128701
SHAUGHNESSEY NO.

1
REVIEW NO.

EEB BRANCH REVIEW

DATE IN 8-16-83 OUT 10-31-83

FILE OR REG. NO. 8340-EUP-T

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 7-27-83

DATE RECEIVED BY HED 8-15-83

RD REQUESTED COMPLETION DATE 11-14-83

EEB ESTIMATED COMPLETION DATE 11-7-83

RD ACTION CODE/TYPE OF REVIEW 710/EUP

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. R. Mountfort (23)

PRODUCT NAME(S) Whip 1EC

COMPANY NAME American Hoescht Corporation

SUBMISSION PURPOSE Proposed EUP for use in soybeans

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
	Ethyl 2-[4-[(6-chloro-2-benzoxazolyl)oxy]	
	phenoxy]propanoate	12.50%

1

WHIP 1 EC

100 Experimental Use Label Information

100.1 Pesticide Use

For selective postemergence annual and perennial grass control in soybeans.

100.2 Formulation Information

ACTIVE INGREDIENT:

ethyl 2-[4-[(6-chloro-2-benzoxazolyl) oxy]phenoxy]propanoate	12.50% *
INERT INGREDIENTS:	87.50%
	100.00%

*Equivalent to 1.0 pound of active ingredient per gallon

100.3 Application Methods, Directions, Rates

See attachment

100.4 Precautionary Labeling

Do not apply directly to water. Do not apply when weather conditions favor runoff or drift. Do not contaminate land and/or water by cleaning of equipment and/or disposal of waste.

100.5 Proposed EUP Program

An experimental use permit program in eight regional areas containing up to a total of 29 states is proposed. A maximum total use of 269.25 pounds of active ingredient is requested with no more than 84 pounds of active ingredient to be used in any one geographical region. This program will consist of 50 tests treating 30 acres each. The total program, therefore, will be conducted on 1,500 acres.

100.5.1 Objectives

1. To further define the spectrum of activity of Whip 1 EC herbicide.

2. To test and collect performance data under a wide variety of soil, climatic, weed pressure and crop conditions.

3. To collect yield data.

4. To use Whip 1 EC herbicide in many types of application equipment, including aerial, and with growers making applications.

5. To locate any product strengths and weaknesses and to make label adjustments prior to applying for registration.

6. To evaluate tank mixtures with a broadleaf postemergence product, Basagran.

7. To collect residue samples.

100.5.2 Amount Shipped, Geographical Distribution

See attachment

100.5.3 Other Test Features

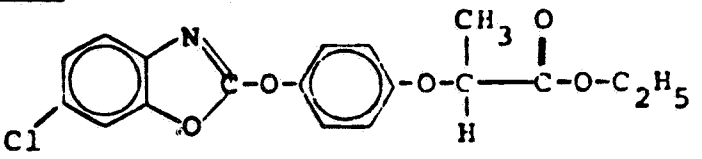
See attachment

101 Physical and Chemical Properties

101.1 Chemical Name

Ethyl 2-[4-[(6-chloro-2-benzoxazolyl)oxy]phenoxy]propanoate

101.2 Structural Formula



101.3 Empirical Formula

$C_{18}H_{16}ClNO_5$

101.4 Common Name (Proposed)

Fenoxaprop-ethyl

101.5 Trade Name

WHIP 1 EC

Product code: HOE 33171 OH AT

101.6 Molecular Weight

361.8

101.7 Physical State

Coarse powder, flakes or solidified melt, beige to brown in color, weak aromatic odor. Melting point: 358-360°K (85-87°C). Boiling point: >300°C. Density: 1.3 gm/cm^3 at 293°K (20°C).

101.8 Solubility (at 20°C, except where noted)

Water (at 25°C)	:	0.9 mg/l (pH 7)
Acetone	:	51 gm/100 ml
Ethanol	:	2 gm/100 ml
Toluene	:	34 gm/100 ml
Cyclohexane	:	1.5 gm/100 ml
Hexane	:	0.5 gm/100 ml
Ethylacetate	:	24 gm/100 ml
1-Octanol	:	2 gm/100 ml
Sesamoil	:	2.5 gm/100 ml

Partition Coefficient in n-octanol/water:
P = 19,100 (18,800 - 19, 300)

102 Behavior in the Environment

No information

103 Toxicological Properties

Species	Formulation	LD50	Validation
Bobwhite quail	96.6%	>2510 mg/kg	Core
Mallard duck	96.6%	>2510 mg/kg	Invalid
Japanese quail			
male	Tech.	>5000 mg/kg	Supplemental
female	Tech.	>5000 mg/kg	Supplemental

