

Shaughnessy No: 128701

EAB Log-Out Date: FEB 12 1986

Signature: 

To: Richard Mountfort  
Product Manager #23  
Registration Division (TS-767C)

From: Emil Regelman, Acting Chief  
Review Section 3  
Exposure Assessment Branch  
Hazard Evaluation Division (TS-769C) 

Attached please find the EAB review of...

Reg./File# : 8340 - EG, 8340 - RI

Chemical : Fenoxaprop-ethyl

Type Product: Herbicide

Product Name: WHIP 1 EC, ACCLAIM 1 EC

Company Name: Hoechst-Roussel Agri-Vet Company

Purpose: Registration for use on soybeans and rice.

Registration for Terrestrial non-food use.

ACTION CODE: 110, 120

EAB # (s): 6076, 5888

Date Received: 10/29/85, 8/16/85

TAIS CODE: 56

Date Completed: \_\_\_\_\_

Total Reviewing Time: 9.0 Day

Monitoring requested: \_\_\_\_\_

Monitoring voluntarily: \_\_\_\_\_

Deferrals To:

\_\_\_\_\_ Ecological Effects Branch

\_\_\_\_\_ Residue Chemistry Branch

\_\_\_\_\_ Toxicology Branch

1. CHEMICAL: Fenoxaprop ethyl + Ethyl - 2 - [4 - [(6 - chloro - 2 - benzoxazolyl)oxy]phenoxy] propanoate.
2. TEST MATERIAL:  
See individual studies
3. STUDY ACTION TYPE:  
This review includes two separate submittals: (1) Registration request for use on turfgrass including sod farms, commercial and residential turf and highway rights-of-way, and (2) Registration request for use on soybeans and rice.
4. STUDY IDENTIFICATION: The following studies are new submittals:

American Hoechst Corporation. 1984a. Analysis of HOE 33171 in water samples. American Hoechst Corporation, Somerville, NJ. Acc. Nos. 073939 and 073935. Reference J-18.

American Hoechst Corporation. 1984b. Dissipation of HOE 33171 residues in soil from Resaca, GA. Hoechst Report No. A29896, A29897, and A28285. American Hoechst Corporation, Somerville, NJ. Acc. No. 258977. Reference J-17.

Asshauer, J. and C. Klockner. 1982. Partition coefficient between soil and water. American Hoechst Corporation, Somerville, NJ. Acc. No. 258976. Reference J-15.

Bertges, W., J. Johnson, and J. O'Grodnick. 1985. Analysis of HOE 33171 in soil from Walnut, IA. American Hoechst Corporation, Somerville, NJ. Acc. No. 073934. Reference J-15A.

Dorn, E., B. Haberkorn, and K. Kunzler. 1983. HOE 033171-14C, aerobic aquatic metabolism in a surface water/sediment system. Report No. A27833. American Hoechst Corporation, Somerville, NJ. Acc. No. 073932. Reference J-5.

Gildemeister, H. and H.J. Jordan. 1984. HOE 033171-14C, photodegradation study on soil. American Hoechst Corporation, Somerville, NJ. Acc. No. 258976. Reference J-5.

- Gildemeister, H. and E. Schmidt. 1984. Anaerobic aquatic metabolism study of the herbicide HOE 033171. Report No. A28731. American Hoechst Corporation, Somerville, NJ. Acc. No. 073932. Reference J-4A.
- Gildemeister, H., G. Schuld, and H.J. Jordan. 1985. HOE 03317114-C, photodegradation study in water. American Hoechst Corporation, Somerville, NJ. Acc. No. 258976. Reference J-4.
- Grande, J., J. Johnson, and J. O'Grodnick. 1985. Analysis of HOE 33171 in soil from Painter, VA. American Hoechst Corporation, Somerville, NJ. Acc. No. 073934. Reference J-17.
- Green, R., J. Johnson, and J. O'Grodnick. 1984. Analysis of HOE 33171 in soil from Lane City, TX. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-14.
- Kinney, D., J. Johnson, and J. O'Grodnick. 1984. Analysis of HOE 33171 in soil from Steele, MO. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-10.
- Kuhner, M. and J. O'Grodnick. 1985. Long-term field dissipation and 3-year rotational crop study of HOE-033171 in Crown Point, IN. American Hoechst Corporation, Somerville, NJ. Acc. Nos. 073936, 073937, 073938, 073940. Reference No. J-23.
- Johnson, J. and W. Horton. 1985. Analysis of HOE 33171 in soil from Fishers, IN. Hoechst Report No. A31375. American Hoechst Corporation, Somerville, NJ. Acc. No. 258979. Reference J-19.
- Johnson, J. and J. O'Grodnick. 1985. Analysis of HOE 33171 in soil from Princess Anne, MD. Hoechst Report No. A31374. American Hoechst Corporation, Somerville, NJ. Acc. No. 258978. Reference J-18.
- McAllister, W.A. and L. Franklin. 1984. Uptake, depuration and bioconcentration of HOE 033171 OH ZE99 0001 (chlorophenyl-<sup>14</sup>C) and HOE 033171 OH ZE99 0002 (dioxyphehyl-<sup>14</sup>C) by bluegill sunfish (*Lepomis macrochirus*). American Hoechst Corporation, Somerville, NJ. Acc. No. 258980. Reference J-21 and J-22.
- O'Grodnick, J. 1985a. Long-term field dissipation and 3-year rotational crop study of HOE-033171 in

