125401
SHAUGHNESSY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 01/09/86 OUT 04 FEB 1986

FILE OR REG. NO 279-GNLU, 279-GNLE, 279-GNLG

PETITION OR EXP. NO.

DATE OF SUBMISSION 01/06/86

DATE RECEIVED BY HED 01/09/86

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RD ACTION CODE/TYPE OF REVIEW 106

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. R. Taylor (25)

PRODUCT NAME(S) Command Technical: 279-GNLE

Command 4EC : 279-GNLG

Command 6EC : 279-GNLU

COMPANY NAME FMC Corporation

SUBMISSION PURPOSE Submission of oyster shell deposition study to support registration

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% A.I.
125401	2-(2-chlorophenyl)-methyl-4-4-dimethyl-3-isoxazolidinone	

** 678

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EEB BRANCH REVIEW

Command herbicide (FMC 57020)

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The registrant (FMC Corporation) has applied for registration of Command technical (formulating use) and Command 4EC and 6EC as herbicides for use on soybeans. Recently reviewed studies (daphnid chronic, estuarine fish acute, estuarine invertebrate acute, and oyster shell deposition study) were submitted in response to EEB's request for additional data needed to develop a hazard assessment.

100.2 Formulation Information

See EEB review of November 29, 1984.

100.3 Application Methods, Directions, Rates

See EEB review of November 29, 1984.

100.4 Target Organisms

Target organisms are annual grass and broadleaf weeds. See EEB review out November 29, 1984 for appended labels listing target species.

100.5 Precautionary Labeling

See EEB review of November 29, 1984.

101 Hazard Assessment

101.1 Discussion

Labeling Information

See EEB review of November 29, 1984.

Crop Distribution and Density

See EEB review of November 29, 1984.

Exposure Use Analysis

See EEB review of November 29, 1984.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial Organisms

As discussed in the original review, data reviewed in EEB indicated that Command herbicide is low in toxicity to birds and mammals. Also, the pesticide will be applied only once, at or before planting. In view of these factors, significant hazards to nontarget terrestrial organisms are not anticipated from the proposed use on soybeans.

Aquatic Organisms

As discussed in the original review, data reviewed in EEB indicated that Command herbicide is slightly toxic to freshwater fish and moderately toxic to aquatic invertebrates on an acute basis. Because preliminary fate data indicated persistence in water, EEB noted that an aquatic invertebrate life-cycle study might be required. Data from this study, using Daphnia magna, were submitted by the registrant. These data show the MATC for Command technical to D. magna to be between 2.20 mg/L and 4.38 mg/L. The Exposure Assessment Branch determined the aquatic EEC for the proposed use to be 0.05 ppm. Based on these figures, EEB has determined that no acute or chronic hazards to populations of nontarget aquatic organisms (freshwater) are anticipated from the use of Command herbicide on soybeans. Data from a fish early life-stage test using rainbow trout (2.29 mg/L < MATC < 4.35 mg/L) support this assessment.[1/]

With regard to estuarine/marine testing, EEB initially deferred any decision pending receipt of environmental fate data. Subsequent discussion with EEB personnel indicated that these tests should be required for the soybean use. The decision to require tests on estuarine/marine organisms was indicated in an EEB review of July 17, 1985.

The registrant has submitted data from three studies on estuarine/marine organisms: acute toxicity test on pink shrimp; acute toxicity test on Atlantic silverside; and oyster shell deposition test. EEB has completed review of the three studies.

1/ Based on data from rainbow trout and bluegill acute studies, which showed Command to be only slightly toxic to freshwater fish, EEB determined that the fish early life-stage test would not be required. FMC did conduct the test, however, and EEB determined that the study was "supplemental".

The oyster shell deposition study was determined to be a "core" study. The 96-hour EC_{50} for Command technical was 5.3 mg/L; the MATC was determined to be greater than 2.75 mg/L and less than 5.48 mg/L. The Exposure Assessment Branch estimated the estuarine EEC to be 0.005 ppm (1 order of magnitude lower than the pond EEC).[2/] On the basis of these figures, no hazard to estuarine organisms would be expected.

The other two studies submitted by FMC (shrimp and estuarine fish acute) were determined to be invalid. Data from these studies (using the technical material) are needed to allow EEB to complete a hazard assessment for estuarine organisms. The problems with these studies (test material coming out of solution, diluter malfunctions, etc.) are such that both studies must be redone.

101.3 Endangered Species Considerations

Terrestrial

No hazard to endangered/threatened species of birds or mammals is expected from the proposed use. See EEB review of November 29, 1984 for discussion.

Aquatic

The Exposure Assessment Branch determined the aquatic EEC for the proposed use to be 0.05 ppm. Acute LC_{50} values for freshwater organisms range from 5.2 mg/L (daphnia) to 34 mg/L (bluegill sunfish). Additional studies indicate an MATC in the range of 2 to 4 mg/L for rainbow trout and daphnia. On the basis of these figures, the aquatic EEC value is well below the aquatic endangered species trigger, and indicates that no hazard to endangered/threatened species of freshwater aquatic organisms would be expected from the proposed use.

Information developed under the soybean cluster approach indicates that no endangered/threatened estuarine species would be impacted by soybean use.

101.4 Adequacy of Toxicity Data

As indicated in section 101.2 above, EEB still requires data from two estuarine studies, a shrimp LC_{50} and an estuarine fish LC_{50}, conducted with the technical material.

2/ Pers. comm. with Robert Holst, EAB.

101.5 Adequacy of Labeling

See EEB review of November 29, 1984.

102 Classification

Classification deferred pending receipt of additional data.

103 Conclusions

EEB has reviewed the additional data submitted to support registration of Command herbicide for use on soybeans. EEB is unable to complete a risk assessment for this use because pertinent ecological effects data are lacking. In order to assess the risks associated with this use, EEB requires data from the following tests:

1) an acute toxicity test for shrimp, and

2) an acute toxicity test for estuarine fish.

These tests must be conducted with the technical grade of the active ingredient. Data from these tests will be required prior to full registration of the products. However, relative to the conditional registration of Command herbicide, the reader is referred to two EEB memos dated January 22 and January 28, 1986. These were developed for an expedited review of Command products for the Registration Division.

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