128701
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 11-01-85 OUT FEB 12 1986

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PETITION OR EXP. NO.

DATE OF SUBMISSION 10-23-85

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TYPE PRODUCT(S) : I, D, H, F, N, R, S Herbicide

DATA ACCESSION NO(S). 073953-073954

PRODUCT MANAGER NO. R. Mountfort (23)

PRODUCT NAME(S) WHIP *IEC

COMPANY NAME American Hoechst Corporation

SUBMISSION PURPOSE Proposed registration of use in soybeans and rice

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
128701	Fenoxaprop-ethyl	12.50%

EEB REVIEW

PESTICIDE NAME: Fenoxaprop-ethyl (HOE-33171)

100.0 Submission Purpose and Label Information:

100.1 Submission Purpose and Pesticide Use:

Proposed registration of WHIP^{R} 1EC Herbicide for selective postemergence annual and perennial grass control in rice and soybeans.

100.2 Formulation Information:

ACTIVE INGREDIENT:	fenoxaprop-ethyl: (±)-ethyl 2-[4-[(6-chloro-2-benzoxazolyl)oxy]phenoxy] propanoate.....	12.50%*
INERT INGREDIENT:	.....	87.50%
		100.0%

100.3 Application Methods, Direction, Rates:

See following pages. Soybeans, label pages 1-2; rice, pages 7-8.

100.4 Precautionary Labeling:

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to a body of water outside of the treated rice field. Do not apply when weather conditions favor runoff or drift. Do not contaminate land/or water by cleaning of equipment and/or disposal of waste.

101.0 Hazard Assessment:

101.1 Discussion:

Fenoxaprop-ethyl is practically non-toxic to birds both when administered through the diet and as an acute exposure.

Data submitted by the registrant indicate that outdoor usage of fenoxaprop-ethyl should present no hazard to honey bees.

Fenoxaprop-ethyl is highly toxic to fish, with an LC_{50} of 310 ppb to bluegill (the most sensitive species). The 96-hour no-effect-level for bluegill is 180 ppb.

Fenoxaprop-ethyl scientific review

Page _____ is not included in this copy.

Pages 3 through 6 are not included in this copy.

The material not included contains the following type of information:

___ Identity of product inert ingredients

___ Identity of product impurities

___ Description of the product manufacturing process

___ Description of product quality control procedures

___ Identity of the source of product ingredients

___ Sales or other commercial/financial information

X A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

___ FIFRA registration data

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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

101.2 Likelihood of Adverse Effects to Non-Target Organisms (Rice)

Data from a rice field study[1] in which Bolero residues were monitored will be used to calculate potential aquatic concentrations of fenoxaprop-ethyl. The study site, two miles north of Matagorda, Texas, incorporates several hundred acres of "intermittent" rice fields which drain into a ditch bordering one of farms. "Intermittent" means that not all the rice fields are planted in rice each year, however, sufficient acreage was planted and treated in each of the two treatment years to provide maximum typical exposure. The drainage ditch is a permanent man-made bayou that flows into the Colorado River. It is 120 to 140 feet wide and 1 to 1.5 feet deep.

The results from this residue monitoring study show that Bolero (applied at the rate of 4 lb ai per acre) will move from an aerially-treated rice field via drift and runoff into the aquatic environment. Bolero levels as high as 25 ppb were noted in the drainage ditch and 10.5 ppb in the river water. Fenoxaprop-ethyl is known to bind strongly to soil. Moreover, it is somewhat less soluble in water than Bolero-- 0.9 mg/l compared to c. 30 mg/l for Bolero. These data from the Bolero field study should nevertheless be useful in estimating potential fenoxaprop-ethyl aquatic residues resulting from the application of Whip 1 EC. Whip 1 EC is applied at the maximum rate of 0.2 lb ai per acre, or 1/20 the application rate of Bolero. Assuming that percent runoff for the two chemicals would be similar, the maximum estimated fenoxaprop-ethyl concentration occurring in drainage ditches would be 1.25 ppb (1/20 X 25) and in river water downstream from the confluence of the drainage ditch, the maximum estimated concentration would be 0.525 ppb (1/20 X 10.5). These values are well below the aquatic hazard trigger of 1/2 the LC_{50} for the most sensitive species (1/2 310 ppb = 155 ppb) and indicate a lack of acute hazard to aquatic organisms. These values are also below the Maximum Acceptable Toxicant Concentration to rainbow trout embryo-larvae (51 ppb) and indicate a lack of chronic hazard to aquatic organisms.

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[1] Impact of Bolero Runoff on a Brackish Water Ecosystem. Performed by Biospherics, Inc. Project No. 382-1983. Date of Study Report: January, 1985. Sponsored by Chevron Chemical Company.

Page 8 is not included in this copy.

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101.3 Endangered Species Considerations (Rice)

A previous Office of Endangered Species Biological Opinion concerned the use of another herbicide (Bolero) on rice (received 3-6-81). This Opinion indicated jeopardy to the fat pocketbook pearly mussel (Potamilus capax) which is found in the White and St. Francis Rivers of Arkansas. Due to the absence of data defining the toxicity of fenoxaprop-ethyl to mollusks, it is unknown whether the proposed use of Whip 1 EC on rice will also result in adverse effects to the fat pocketbook pearly mussel. The decision whether or not to initiate formal consultation with OES will be made upon receipt of an oyster embryo-larvae EC_{50} test.