Leland, MS. American Hoechst Corporation, Somerville, NJ. Acc. Nos. 073946, 073947, and 073948. Reference J-25.

O'Grodnick, J. 1985b. Long-term field dissipation and 3-year rotational crop study of HOE-033171 in York, NE. American Hoechst Corporation, Somerville, NJ. Acc. Nos. 073941, 073942, 073943, 073944, and 073945. Reference No. J-24.

O'Grodnick, J. and J. Grande. 1984. Comparison of total extractable versus dislodgeable pesticide residues in turf grass after application of HOE 33171. Report No. A30857. American Hoechst Corporation, Somerville, NJ. Acc. No. 258979. Reference J-20.

Richards, S. and L. Wilkes. 1985. Storage stability study for HOE 33171 in soil (2 years). ADC Project No. 697-G. American Hoechst Corporation, Somerville, NJ. Acc. No. 073932. Reference J-8.

Schwalbe-Fehl, M. 1984. HOE 033171, Assessment of the residue situation in irrigated crops. Report No. A30351. American Hoechst Corporation, Somerville, NJ. Acc. No. 073948. Reference J-28.

Schwalbe-Fehl, M. and H. Kocher. 1984. HOE 033171-(chlorophenyl-U-14-C), confined accumulation study on rotational crops-planting of crops 30 days after treatment of the soil. Report No. A30300. American Hoechst Corporation, Somerville, NJ. Acc. No. 073935. Reference J-21.

Shaffer, S.R., J.A. Ault, and M. Williams. 1985. Characterization of  $^{14}\text{C}$ -residues of HOE-033171 in water and fish tissue taken from a flow-through bioconcentration study (plus addendum). American Hoechst Corporation, Somerville, NJ. Acc. No. 258981. Reference J-23 and J-24.

Smith, A.E. 1985. Persistence and transformation of the herbicides [ $^{14}\text{C}$ ]fenoxaprop-ethyl and [ $^{14}\text{C}$ ]fenthiaprop-ethyl in two prairie soils under laboratory and field conditions. J. Agric. Food

Chem. 33:483-488. American Hoechst Corporation, Somerville, NJ. Acc. No. 258976. Reference J-11.

Strachan, F., J. Johnson, and J. O'Grodnick. 1984a. Analysis of HOE 33171 in soil from Choctaw, MS. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-11.

Analysis of HOE 33171 in soil from Rosa, LA. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-9.

Thomas, J., J. Johnson, and J. O'Grodnick. 1984a. Analysis of HOE 33171 in soil from Leland, MS. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-12.

Thomas, J., J. Johnson, and J. O'Grodnick. 1984b. Analysis of HOE 33171 in soil from Leland, MS. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-15.

Thomas, J., J. Johnson, and J. O'Grodnick. 1984c. Analysis of HOE 33171 in soil from Leland, MS. American Hoechst Corporation, Somerville, NJ. Acc. No. 073934. Reference J-16.

Todd, L., J. Johnson, and J. O'Grodnick. 1984. Analysis of HOE 33171 in soil from Dayton, TX. American Hoechst Corporation, Somerville, NJ. Acc. No. 073933. Reference J-13.

5. REVIEWED BY:

Arthur Schlosser  
Chemist, Review Section #3  
EAB/HED/OPP

Signature: Arthur C Schlosser

Date: February 11, 1986

6. APPROVED BY:

Emil Regelman  
Acting Chief  
Review Section #3  
EAB/HED/OPP

Signature E Regelman

Date: FEB 12 1986

7. CONCLUSION:

See conclusion in Dynamac Final Report Task 1 and 2, January 7, 1986

8. RECOMMENDATIONS:

We cannot concur with the proposed uses for fenoxaprop ethyl on rice, soybeans and turfgrass including sod farms, commercial and residential turf and highway rights - of - way.

