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SHAUGHNESSEY NO.

EEB REVIEW

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TYPE PRODUCT Herbicide

DATA ACCESSION NOS.

PRODUCT MANAGER NO. D. Stubbs (41)

PRODUCT NAME(S) Command 4EC

COMPANY NAME State of Virginia

SUBMISSION PURPOSE Proposed Section 18's for use on snap beans, cucumbers, and squash

SHAUGHNESSEY NO.	CHEMICAL & FORMULATION	%AI
125401	Command herbicide	47.1%

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EEB BRANCH REVIEW

Command Herbicide (Clomazone)

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The State of Virginia is requesting emergency exemptions (Section 18's) for the use of Command herbicide to control annual broadleaf weeds and grasses in snap beans, cucumbers, and squash. No data were submitted with this request.

100.2 Formulation Information

Command 4EC

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

This product contains 4 lb ai per gallon.

100.3 Application Methods, Directions, Rates

A. Timing and Method of Application

Preemergence: Apply preemergence to cucumbers, summer squash, and snap beans from March 20 to September 30, 1989. Command may be applied preemergence only in Accomack and Northampton Counties and under the conditions stated. Command may be applied in a band over the row adjusting the rate and carrier volume to the band width desired.

Preplant incorporated: Command may be applied preplant incorporated from March 20 to September 30, 1989, under the conditions stated. Incorporate to a depth of 1 inch or less and place the seed below the chemical barrier when planting.

B. Rate and Number of Applications

Command will be applied at a rate of 0.4 pt (0.2 lb ai) per acre preemergence, or 0.4 to 0.5 pt (0.2 to 0.25 lb ai) per acre preplant incorporated. One application will be allowed under these exemptions.

100.4 Target Organisms

Target organisms are the following annual grasses and broadleaf weeds:

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Common lambsquarters	Crabgrass (large, smooth)
Jimsonweed	Panicum (Texas, fall)
Purslane	Foxtail (giant, green, yellow, robust)
Common ragweed	Field sandbur
Pennsylvania smartweed	Barnyardgrass
Velvetleaf	
Spurred anoda	

100.5 Precautionary Labeling

APPLICATION PRECAUTIONS

Do not apply Command 4EC herbicide preemergence to fields that are within 1500 feet of the areas listed below:

Residences
Towns and subdivisions
Commercial vegetable production (except sweet corn)
Commercial fruit production
Commercial nurseries
Commercial greenhouses
Small grain fields

Caution must be taken to minimize spray drift as off-site movement can cause temporary whitening or yellowing of plants. Consult the label for information on the reduction of drift. Prior to making applications, it is recommended that adjacent properties be checked and if susceptible and desirable plant species are present, that preemergence spraying within 1500 feet be avoided.

101 Hazard Assessment

101.1 Discussion

The state of Virginia is requesting emergency exemptions for the use of Command herbicide to control annual grasses and broadleaf weeds in snap beans, cucumbers, and squash. Proposed maximum application rate is 0.5 pt (0.25 lb ai) per acre, with one application allowed. Exemption period is March 20 through September 30, 1989.

These requests are for use on 8000 acres of snap beans, 8000 acres of cucumbers, and 500 acres of squash. The label restricts preemergence application to Accomack and Northampton Counties; otherwise, counties are not specified.

Command herbicide is currently registered for use on soybeans, which are grown on approximately 600,000 acres in Virginia (1982 Census of Agriculture).

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101.2 Likelihood of Adverse Effects on Nontarget Organisms

Terrestrial

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 LD50's > 2510 mg/kg, LC50's > 5620 ppm). The available data on rats suggest that the chemical also has a low mammalian toxicity. Thus, significant acute hazards to nontarget terrestrial organisms are not anticipated from use under the proposed exemptions.

Data from hydrolysis, photolysis, and soil metabolism studies indicate that Command herbicide may persist in the environment. However, chronic hazards to avian and mammalian species are unlikely, as the probability of exposure is low, acreage to be treated is limited, and the 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

Data from previous EEB reviews indicate that Command is slightly toxic to freshwater fish, with reported LC50's of 19 mg/L for rainbow trout and 34 mg/L for bluegill sunfish. A daphnid study indicated that Command is moderately toxic to aquatic invertebrates (LC50 = 5.2 mg/L). And the MATC for Command technical to Daphnia was determined to be between 2.20 and 4.38 mg/L.

The Exposure Assessment Branch determined the aquatic EEC for the soybean use to be 0.05 ppm, based on one application at 1.0 lb ai per acre. For the purposes of this review, EEB will assume a similar scenario for the proposed uses. At the maximum rate (0.25 lb ai per acre), calculated aquatic EEC would be 0.0125 ppm. Based on these figures, EEB has determined that no acute hazards to populations of freshwater aquatic organisms are anticipated from use under the proposed exemptions.

As noted above, environmental fate data indicate a potential for Command to persist in the environment. Under the conditions of the proposed Sec. 18's, however, (single application, limited acreage), hazard to aquatic organisms is not expected.

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.

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Data from a number of tests are required prior to registration of this product for any new agricultural use. See EEB review by Vaughan (EUP, field corn, Oct 31, 1988) for a listing of the data requirements. EEB will defer development of a final hazard assessment on nontarget plants, pending receipt of data from these tests. However, EEB would like to point out that, based on the limited information available, adverse effects on nontarget plants are anticipated from the proposed uses when the herbicide is not soil-incorporated.

101.3 Endangered Species Considerations

On the basis of the above discussion, the only endangered organisms of concern would be plants. Information on file indicates that no endangered plant species are associated with snap beans, cucumbers, or squash in Virginia. Thus, hazard to endangered species of plants is not anticipated under the proposed exemptions.

101.4 Adequacy of Toxicity Data

Available data are sufficient to assess hazard under the proposed Section 18's. Note that there are still a number of outstanding data gaps for data required to support a full registration on any agricultural crop.

103 Conclusions

EEB has reviewed the proposed emergency exemptions for Command herbicide on snap beans, cucumbers, and squash in Virginia. Based on the substantial volume of ecological effects data submitted by the registrant, EEB concludes that the proposed uses present 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. Use under the proposed exemptions will not present a hazard to any endangered species in Virginia.

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