Species	Formulation	LC50(ppm)	Validation
Mallard duck	96.6%	>5620	Core
Bobwhite quail	96.6%	>5620	Core
Brown trout	96.0%	0.48(0.45-0.52)	Core
Bluegill	95.8%	0.31(0.26-0.35)	Core
Pumpkinseed sunfish	96.0%	0.36(0.32-0.41)	Core
Golden orfe	Tech.	>0.8	Invalid
Rainbow trout	E.C., 12.5%	3.38(3.12-3.66)	Core/formulation
Pumpkinseed sunfish	E.C., 12.5%	3.34(3.08-3.71)	Core/formulation
Fathead minnow	E.C., 12.5%	7.12(6.51-7.82)	Core/formulation
Daphnia magna	96.0%	3.18(1.79-7.36)	Core
Daphnia magna	E.C., 12.5%	11.15(9.38-13.36)	Core/formulation

103.1 Avian Acute Oral LD50's

Bobwhite quail

This study is scientifically sound and indicates that HOE-33171 is practically non-toxic to bobwhite quail with an LD_{50} of greater than 2510 mg/kg. The study does fulfill the requirements for an avian acute oral LD_{50}.

Mallard duck

This study is not scientifically sound because regurgitation of the test material was noted at all dosage levels. The study does not fulfill the requirements for an avian acute oral LD_{50}.

Japanese quail (male)

This study is scientifically sound and indicates that HOE-33171 is practically non-toxic to male Japanese quail with an LD_{50} of greater than 5,000 mg/kg. The study, however, does not fulfill the requirements for an avian acute oral LD_{50} because the Japanese quail is not an acceptable test species.

Japanese quail (female)

This study is scientifically sound and indicates that HOE-33171 is practically non-toxic to female Japanese quail with an LD_{50} of greater than 5,000 mg/kg. The study, however, does not fulfill the requirements for an avian acute oral LD_{50} because the Japanese quail is not an acceptable test species.

103.2 Avian Dietary LC50's

Mallard duck

This study is scientifically sound and indicates that HOE-33171 is practically non-toxic to mallard ducks with an LC_{50} of greater than 5620 ppm. The study does fulfill the requirements for an avian dietary LC_{50}.

Bobwhite quail

This study is scientifically sound and indicates that HOE-33171 is practically non-toxic to bobwhite quail with an LC_{50} of greater than 5620 ppm. The study does fulfill the requirements for an avian dietary LC_{50}

103.3 Fish Acute LC50's

Brown trout

This study is scientifically sound and indicates that HOE-33171 is highly toxic to brown trout with an LC_{50} of 0.48 ppm. The study does fulfill the requirements for a cold water fish acute 96 hour LC_{50}.

Bluegill

This study is scientifically sound and indicates that HOE-33171 is highly toxic to bluegill with an LC_{50} of 0.31 ppm. The study does fulfill the requirements for a warm water fish acute 96 hour LC_{50}.

Pumpkinseed sunfish

This study is scientifically sound and indicates that HOE-33171 is highly toxic to pumpkinseed sunfish with an LC_{50} of 0.36 ppm. The study does fulfill the requirements for a warm water fish acute 96 hour LC_{50}.

Golden orfe

This study is not scientifically sound because the test vessels were aerated. Analysis of the test solution at the highest concentration showed an 87% reduction in the test material after 96 hours. The study does not fulfill the requirements for a fish acute 96 hour LC_{50}.

Rainbow trout

This study is scientifically sound and indicates that HOE-33171 emulsifiable concentrate (12.5%) is moderately toxic to rainbow trout with an LC_{50} of 3.38 ppm. The study would fulfill a requirement for a cold-water fish acute 96-hour LC_{50} performed on this product.

Pumpkinseed sunfish

This study is scientifically sound and indicates that HOE-33171 emulsifiable concentrate (12.5%) is moderately toxic to pumpkinseed sunfish with an LC_{50} of 3.34 ppm. The study would fulfill a requirement for a warmwater fish acute LC_{50} performed on this product.

Fathead minnow

This study is scientifically sound and indicates that HOE-33171 emulsifiable concentrate (12.5%) is moderately toxic to fathead minnows with an LC_{50} of 7.12 ppm. The study would fulfill a requirement for a warmwater fish acute LC_{50} performed on this product.

103.4 Aquatic Invertebrate LC50

Daphnia magna

This study is scientifically sound and indicates that HOE-33171 is moderately toxic to Daphnia magna with an LC_{50} of 3.18 ppm. The study does fulfill the requirements for an aquatic invertebrate 48-hour LC_{50}.