The following data gaps are identified for the use on rice: Photo-degradation in water, adsorption/desorption, aquatic field dissipation

(sediment), and irrigated crop data. Additional data on accumulation in fish and data on non-target organisms may be required if catfish and crayfish are commercially cultivated in treated areas.

The following data gaps are identified for the use on soybeans: Photodegradation in water, photodegradation on soil, leaching or adsorption/desorption and field dissipation studies (soil).

Data submitted so far on rotational crops indicate that a 120 day rotation interval is needed for for small grains and a 30 day interval for all other crops.

The following data gaps are identified for the use on turfgrass including sod farms, commercial turf and highway rights - of - way: photodegradation in water, leaching or adsorption/desorption and field dissipation (soil).

The following data gaps are identified for use on residential turf: leaching or adsorption/desorption and field dissipation (soil).

If a conditional registration is granted, the following label restrictions will be required: (1) For soybeans and rice, "Do not rotate treated areas with small grains for 120 days and all other crops for 30 days following the last application of fenoxaprop ethyl." (2) For rice, "Do not use water containing fenoxaprop ethyl residues to irrigate crops not registered for use with this chemical," and "Do not use in areas where the commercial cultivation of catfish and crayfish is practised".

9. BACKGROUND:

This is a new chemical. Full registration is requested for use on turfgrass, rice and soybeans.

10. DISCUSSION:

See Dynamac Final Report TASK 1 and 2, January 7, 1986

11. ONE-LINER:

Not completed at this time.

12. C.B.I APPENDIX:

Data are CBI and should be treated as such.

# American Hoechst Corporation

Route 202-206 North • Somerville, New Jersey 08876  
Telex 833-449 • Cable Hoechstus, Somerville, N.J.  
Telephone (201) 231-2000

# Hoechst

Direct dial number: (201) 231-2028

April 4, 1986

VIA COURIER

Mr. Richard Mountfort  
Product Manager (23)  
Fungicide-Herbicide Branch  
Registration Division (TS 767C)  
U.S. Environmental Protection Agency  
Crystal Mall Building #2 - Room 237  
1921 Jefferson Davis Highway  
Arlington, VA 22202

Dear Mr. Mountfort:

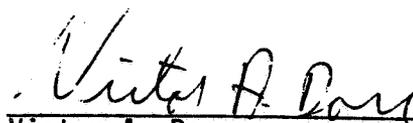
Subject: Acclaim<sup>®</sup>/Whip<sup>®</sup> 1 EC Herbicide  
EPA Reg. File: 8340-EG, 8340-RI  
Pesticide Petition No. 6F3316  
Executive Summaries of Petitioner  
Responses to HED Reviews

In preparation for our April 10, 1986 meeting with you and members of the Residue Chemistry, Toxicology and Exposure Assessment Branches, we have prepared executive summaries of our technical responses to the data reviews from each of these three branches. Ten copies of each of the three reviews are enclosed for your advance distribution to each of the Agency participants in the meeting.

The summaries are organized in a format of a restatement of the EPA conclusion followed by a synopsis of the petitioner response. We have used the same order and numbering system (where available) from each review for ease of tracking. We have responded to each of the technical issues/deficiencies raised by each branch and will hopefully agree to resolve all of them during our meeting and subsequent submission of new data.

We will appreciate your distribution of the appropriate executive summaries to each participant prior to our meeting and we will look forward to a productive discussion on April 10, 1986.

Very truly yours,

  
\_\_\_\_\_  
Victor A. Dorr  
Manager, Agricultural Products  
Registration & Projects Coordination

VAD:b1  
Atts.

cc: Mr. J. Akerman - w/attns.

April 4, 1986

**EXECUTIVE SUMMARY**

Petitioner Response to EPA  
Exposure Assessment Branch  
Review Dated February 12, 1986

Acclaim<sup>R</sup>/Whip<sup>R</sup> 1EC Herbicide

Registration Application and Tolerance Petition  
for Use on Soybeans, Rice and Turf

EPA Reg. File: 8340-EG, 8340-RI  
Pesticide Petition No. 6F3316

American Hoechst Corporation  
Rt. 202 - 206 North  
Somerville, New Jersey 08876

## Hydrolysis Studies

### I. EPA Conclusion:

All data requirements for hydrolysis have been fulfilled.

## Photodegradation Studies in Water

### II. EPA Conclusion:

The distilled water was not buffered in the photodegradation studies in water.

