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SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

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PETITION OR EXP. NO

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RD ACTION CODE/ TYPE OF REVIEW: 700

TYPE PRODUCT(S): HERBICIDE

ACCESSION NUMBER(S): 409745-25 thru -30 and-32

PRODUCT MANAGER: R. Mountfort (23)

PRODUCT NAME(S): SELECT 2EC

COMPANY NAME: Valent U.S.A. Corporation

PURPOSE OF SUBMISSION: Proposed EUP for use in cotton.

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	%A.I.

1/6 328

ECOLOGICAL EFFECTS BRANCH REVIEW

Chemical: Clethodim (RE-45601)
SELECT 2EC Herbicide

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

VALENT U.S.A. Corporation is seeking an Experimental Use Permit for SELECT 2EC (experimental herbicide) use in cotton to control annual and perennial grasses. VALENT requests to conduct this EUP program from April 1, 1989 to April 1, 1991. The company is proposing to apply SELECT 2EC to a total of 52 acres in 13 states during each of the two years of the program using a total of 52 pounds of active ingredient.

100.2 Formulation Information

Refer to photocopy of submitted label, attached.

100.3 Application Methods, Directions, Rates

Refer to photocopies of submitted "Application Information", attached.

100.4 Target Organism

A variety of annual and perennial grasses. See attached listings.

100.5 Precautionary Labeling

Refer to photocopy of submitted precautionary statement for Environmental Hazards statement.

101 Hazard Assessment

101.1 Discussion

Spray applications made with SELECT under this EUP program will be both air and ground. The plot size involved will vary, but will basically be approximately 1/2 to 2 acres for ground trials and approximately 1/2 to 5 acres for aerial trials. Under Section G of the submission, the geographical areas involved in the EUP are identified as Alabama, Arizona, Arkansas, California, Georgia, Louisiana, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas; however, under the Label Section of the submission, Colorado, Nevada, New Mexico, and Utah are also listed. VALENT plans for this EUP program to commence April 1, 1989 and conclude April 1, 1991, with applications to begin May 1, 1989.

The only ecological effects data available to EEB for review of this new chemical are the basic toxicity studies submitted with the EUP request. The Data Evaluation Records for these studies are attached and form the basis for the following hazard assessment.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial Species

Technical clethodim is classified as practically non-toxic to birds on an acute oral basis with a bobwhite quail LD_{50} >2000 mg/kg (EPA Accession No. 409745-25). On a subacute dietary basis, available data documents LC_{50} values of >4270 ppm for bobwhite quail (EPA Accession No. 409745-26) and >3978 ppm for mallard ducks (EPA Accession No. 409745-27) exposed to technical clethodim. Maximum residues of clethodim on invertebrate and vegetative prey items immediately following an application rate of 0.5 lb ai/acre are expected to range from 4 to 120 ppm. Therefore, no hazard to birds feeding in and around treated sites is expected to occur with this use.

Based on mammalian body weight data, food consumption data, and maximum clethodim residues on vegetative food items, amounts of clethodim estimated to be ingested daily by representative species feeding in and around treated sites are 37 mg/kg of body weight for the hispid cotton rat and 86 mg/kg for the cottontail. These values are far below 1/5 the approximate rat LD_{50} value (1,500 mg/kg) reported by the registrant in the submission. No hazards to mammals are expected to occur with this use.

Aquatic Species

Aquatic organism toxicity studies document 96-hour LC_{50} values of 18 ppm for rainbow trout (EPA Accession No. 409745-28) and >33 ppm for bluegill (EPA Accession No. 409745-29) exposed to technical clethodim. There are no acceptable data to determine the acute toxicity of clethodim to freshwater invertebrates. Maximum residue of clethodim in 6 inches of water following direct application of 0.5 lb ai/acre is expected to be 367 ppb. This residue value is far less than 1/10 the lowest LC_{50} value for tested fish species; therefore, no hazard to freshwater fish is expected to occur with this use. No hazard assessment may be completed for freshwater invertebrates due to lack of acceptable data.

