201302
RECORD NO.

125401
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 08-20-87 OUT 18 MAY 1988

FILE OR REG. NO 279-3052

PETITION OR EXP. NO.

DATE OF SUBMISSION 07-27-87

DATE RECEIVED BY HED 08-18-87

RD REQUESTED COMPLETION DATE 11-02-87

EEB ESTIMATED COMPLETION DATE 11-02-87

RD ACTION CODE/TYPE OF REVIEW 315

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: 279-3052

Command 4EC: 279-3053

COMPANY NAME FMC Corporation

SUBMISSION PURPOSE Proposed registration on fallow cropland that is rotated to winter wheat

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
125401	Command herbicide (clomazone):	
	Technical	90.0%
	4EC	47.1%

** 810

EEB REVIEW

Chemical: Command Herbicide (clomazone)

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 for use as an herbicide on fallow cropland that is rotated to winter wheat.

100.2 Formulation Information

Command 4EC

ACTIVE INGREDIENT:	
2-(2-Chlorophenyl) methyl-4,4-dimethyl-	
3-isoxazolidinone	47.1%
INERT INGREDIENTS	52.9%

100.3 Application Methods, Directions, Rates

Do not apply aerially.

Broadcast Application:
Apply Command 4EC alone or in tank mix combinations by ground equipment using a finished spray volume of 15 to 40 gallons of water per acre. NOTE: The use of an agriculturally approved drift reducing additive is required at finished spray volumes of 15 gallons per acre. Use nozzles suitable for broadcast boom application of herbicides. Coarse sprays are less likely to drift out of the target area than fine sprays. See "APPLICATION PRECAUTIONS" section for specific recommendations to reduce spray drift. For Command 4EC tank mixtures with wettable powder or dry flowable formulations, nozzle screens and strainers should be no finer than 50-mesh.

Application Rates:
Use Command 4EC Herbicide alone at a rate of 1 1/2 to 2 pints (24 to 32 ounces) per acre in a surface applied broadcast application for preemergent control of weeds. Command 4EC at 1 1/2 pints per acre is recommended where Glean at 1/3 to 1/2 ounce per acre was applied for weed control in the growing wheat crop. Use the higher rate when heavier weed infestations are anticipated or for longer residual control.

811

In areas where the winter wheat-fallow-winter wheat cropping system is practiced, make application after wheat harvest. For optimum control, make applications after August 15 but before October 31. Command 4EC can also be used in areas where spring wheat is planted following an 18 month fallow period.

Treatments should be made only to fields where good weed control has been maintained in the wheat crop through wheat harvest. Treatment recommendations are only designed to control weeds that have recently emerged and those that germinate throughout the fall, winter, and spring period. Do not apply in situations where dense weed growth exists.

Please refer to appended label for additional information.

100.4 Target Organisms

Target organisms are annual grass and broadleaf weeds. Please refer to appended label for list of species.

100.5 Precautionary Labeling

ENVIRONMENTAL HAZARDS
Do not apply directly to water or wetlands. Do not apply when weather conditions favor drift from the area treated. Do not apply where runoff is likely to occur. Do not contaminate water by cleaning of equipment or disposal of wastes. Apply this product only as specified on this label.

SPECIAL PRECAUTION
Off-site movement of spray drift or vapors of Command herbicide can cause foliar whitening or yellowing of some plants. Prior to making applications, read and strictly follow all precautions and application instructions on this label.

IMPORTANT
FAILURE TO OBSERVE THE APPLICATION PRECAUTIONS SECTION OF THIS LABEL MAY RESULT IN INJURY TO DESIRABLE VEGETATION
Desirable plants including some species of trees, shrubs, flowers, agronomic crops, and fruits and vegetables are sensitive to Command herbicide. Foliar contact with spray drift or vapors may cause whitening of sensitive plants. Symptoms are generally temporary in nature but may persist on some plants.

812

162

APPLICATION PRECAUTIONS:
Do not apply Command 4EC within 1,000 feet of the areas listed below:
Emerged winter wheat
Towns and subdivisions
Commercial vegetable production
Commercial fruit production
Commercial nurseries
Commercial greenhouses

101 Hazard Assessment

101.1 Discussion

Command 4EC is a selective herbicide which may be used as a preemergence surface applied treatment to control annual grass and broadleaf weeds on fallow cropland that is rotated to winter wheat. Command may be used alone or tank-mixed with other herbicides. Maximum application rate is 2 pints of 4EC (1 lb ai) per acre. Application of this herbicide is by ground equipment only.