Daphnia magna

This study is scientifically sound and indicates that HOE-33171 emulsifiable concentrate (12.5%) is slightly toxic to Daphnia magna with an LC_{50} of 11.15 ppm. The study would fulfill the requirements for an aquatic invertebrate 48-hour LC_{50} performed on this product.

103.5 Toxicity to Beneficial Insects

This study is scientifically sound, and shows HOE-33171 to be relatively non-toxic to honey bees.

104 Hazard Assessment

104.1 Discussion

At the proposed maximum application rate of 0.20 lbs a.i./A, the following concentrations may be expected in bodies of water of various depths (assuming that the pesticide is applied directly to water):

water depth	concentrations (ppb
6 inches	147
12 inches	73.5
24 inches	36.7

EEB has developed a scenario for a soybean use pattern which assumes 1% runoff and a 40 acre drainage basin draining into a 2.5 acre pond 2.5 feet deep. Employing this scenario, the Estimated Environmental Concentration is 4.7 ppb. Since this pesticide may also be applied aerially, the expected loss of the pesticide from the treated area would probably be greater than 1% (through runoff and aerial drift combined). Employing the same scenario as above and assuming a 5% loss, the resulting EEC would be 23.5 ppb.

104.2 Likelihood of Adverse Effects to Non-target Organisms

Data submitted by the registrant indicate that outdoor usage of HOE-33171 should present no hazard to honey bees. HOE-33171 is practically non-toxic to birds both when administered through the diet and as an acute exposure. The use of Whip 1 EC, therefore, should not result in any hazard to avian wildlife.

HOE-33171 is highly toxic to fish, with an LC_{50} of 310 ppb to bluegill (the most sensitive species). In the worst case situation - the direct application of the pesticide to water - the resulting aquatic concentrations would surpass 1/10 of this LC_{50} value (31 ppb), resulting in toxicity to this species.

In actual use and assuming a relatively low rate of runoff (1%), the resulting concentrations are low and would not adversely affect aquatic species (EEC = 4.6 ppb). If the potential for aerial drift (in addition to runoff) is included in these calculations, and assuming, therefore, a total loss from the treatment area of 5%, the resulting concentration of 23.5 ppb is still less than the calculated toxic level for fish. The proposed use of Whip 1 EC, therefore, should not result in hazard to aquatic species.

104.3 Endangered Species Considerations

In the previous section, an EEC of 23.5 ppb was calculated. If such a concentration should occur in an aquatic system, the concentration would be sufficient to result in hazard to endangered species of fish (1/20 LC_{50} = 15.5 ppb). Considering only those species which occur in areas of significant soybean production (crop file, Soybean Digest), the following species of endangered fish may be adversely affected by the use of this pesticide on soybeans:

Alabama: Slackwater darter, Limestone and Madison Counties.
Ohio: Scioto Madtom, Pickaway County.

If the toxicity of this pesticide to mollusks is similar to that of fish, the following species may also be adversely affected:

Missouri: Curtis' Pearly Mussel, Butler County.

104.4 Adequacy of Toxicity Data

The high octanol/water partition coefficient (19,100) of this chemical indicates a potential for accumulation in biological systems. This problem can be addressed upon receipt and evaluation of a fish bioaccumulation study by the Exposure Assessment Branch.

105 Conclusions

105.1 Environmental Hazards Labeling

The hazard labeling should include the statement:

"This pesticide is toxic to fish".

105.2 Data Adequacy Conclusions

Basic fish and wildlife toxicity data were submitted by the registrant and the studies were found to be acceptable.

105.3 Special Notes

This product is highly toxic to fish and should not be used where exposure to endangered or threatened fish or mollusks is likely.

Prior to the selection of sites for this experimental use, the registrant should contact the Regional Office of the U.S. Fish and Wildlife Service (Endangered Species Specialist) or the State Fish and Game Agencies to make certain that no endangered or threatened fish or mollusk occur in any area of application that is near aquatic habitats.

105.4 Recommendations

EEB has reviewed the proposed experimental use program for the herbicide WHIP 1 EC for grass control in soybeans. Based on the available data and use information, EEB concludes that the proposed experimental program provides for minimal hazards to nontarget organisms in general, but that there may be potential hazard to endangered species of fish and mollusks. To avert any hazard to endangered species, the recommendations outlined in the previous section should be followed. This product is not to be used where exposure to endangered and threatened fish and mollusks is likely.

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Fenoxaprop-ethyl scientific review

Page _____ is not included in this copy.

Pages 10 through 16 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

___ A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

X FIFRA registration data

___ The document is a duplicate of page(s) _____

___ The document is not responsive to the request

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.