DATA EVALUATION RECORD

CASE GS0073 2,4-D STUDY 3 PM --

CHEM 030001 2,4-D

BRANCH EAB DISC --

FORMULATION 90 - FORMULATION NOT IDENTIFIED

FICHE/MASTER ID 00095240 CONTENT CAT 01

Hautala, R.R. 1976. Photolysis of pesticides on soil surfaces. Unpublished study received Nov. 14, 1977 under 464-448. Prepared by University of Georgia, Dept. of Chemistry. Submitted by Dow Chemical U.S.A., Midland, MI; CDL:096642-B.

SUBST. CLASS = S.

DIRECT RVW TIME = 8 (MH) START-DATE END DATE

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CONCLUSIONS:

Degradation - Photodegradation on Soil

This study is unacceptable because no data were provided to support the calculated half-lives, the experimental design was inadequately described, and there were no dark controls reported. In addition, this study would not fulfill EPA Data Requirements for Registering Pesticides because degradates were not characterized, the test substance was uncharacterized, the test soils were not completely characterized, and the artificial light source was not sufficiently characterized nor was it compared to natural sunlight.

SUMMARY OF DATA BY REVIEWER:

2,4-D (2,4-dichlorophenoxyacetic acid, test substance uncharacterized), at 2.9 lbs/A (5 mg/plate), degraded with a half-life of >140 hours on "wet" soils, irradiated with Pyrex glass-filtered mercury arc light. The presence of anionic or cationic surfactants on the wet soil increased the rate of photolysis. On soils treated with cationic (sodium dodecyl sulfate) or anionic (hexodecyltrimethylammonium bromide) surfactants,

2,4-D degraded with half-lives of 55 to 175 hours on saturated soil and 145 to 175 hours on dry soil.

DISCUSSION:

1. The registrant provided half-life estimates but provided no supporting data on the concentration of 2,4-D or its degradates in soil at specific intervals.

2. The experimental design was inadequately described. The sampling procedures and intervals, including whether immediate posttreatment samples were taken, were not reported. The incubation temperature was not reported. The test substance was not characterized. The soils were not completely characterized; percent of sand, silt, and clay, and CEC were not provided.

3. There was no indication that dark controls were used to distinguish photolysis from other degradation mechanisms.

4. The registrant stated that the soils were extracted and the extracts were analyzed by GC. However, the extraction procedures were not described and the detection limits were not provided.

5. The degradates were not characterized.

6. The artificial light source was not adequately characterized. The intensity of the lamp was reported for wavelengths between 297 and 314 nm only. The author stated that the pesticide did not absorb longer wavelengths; however, the absorption spectrum for 2,4-D was not provided. In addition, the spectral characteristics of the artificial light source was not compared to natural sunlight. The duration of light and dark periods was not reported.

7. There was no material balance. Volatilization was neither measured nor controlled.

2,4-D EFED Review

Page _____ is not included in this copy.

Pages 3 through 9 are not included in this copy.

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_____ Identity of product inert ingredients.

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_____ A draft product label.

_____ The product confidential statement of formula.

_____ Information about a pending registration action.

X FIFRA registration data.

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