#### Petitioner Response:

The study was initiated with neutral distilled water. During the photodegradation, the pH of the solution should shift to acidic conditions with the free acid metabolite.

The hydrolysis studies (Asshauer, 1981, Acc. No. 071800), show that the hydrolytic degradation of HOE 033171 is remarkably slowed under acidic conditions (pH 5). Therefore, not buffering the water will result only in a shift to slightly more acidic conditions.

This shift to slightly more acidic conditions and the short investigation period of 8 days will not significantly affect photolytic degradation.

### III. EPA Conclusion:

It was not stated that sterile conditions were maintained.

#### Petitioner Response:

Before initiating the photodegradation study, all glassware coming into contact with the test substance was sterilized by oven heating at 180°C for one hour. In addition, the air inlet tube was protected by a plug of sterilized quartz glass wool.

### IV. EPA Conclusion:

The incubation temperature of the dark control was not reported.

#### Petitioner Response:

The dark control was incubated at room temperature ( $22 \pm 2^\circ\text{C}$ ).

V. EPA Conclusion:

The artificial light was not compared to natural sunlight.

Petitioner Response:

As known from the literature (e.g. Nilles, G. P. and Zabik, M. J., J. Agr. Food Chem. 22, 684-688, 1974) the sunlight energy at the ground is between  $6-8 \times 10^5$  erg/cm<sup>2</sup> x sec (100% clear sky) and  $2 \times 10^4$  erg/cm<sup>2</sup> x sec (100% overcast), that is between 0.07 W/cm<sup>2</sup> and 0.002 W/cm<sup>2</sup>.

The mercury vapor lamp TQ 150 z3 with the Solidex dip pipe used in the photodegradation study has an energy output of about 35 W.

The construction of the photoreactor provides an irradiated surface of the test solution between 142 cm<sup>2</sup> (inner surface) and 320 cm<sup>2</sup> (outer surface). Assuming a mean irradiated surface of about 230 cm<sup>2</sup> the energy output of the photolamp is 0.15 W/cm<sup>2</sup>.

Compared to sunlight (0.07 W/cm<sup>2</sup>) there is a conversion factor of about 2.1, meaning one hour of irradiation in the photoreactor is equivalent to about 2.1 hours in bright sunshine. The total irradiation period of 192 hours is equivalent to about 34 days under outdoor conditions with 12 hours sunshine per day.

**Photodegradation Studies in Soil**

VI. EPA Conclusion:

Incubation temperature of both the dark control and treated samples was not reported in the photodegradation studies in soil.

Petitioner Response:

Temperature for all samples during the whole study was  $27 \pm 2^\circ\text{C}$ .

VII. EPA Conclusion:

No material balance was provided for the dark control soils.

Petitioner Response:

The dark control (8 hr and 45 hr) and the corresponding treated samples were kept together in the quartz glass box in order to have the experimental conditions as identical as possible. No distinction could be made between volatiles of the dark control and the treated samples. Therefore the material balance for these samples could not be reported. The amount of volatile <sup>14</sup>C activity is insignificant (3.6%) but could be expected to be essentially equal for dark and irradiated samples.

VIII EPA Conclusion:

Material balance for irradiated samples declined to <75% of the applied after 32 hours of irradiation

Petitioner Response:

Three reasons for the insufficient recoveries might be: (1) possible adsorption of volatiles to the walls of the tube connecting the quartz glass box with the absorption traps (2) possible loss of volatiles through leaks and (3) during the night there was no aeration. Therefore, a slight overpressure might result causing losses.

**Photodegradation Studies in Air**

IX. EPA Conclusion:

No data are required because of the low vapor pressure of fenoxaprop-ethyl.

**Aerobic Soil Metabolism Studies**

X. EPA Conclusion:

All data requirements have been fulfilled.

**Anaerobic Soil Metabolism Studies**

XI. EPA Conclusion:

All data requirements have been fulfilled.

**Anaerobic Aquatic Metabolism Studies**

XII. EPA Conclusion:

All data requirements have been fulfilled.

**Aerobic Aquatic Metabolism Studies**

XIII EPA Conclusion:

All data requirements have been fulfilled.

**Leaching and Adsorption/Desorption Studies**

XIV. EPA Conclusion:

In order to satisfy the data requirements for aquatic food crop use, a batch equilibrium study is needed to determine the desorption properties of fenoxaprop-ethyl in the three soils for which adsorption properties have been established, as well as the adsorption/desorption properties of a fourth soil and an aquatic sediment.

Petitioner Response:

A batch equilibrium study with four soils and an aquatic sediment is being submitted.