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Terrestrial Organisms

Data from previous EEB reviews indicate that Command is practically nontoxic to birds on both an acute oral basis and a dietary basis (bobwhite quail and mallard LD_{50}'s > 2510 mg/kg, LC_{50}'s > 5620 ppm). The available data on rats suggest that the chemical also has a low mammalian toxicity. Thus, significant acute hazards to populations of nontarget terrestrial organisms are not anticipated from the use of Command herbicide on fallow cropland.

Chronic hazards to avian and mammalian species are also unlikely, due to the fact that probability of exposure is low, and due to the fact that Command herbicide will only be applied once per season.

No data are available on effects on pollinators, but in view of the low exposure potential of the proposed use, Command would not be expected to impact honey bees.

Aquatic Organisms

Data from previous EEB reviews indicate that Command is slightly toxic to freshwater fish, with reported LC_{50}'s of 19 mg/l for rainbow trout and 34 mg/l for bluegill sunfish. The daphnid study indicates that Command is moderately toxic to aquatic invertebrates (LC_{50} = 5.2 mg/l).

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 showed 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 soybean use to be 0.05 ppm. For the purposes of this review, EEB will assume an aquatic EEC in the same range for the fallow cropland use. Based on these figures, EEB has determined that no acute or chronic hazards to populations of freshwater aquatic organisms are anticipated from the use of Command herbicide on fallow cropland. (Please see EEB review by Vaughan, out February 4, 1986, for additional detail).

Nontarget Plants

The Agency record on Command herbicide contains numerous reported incidents of adverse effects on nontarget plants. This potential to impact nontarget plants is reflected in the number of prominent warnings and precautions on the product label (See Section 100.5, above, and attached label). It is important that the Agency have sufficient information to accurately assess this potential hazard to nontarget plants. For this reason, EEB will require data from the following tests:

Tier II seed germination/seedling emergence (§123-1);
Tier II vegetative vigor (§123-1);
Tier II aquatic plant growth (§123-2).

In addition, EEB will require validated data from the two drift studies outlined in §158.142 of the Data Requirements. These studies should be submitted to the Exposure Assessment Branch for review and validation.

The Plant Protection data table (§158.150) indicates that the Tier II plant studies be conducted using the technical grade of the active ingredient. Drift studies (§158.142) are conducted with the end use product. EEB will use the data from the plant tests, in conjunction with the data from the drift studies, to develop a nontarget plant hazard assessment. The data from these tests would be more valuable to EEB if all the tests were run with the same test substance. Thus, EEB would prefer to see all the above tests conducted using the formulated product.

Data from the studies listed above are required prior to registration of the product for use on fallow cropland. EEB will defer development of a final hazard assessment on nontarget plants, pending receipt of data from these tests.

101.3 Endangered Species Considerations

On the basis of the above discussion, the only endangered organisms of concern would be plants. Information in EEB's Endangered Species files shows that no endangered plant species are associated with winter wheat. Thus, hazard to endangered species of plants is not anticipated from the proposed use of Command.

101.4 Adequacy of Toxicity Data

Data in the Command file are adequate to develop hazard assessments for nontarget organisms other than plants. For discussion of additional data requirements (nontarget plant and drift studies), see Section 101.2, above.

101.5 Adequacy of Labeling

Development of labeling will be deferred pending receipt of data from plant and drift studies.

103 Conclusions

EEB has reviewed the proposed registration of Command herbicide for use on fallow cropland to be rotated to winter wheat. Based on the substantial volume of ecological effects data submitted by the registrant, EEB concludes that the proposed use presents minimal hazard to nontarget organisms other than plants. EEB is unable to complete a risk assessment for plants because data from nontarget plant studies and drift studies are lacking. See Section 101.2, above, for discussion of the data requirements.

Allen W. Vaughan 5.16.88
Allen W. Vaughan, Entomologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769)

Norman J. Cook 5.16.88
Norman Cook, Supervisory Biologist
Ecological Effects Branch
Hazard Evaluation Division (TS-769)

James W. Akerman 5/17/88
James W. Akerman, Chief
Ecological Effects Branch
Hazard Evaluation Division (TS-769)

815

165