -150. The request is to lower the existing rotational crop restriction for root crops (such as carrots, turnips, sweet potatoes, etc.) from 18 months following treatment to 8 months following treatment.

1.1 Chemical

Common name: Acifluorfen, sodium salt

Chemical name: Sodium 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate

Chemical structure:



2.0 DIRECTIONS FOR USE

Current EPA approved label was not included in package submitted to EAB.

3.0 DISCUSSION OF DATA

No new data were submitted for review, only excerpts of previously submitted studies. Since the submission includes no new data, this review will consist of the Rohm and Hass comment (edited), titles of the excerpts followed by EAB's comment or conclusion of the original review.

3.1 Rohm and Haas comment: The reports show that ^{14}C labeled Blazer rapidly disappears from treated soil (half-life is ca. 30 days). However, the remaining material is largely unchanged.

3.1.1 A Residue Decline Study of Soil Treated With ^{14}C-RH-6201 at Newton, PA., in 1977. T. D. Rogerson. Rohm and Haas Technical Report No. 34-78-19. Tab 1.

This study was reviewed by EAB 1/3/80 in support of registration of Blazer for use on soybeans.

EAB concluded that in the 0-3 inch soil core half-life of ^{14}C residues of acifluorfen ranged from 29-44 days (depending on position of label).

Note: EAB Decline Program Analysis of the data (by current reviewer) for the 0-3 inch soil depths indicated that only data for the NO_2-ring ^{14}C-RH-6201 residues gave a correlation coefficient >.8 (.82) for a half-life of 30 days.

Leaching of radioactive residues into the 3-6 and 6-12 inch soil depths occurred during the early period of the study but after 110 days levels ranged from 0.01 to 0.06 ppm at 3-6 inch soil depth and were non-detectable at 6-12 inch depth. The reviewer noted detectable residues in the soil prior to application suggesting that residues were still present from the previous year's application.

Identity of ^{14}C residues was not determined.

3.1.2 Metabolism of RH-6201 in Soil. PP 7G1906. January 12, 1977 Rohm and Haas Technical Report No. 3423-76-15. Tab 2.

Briefly, soil samples taken at 57 days after application contained extractable residues identified as ^{14}C-RH-5781 (free acid of RH-6201). Rohm and Haas concluded that ^{14}C-RH-6201 was not extensively degraded during the study. Data from samples taken later were nonconclusive.

EAB review of PP 7G1906 dated 12/6/77 (or any subsequent review) does not discuss this study. The report, as submitted, is incomplete to review at this time. For review of this study, the complete report should be submitted.

3.2 Rohm and Haas comment: Root crops grown in the treated soil contain very low levels of total radioactivity at harvest (none detectable to 0.04 ppm-typically 0.01 ppm).

3.2.1 ^{14}C Residue Studies on Rotational Crops from Plots Treated with ^{14}C-RH-6201 at Newton, PA. T. D. Rogerson. Rohm and Haas Technical Report No.34H-78-7. Tab 3.

This study was reviewed by EAB (in review dated 1/3/80). In this review, EAB concluded that ^{14}C residues above 0.06 ppm would not be found in turnips planted 11 months after treatment. Other (non-root) crops were discussed but results not relevant to current review.

(Current reviewer notes data show that 0.01 to 0.12 ppm ^{14}C-residues were found in turnip tops planted in soil 13 months after treatment. Roots contained non-detectable to 0.02 ppm ^{14}C residues. Identity of ^{14}C-residues was not determined.)

3.2.2 ^{14}C-Residue Studies on Rotational Crops from Plots Treated with ^{14}C-RH-6201 at Newton, Pa., in 1977. T. D. Rogerson. Oct. 17, 1978. Rohm and Haas Technical Report No. 34H-78-23. Tab 4.

This study was also reviewed in EAB review dated 1/3/80. (Note: This is a continuation of the study discussed in Section 3.2.1, above.)

Turnip roots and tops contained non-detectable to 0.1 ppm ^{14}C residues at harvest when planted in soil treated (1 lb ai/acre) 431 days earlier with ^{14}C-RH-6201.