**Laboratory Volatility Studies**

XV. EPA Conclusion:

No data are required because of the low vapor pressure of fenoxaprop-ethyl.

## Field Volatility Studies

### XVI. EPA Conclusion:

No data are required because of the low vapor pressure of fenoxaprop-ethyl.

## Terrestrial and Aquatic Field Dissipation Studies

### XVII EPA Conclusion:

In all terrestrial and aquatic field dissipation studies the Dynamac report concluded that the analytical method was nonspecific and the patterns of decline of fenoxaprop-ethyl and the formation and decline of degradates were not addressed.

### Petitioner Response:

Eleven laboratory studies and two field trials using radio-labeled fenoxaprop-ethyl have served to more than adequately establish the degradation behavior of this chemical. These studies include results from a variety of soil types, using two different <sup>14</sup>C-labels and were conducted under a variety of meteorological conditions.

Under these various conditions, the half life remains between 4 and 21 days with a consistent metabolism pattern. Therefore, we are convinced that the degradation kinetics are adequately understood and as a result the analytical method is sufficient to determine the dissipation of fenoxaprop-ethyl under field conditions.

### XVIII EPA Conclusion:

In all terrestrial and aquatic field dissipation studies the Dynamac report concluded that the analytical method was inadequate (recoveries ranged from 65% - 125%).

### Petitioner Response:

All the recoveries from the soil studies submitted are summarized in Table 15 of the petition Section J, Environmental Fate.

Additionally, we calculated the mean recovery value of recoveries and the coefficients of variation for the different fortification data as follows:

Fortification level (mg/kg)	Mean value of recoveries (%)	Coefficients of variation of recoveries (%)
0.02	93.7	27.0
0.05	92.5	23.5
0.10	80.6	16.4
mean	89.8	24.3

The above summary shows excellent mean values for the recoveries and acceptable coefficients of variation (below 30%) and we are convinced that our method is adequate.

Additional Petitioner Comments:

- (a) The requested additional weather and soil characterization data are submitted.
- (b) The use of more than one pesticide meets EPA Guidelines.
- (c) The structure of glyphosate is radically different from Whip and should not affect degradation.
- (d) The submitted aquatic field dissipation studies show no significant residues in irrigated water from rice fields. Additional studies are submitted to support these data.

**Forestry Dissipation Studies**

XIX. EPA Conclusion:

No data are required because fenoxaprop-ethyl has no forestry use.

**Dissipation Studies for Combination Products and Tank Mix Uses**

XX. EPA Conclusion:

No data are required because data requirements for combination products and tank mix uses are currently not being imposed.

**Long-Term Field Dissipation Studies**

XXI. EPA Conclusion:

No data are required because >50% of the applied fenoxaprop-ethyl would be expected to dissipate before subsequent application.

**Confined Accumulation Studies on Rotational Crops**

XXII EPA Conclusion:

A 30-day rotational crop interval must be established for all crops except small grains (120-day interval).

Petitioner Response:

The label will be revised to allow a 30-day rotational crop interval except for a 120-day interval for small grains.

**Field Accumulation Studies on Rotational Crops**

XXIII EPA Conclusion:

Based on the results of the confined accumulation studies in rotational crops, no data are required.

### Accumulation Studies on Irrigated Crops

#### XXIV EPA Conclusion:

Residues were not characterized in all experiments or at multiple sampling intervals. Also, the concentration of residues in the soil and the nature of those residues was not specified.

#### Petitioner Response:

The radiolabeled study accumulated on irrigated crops showed insignificant total  $^{14}\text{C}$  residues in irrigation water from 3 soil types. The total radioactivity measures the worst case. An additional study is included in this submission.

### Laboratory Studies of Pesticide Accumulation in Fish

#### XXV. EPA Conclusion:

Additional data may be required if catfish or crayfish are commercially cultivated in treated areas.

#### Petitioner Response:

The label will be revised to state that the product is not to be used on areas where catfish or crayfish are commercially cultivated.

### Field Accumulation Studies on Aquatic Nontarget Organisms

#### XXVI EPA Conclusion:

Additional data may be required if catfish or crayfish are commercially cultivated in treated areas.

#### Petitioner Response:

The label will be revised to state that the product is not to be used on areas where catfish or crayfish are commercially cultivated.

**Reentry Studies**

XXVII EPA Conclusion:

Major deficiencies with the storage stability study were that the test substance was not characterized, the soil was not characterized, and storage conditions were not defined.

Petitioner Response:

The soil characterization and storage conditions for the soil storage stability study are defined in this submission.