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Shaughnessy No.: 125401

Date Out EAB: JUL 02 1985

TO: R. Taylor
Product Manager # 25
Registration Division
TS-767

FROM: Samuel M. Creeger, Chief
Environmental Chemistry Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 279-EUP-RNO

Chemical: FMC 57020 (Dimethazone - proposed common name)

Type Product: Herbicide

Product Name: Command 6 EC

Company Name: FMC

Submission Purpose: EUP on fallow cropland

Action Code: 700

Date In: 6/7/85

EAB # 5654

Date Completed: JUL 02 1985

TAIS (Level II)	Days
52	0.75

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

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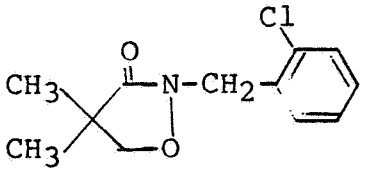
1. CHEMICAL:

- Common name: Dimethazone (proposed)
- Trade name: Command 6 EC
- Company code: FMC 57020
- Chemical name: 2-(2-chlorophenyl)methyl-4,4-dimethyl-3-isoxasolidinone
- Chemical structure:



2. TEST MATERIAL: Not applicable.

3. STUDY/ACTION TYPE: EUP on fallow cropland

4. STUDY IDENTIFICATION: No new studies were submitted.

5. REVIEWED BY:

Soobok Hong
Chemist
Environmental Chemistry Review Section 1/EAB/HED
June 18, 1985

6. APPROVED BY:

Samuel M. Creeger, Chief
Supervisory Chemist
Environmental Chemistry Review Section 1/EAB/HED
JUL 02 1985

7. CONCLUSIONS:

7.1 EAB file reveals that all the environmental fate data requirements on FMC 57020 for the proposed EUP have been satisfied.

- Hydrolysis - FMC 57020 is stable to hydrolysis in acidic, neutral and basic solutions maintained at temperature of 25 ± 0.5°C.

- Aerobic soil metabolism - FMC 57020 is mineralized in soil under aerobic conditions. CO_2 evolution and soil binding increase with time. The rate and the degree of mineralization and soil binding vary with soil types. Both rings of the molecule are susceptible to the mineralization process. Unchanged FMC 57020 is the primary residue in soil, and polar/non-polar metabolites are minor residues. The estimated half-lives varied from 56 to 173 days depending on soil type.

- Anaerobic soil metabolism* - FMC 57020 readily degrades to FMC 65317 as a major product under anaerobic conditions. Another 12 minor degradation products were detected. No CO_2 evolution was observed. Data indicate that FMC 65317 persists under anaerobic conditions.

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- o Laboratory leaching - FMC 57020 appears to have a low to intermediate mobility in sandy loam, silt loam and clay loam soils but a high mobility in sand soil. FMC 65317, an anaerobic soil degradate of FMC 57020, has a very high mobility in all soil types.

- o Field leaching* - FMC 57020 appears to have a low leaching potential under actual field conditions (loamy sand, 1.2 % OM, 2.0 lb ai/A, 13.9 inches of water in 61 days) since no detectable levels (less than 0.02 ppm) of the compound or its metabolites were found in soil samples taken deeper than 1 foot.. FMC 65317 was not detected in any soil sample at any depth.

- o Rotational crops - The application of ^{14}C-FMC 57020 at the rate of 2 lb ai/A (1.6-1.7x maximum label rate) results in low residues in rotational crops (corn, oat, cabbage and sugar beet) planted 10 months after chemical application. A majority of these residues are either plant tissue bound or polar. Organosolubles accounted for less than 0.02 ppm. Residue levels were higher in the mature rotational crops as compared to the immature ones. Total ^{14}C did not exceed 0.063 ppm in corn, cabbage or sugar beet, but reached a maximum of 0.118 ppm in mature oat straw. The data support a 10 month rotational crop interval. Additional data will be needed if a shorter interval is desired.

- o Fish accumulation - FMC 57020 has a moderate tendency to bioaccumulate in bluegill sunfish under flow-through conditions. A bioaccumulation factor of 40x for whole fish was found, but depuration occurs rapidly to low but measurable levels upon removal of the fish to uncontaminated water. FMC 57020 appears to be metabolized in the fish by a variety of processes including oxidation, hydroxylation, heterocyclic ring opening, methylation, and decarboxylation. There are indications that the methylene carbon is incorporated into fats/oils and higher molecular weight lipophilic/polar conjugates.

*: These data are not required for the proposed EUP, but the data requirements have been satisfied for registration for use on soybeans.

8. RECOMMENDATIONS:

Although all data requirements on FMC 57020 have been met for the proposed EUP, the following requirements have not yet been satisfied in support of registration:

- o Aqueous photolysis - A new study need to be done. The study should show a good material balance (i.e. volatile traps should be used) and be conducted at a constant temperature of about 25°C.

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- o Soil photolysis - A new study need to be done. Volatile traps should be used, and soil temperature needs to be maintained at about 25°C.

- o Field dissipation - Recalculate the residue concentration in 0-12 inch soil depth, provide all the data points used for linear regression analyses, and recalculate half-lives.

9. BACKGROUND:

A. Introduction

FMC is requesting an experimental use permit (EUP) to evaluate the control of various annual grasses and broadleaf weeds with Command 6 EC Herbicide on fallow cropland. It is proposing an experimental use period of two years (July 1, 1985 through July 1, 1987). The EUP will involve a total of 1,100 pounds ai on 1,100 acres in 7 states (CO, KS, MT, NE, SD, ND and WY) per year (2,200 lb ai during the two year period). A copy of the proposed experimental program is attached.

B. Directions for Use

A copy of the proposed label is attached.

Apply Command 6 EC Herbicide alone or in tank mix combination by ground equipment using a finished spray volume of 5-40 gallons of water per acre. Use nozzles suitable for broadcast boom application of herbicides.

In the areas where the winter wheat-fallow-winter wheat cropping system is practiced, make a surface applied broadcast application of 0.5 to 1.25 lb ai/A (the median application rate of 1.0 lb ai/A) of Command Herbicide after wheat harvest but before germination of volunteer wheat and other fall germinating winter annuals. If the higher rate is utilized, the earliest possible application timing should be used to minimize the opportunity for residual activity that may cause injury to the subsequent wheat crop.

Do not plant wheat sooner than 10 months after a late summer or fall application.

10. DISCUSSION OF INDIVIDUAL STUDIES:

No data were submitted. The proposed experimental program seems sound.

11. ONE-LINER: No new information was added to the on-going one-liner.

12. CBI: No CBI is included in this review.

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