3.2.3 Also, other rotational crop studies which were previously submitted (but not excerpted in the current package) and reviewed showed:

- Carrots when planted 4 months after 1 lb. ai/acre treatment and harvested 7-10 weeks later contained 0.2 and 0.14 ppm ^{14}C-residues in carrot tops. Carrots harvested 13 weeks after planting (223 days after treatment) contained 0.064 and 0.045 ppm ^{14}C-residues in tops and roots, respectively. (RH Technical Report No. 34H-76-9)

- Turnips planted 2 months after 2 lb ai/acre treatment and harvested 2 months later contained 0.11 ppm and 0.04 ppm ^{14}C residues in tops and roots, respectively. (RH Technical Report No. 34H-76-21)

- Carrot roots contained 0.02 ppm residues when planted 10 months after 1 lb. ai/acre and harvested 3 months later. Beet roots contained 0.04 ppm and non-detectable residues planted 1 month after 1 lb. ai/acre treatment and harvested 3 and 6 months later, respectively. EAB concluded that the data supported a restriction that carrots and beets may be planted 18 months after treatment with use of only root portion for food and/or feed purposes. (EAB review 4/22/80)

3.3 Rohm and Haas Comment: Limited plant metabolism data (for soybeans) show that the majority of the adsorbed material is incorporated into natural plant constituents.

3.3.1 Distribution of Radioactive Residues in Soybeans Treated with ^{14}C-RH-6201. T. D. Rogerson. Oct. 5, 1978. Rohm and Haas Technical Report 34H-78-20. Tab 5.

This study report results of metabolism of ^{14}C-RH-6201 resulting in soybeans planted in soil plots also used for rotational crop studies described in 3.2.1 and 3.2.2, above.

This study is not relevant to rotational crop data requirement. Results are reported for a soybean meal/oil fractionation study. The author reported approximately 70% of the ^{14}C residues in the plant could be attributed to plant protein incorporated material.

EAB considers this study ancillary data. However, it may have value for RCB.

3.4 This reviewer notes that Rohm and Haas submitted rotational crop studies for ^{14}C-RH-8817 (ethyl ester of aciflurofen). EAB, in review dated 11/17/81, concluded that while measurable amounts of radioactivity were taken up, the maximum values were very low: non-detectable to 0.03 ppm and non-detectable to 0.08 ppm ^{14}C residues in plants planted 7 months after 1 and 2 lb ai/acre treatments, respectively.

4.0 EXECUTIVE SUMMARY

The data submitted (excerpts of previously submitted studies) have been previously reviewed by EAB. Based on the previous reviews EAB concluded that the data supported a restriction that carrots and beets may be planted 18 months after treatment. The current request offers no additional information EAB has not considered previously. Thus, EAB's orignal conclusion still stands. The data do not support a lowering of the current 18 month restriction to 8 months.

5.0 RECOMMENDATION

5.1 EAB does not consider the data sufficient to lower the current rotational crop restriction for root crops from 18 months to 8 months.

5.2 The registrant should be informed that, in order to lower the current rotational crop restriction for root crops to eight months, an unlabeled (cold) field study must be submitted which shows no detectable residues present in root crops using rotational crops planted 8 months after treatment must be submitted. The root crop should be analyzed for parent compound and major degradation products found in the aerobic soil metabolism study. Roots and tops should be analyzed separately.

If an interval earlier than 8 months or removal of restriction is desired, the study should sample root crops at intervals earlier than 8 months (minimum of 30 days) and show no detectable residues at that interval.

The soil should be treated at maximum label dose rate simulating actual field practice. An adequate number of samples should be taken from different areas of the treated field. If samples are stored for some time before analysis, storage stability data or residues will be needed.

5.3 Alternatively, the registrant can repeat the 14C confined study using a shorter rotational crop interval and show that any 14C taken up has been incorporated into natural plant constitutents and is not parent compound or degradation products found in the aerobic soil metabolism study.

5.4 It is suggested that the registrant submit a protocol for conducting the study to EAB for review before initiating the study.

Clinton Fletcher
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