Basing our endangered species hazard assessment on available data, we obtain an endangered species hazard trigger of 15.5 ppb based on the lowest aquatic LC_{50} value (1/20 the bluegill LC_{50} value of 310 ppb). The no-effect-level for bluegill (as demonstrated by dose-mortality data) is 180 ppb. The estimated aquatic concentrations given in the previous section (1.25 and 0.525 ppb) are well below both the trigger value and the no-effect-level and indicate a lack of hazard to endangered fish species.

101.4 Likelihood of Adverse Effects to Non-Target Organisms (Soybeans)

In order to determine potential aquatic concentrations resulting from runoff from treated soybean fields, the scenario will be used of a 10 acre field supplying and draining into a one-acre pond 6 feet deep. Fenoxaprop-ethyl has a rather low solubility of 0.9 mg/l, therefore a runoff rate of 1% will be assumed. Following an application of 0.2 lb ai/acre, the estimated environmental concentration is 1.2 ppb [0.2 lb X 10 acres X .01 = .02 lb; concentration in 6 feet water from Nomograph (EPA internal document) = 1.2 ppb]. This concentration is well below the aquatic hazard trigger of 1/2 the LC_{50} for the most sensitive species (1/2 310 ppb = 155 ppb) and is also below the MATC for rainbow trout embryo-larvae (51 ppb). Acute and chronic adverse effects to aquatic organisms are therefore not expected from the use of Whip 1 EC on soybeans.

101.5 Endangered Species Considerations (Soybeans)

The soybean use pattern has been included under the endangered species "cluster" program. In this program,

all pesticides included in a given use pattern are evaluated for adverse effects to endangered species.

Fenoxaprop-ethyl, being a new chemical, was not included in the soybean cluster. Using the scenario used in the cluster program (40 acre field draining into a 2.5 acre pond 2.5 feet deep) the resulting estimated environmental concentration is 4.7 ppb. This value is well below both the no-effect-level for bluegill (180 ppb) and the endangered species aquatic hazard trigger of 15.5 ppb. The proposed use should therefore not result in adverse effects to aquatic endangered species.

101.6 Adequacy of Toxicity Data:

The following studies were included with this submission. They were not all reviewed due to the expedited time-frame.

1. The Effect of HOE 033171 OH ZD96 0001 on Salmo gairdneri (Rainbow trout) in an Embro-larval Study. Acc. # 073954.

   The study is scientifically sound and shows that the 95.5 % technical product has a MATC (Maximum Acceptable Toxicant Concentration) of 0.051 mg/l to rainbow trout for a 76 day exposure period of eggs and fry. The study fulfills the guidelines requirement for a fish early life-stage study (sec. 72-4).

2. Final Flow-Through Acute Toxicity Report # 31439. Dynamic Acute Toxicity of HOE 033171 OH ZD96 0001 to Bluegill Sunfish (Lepomis macrochirus). Acc. # 073954.

   Preliminary review of this study shows it to be scientifically sound with an LC_{50} of 0.37 mg/l (based on nominal concentrations).

3. The Effects of Dietary Inclusion of HOE 033171-Active Ingredient Technical on Reproduction in the Bobwhite Quail. Acc. # 073953.

   This study has been given a preliminary review. The author of the study concludes that a dietary level of 180 ppm of HOE 033171 represents the "no toxic effect level" for reproductive impairment in the bobwhite quail.

4. The Effects of Dietary Inclusion of HOE 033171-Active Ingredient Technical on Reproduction in the Mallard Duck. Acc. # 073953.

   This study has been given a preliminary review. The author of the study concludes that a dietary level of 180 ppm of HOE 033171 has no adverse effects on the reproduction of the mallard duck.

The use of WHIP 1EC on rice (and to a lesser extent on soybeans) has the potential to contaminate the estuarine environment. For this reason, acute toxicity testing for estuarine and marine organisms is needed. Additionally, a rice use has the potential for exposure to an endangered species of mussel. The 48-hour EC_{50} determination for oyster embryo-larvae is essential for determining the likelihood of adverse effects to this endangered species.

The following studies (on both the technical and the end-use product) are required in order to complete the hazard assessment for the use of WHIP 1EC on rice:

1. 96-hour LC_{50} for shrimp (Sec. 72-3)
2. 96-hour LC_{50} for an estuarine or marine fish (Sec. 72-3)
3. 48-hour EC_{50} for oyster embryo-larvae (Sec. 72-3)

101.7 Adequacy of Labeling:

The Environmental Hazard Statement is adequate.

103.0 Conclusions:

EEB has reviewed the proposed registration of WHIP 1EC herbicide for use on soybeans and rice. Based upon the available data and use information, EEB concludes that the proposed use provide for minimal hazards to non-target organisms in soybeans. Since the use of WHIP 1EC on rice (and to a lesser extent on soybeans) has the potential to contaminate the estuarine environment, acute estuarine studies are needed in order to complete a risk assessment for rice.

Furthermore, upon receipt of the oyster data, a decision will then be made in regards to an Office of Endangered Species consultation concerning potential adverse effects to an endangered species of mussel.

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12