Nontarget Insects

In an acute contact test conducted with clethodim, the honey bee LD_{50} was determined to be >100 micrograms per bee (EPA Accession No. 409745-32). Clethodim is therefore considered to be essentially nontoxic to honey bees exposed to direct application. No hazard is expected to occur with this use.

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Nontarget Plants

Nontarget phytotoxicity studies are not necessary for this EUP. However, any nontarget plant damage that occurs following aerial or ground application should be investigated and the results submitted to the Agency.

101.3 Endangered Species Considerations

Based on available data, no hazard to endangered birds, mammals, or fish is presumed to occur with this use. No assessment of hazard to endangered aquatic invertebrates may be completed due to lack of data. Because this product is a herbicide, and in the absence of phytotoxicity data, endangered plant species located in the vicinity of treated sites are presumed to be affected from this use. The Office of Endangered Species, U.S. Fish and Wildlife Service should be consulted prior to using SELECT 2EC.

101.4 Adequacy of Toxicity Data

Subdivision E Guidelines requires six basic toxicity studies as a minimum for considering ecological effects of a given pesticide use. The avian acute oral LD_{50} and the freshwater fish (coldwater species) LC_{50} studies are considered acceptable for these Guidelines requirements. The avian dietary LC_{50} and the freshwater fish (warmwater species) LC_{50} studies are considered to fulfill the Guidelines requirements only for LC_{50} values of up to 4270 ppm (bobwhite quail), 3978 ppm (mallard), and 33 mg/l (bluegill). Although these studies are adequate for use in the hazard assessment for this EUP, should regulatory criteria ever identify a need for documented LC_{50} values greater than those listed, the studies will need to be repeated as discussed in the attached DERs. The freshwater aquatic invertebrate toxicity study (EPA Accession No. 409745-30) does not meet Guidelines requirements and cannot be used in a hazard assessment. Therefore, this study should be repeated as discussed in the attached DER in order to complete the hazard assessment for this EUP.

Should the registrant request a full registration for this use of clethodim, the studies listed below will be required as a minimum. Other studies may be required pending review of acute toxicity and environmental fate data.

72-2 Freshwater Aquatic Invertebrate LC_{50} - Repeated as discussed in the attached DER.

72-3 Estuarine/Marine Organism LC_{50} - Required due to use pattern and solubility.

122-1 Tier I Seed Germination/Seedling Emergence - Determine effects on nontarget broadleaf plants.

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122-1 Tier I Vegetative Vigor - Determine effects on nontarget broadleaf plants.

123-1 Tier II Seed Germination/Seedling Emergence - Determine effects on nontarget grasses.

123-1 Tier II Vegetative Vigor - Determine effects on nontarget grasses.

123-2 Tier II Aquatic Plant Growth - Algal (Selenastrum capricornutum) study for ground application. Duckweed (Lemna gibba) study required for aerial application.

201-1,2 Spray Drift Data

Also, if other proposed uses and/or rates, as used in a regulatory hazard assessment, identify a need for LC_{50} values greater than those previously documented in avian dietary and freshwater fish (warmwater) studies, the following studies will need to be repeated.

71-2 Avian Dietary LC_{50} (upland and waterfowl) - Repeated as discussed in the attached DER.

72-1 Freshwater Fish LC_{50} (warmwater species) - Repeated as discussed in the attached DER.

101.5 Adequacy of Labeling

Environmental hazards labeling is adequate for this use.

102 Conclusions

EEB has reviewed a request by VALENT U.S.A. Corporation to apply an experimental herbicide, SELECT 2EC (active ingredient: clethodim), to cotton under a two-year EUP program. Toxicity studies submitted in support of the EUP were also evaluated; DERs are attached.

No hazard is expected to occur to birds, mammals, or fish with this use; however, a complete hazard assessment is not possible due to the absence of acceptable toxicity data on aquatic invertebrates. Nontarget phytotoxicity monitoring is required during aerial applications of this EUP program (see Sec. 101.2). Also, endangered plant species in the vicinity of this use are presumed to be affected; the Office of Endangered Species should be consulted.

Data gaps for the EUP and for potential full registration are discussed under Section 101.4.

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