

10-1-90

Shaughnessey Number: 106401

Date out of EFGWB: OCT - 1 1990

TO: B. Baker
 Product Manager # 74
 Registration Division (H7505C)

FROM: Paul Mastradone Ph.D., Chief *PM*
 Environmental Chemistry, Review Section 1
 Environmental Fate and Ground Water Branch
 Environmental Fate and Effects Division (H7507C)

THRU: Henry Jacoby, Chief *Henry Jacoby*
 Environmental Fate and Ground Water Branch
 Environmental Fate and Effects Division (H7507C)

Attached, Please find the EFGWB review of:

Reg./File No: _____

Chemical Name: 1,2-dimethyl-3,5-diphenyl-1H-pyrazolium
methylsulfate

Common Name: Difenzoquat

Type Product: Herbicide

Product Name: Avenge

Company Name: American Cyanamid Company

Purpose: Review Adsorption/Desorption study

Date Received: 3/14/90 Action Code: 660

Date Completed: 9/4/90 EFGWB #: 90-0451

Monitoring study Requested: _____ Total Review Time: 2.0 Day

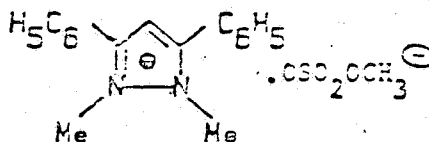
Deferrals to:

- _____ Ecological Effects Branch, EFED
- _____ Science Integration & Policy Staff, EFED
- _____ Non-Dietary Exposure Branch, HED
- _____ Dietary Exposure Branch, HED
- _____ Toxicology Branch I, HED
- _____ Toxicology Branch II, HED

1.0 CHEMICAL:

Chemical Name: 1,2-dimethyl-3,5-diphenyl-1H-pyrazolium.
methylsulfate

Common Name: Difenzoquat
Structure:



Physical/Chemical Properties:

Empirical Formula: $C_{17}H_{17}N_2$

Molecular Weight: 249

Solubility (ppm): 765,000 @ 20 C

Vapor Pressure (Torr): E-7

2.0 TEST MATERIAL:

^{14}C -Difenzoquat

3.0 STUDY /ACTION TYPE:

Review adsorption/desorption study.

4.0 STUDY IDENTIFICATION:

Mangels, G. January 7, 1987. Difenzoquat (AC 84,777):
Adsorption/Desorption in Soil. American Cyanamid Company,
Princeton, NJ. MRID# 414153-02.

5.0 REVIEWED BY:

Elizabeth A. Resek, Chemist
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

Signature:

Date: OCT - 1 1990

6.0 APPROVED BY:

Paul Mastradone Ph.D., Chief
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

Signature:

Date: OCT - 1 1990

7.0 CONCLUSIONS/RECOMMENDATIONS:

EFGWB concludes that the adsorption/desorption study submitted partially satisfies data requirements.

The adsorption portion of the study for unaged residues is acceptable and fulfills data requirements. The desorption portion of the study for unaged residues is not acceptable and that portion of the data requirement remains unfulfilled because the desorption coefficients were not calculated and reported.

Difenzoquat appears to be immobile. Adsorption coefficients range from 123 to 685 (soils range from Sharkey sandy clay loam to Beardon clay loam soils, respectively).

8.0 BACKGROUND:

EFGWB has been requested to review the submitted adsorption/desorption study for groundwater data call-in as requested in List A inventory of 1989.

9.0 DISCUSSION OF INDIVIDUAL STUDIES:

See individual DER.

10.0 COMPLETION OF ONE-LINER:

N.A.

11.0 CBI APPENDIX:

N.A.

DATA EVALUATION RECORD

STUDY IDENTIFICATION:

Mangels, G. January 7, 1987. Difenzoquat (AC 84,777):
Adsorption/Desorption in Soil. American Cyanamid Company,
Princeton, NJ. MRID# 414153-02.

REVIEWED BY:

Elizabeth A. Resek, Chemist
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

Signature 

Date _____

APPROVED BY:

Paul Mastradone Ph.D., Chief
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

Signature 

Date 01 - 1987

TYPE OF STUDY: Adsorption/Desorption

CONCLUSION:

EFGWB concludes that the adsorption/desorption study submitted partially satisfies data requirements.

The adsorption portion of the study for unaged residues is acceptable and fulfills data requirements. The desorption portion of the study for unaged residues is not acceptable and that portion of the data requirement remains unfulfilled because the desorption coefficients were not calculated and reported.

Difenzoquat appears to be immobile with adsorption coefficients of 181 with water and 124 with calcium chloride solution for sandy loam soil. Adsorption coefficients for sandy clay loam soil were 636 (water) and 123 (CaCl₂). Silt loam soil had K_d's of 1093 and 471 for water and CaCl₂, respectively. Adsorption coefficients for clay loam soil were 2680 (water) and 685 (CaCl₂).

MATERIALS AND METHODS:

Adsorption and desorption of ¹⁴C-difenzoquat were determined in slurries using four soil types (For soil characteristics see Table I). Soils were air dried for up to 48 hours then sieved to less than 2 mm. Solutions of ¹⁴C-difenzoquat were prepared at

measured concentrations of 1.08, 0.645, 0.320 and 0.105 ppm in water and 1.07, 0.605, 0.300 and 0.0968 ppm in 0.01 N calcium chloride. The experiment was performed in triplicate at each concentration for each of the four soils studied.

For adsorption, difenzoquat solutions were added to soil and then shaken at 23 C for 3 days to establish equilibrium. Samples were centrifuged and aliquots of the solution were removed for radioassay. The remaining solution was removed.

The desorption portion of the study was conducted by resuspending the centrifuged soil in fresh 0.01 N calcium chloride solution. The samples were shaken 3 days, centrifuged, then the solutions analyzed by LSC. This procedure was repeated twice.

REPORTED RESULTS:

Calculated adsorption coefficients reported were:

<u>Soil Type</u>	<u>K_d(water)</u>	<u>K_d(CaCl₂)</u>
Sassafras sandy loam	181	124
Sharkey sandy clay loam	636	123
Tippeecanoe silt loam	1093	471
Beardon clay loam	2680	685

DISCUSSION:

1. The registrant should note that the study submitted is deficient because no desorption coefficients were reported.
2. Also, it should be noted that the desorption values (ug) reported for desorption #1 and #2 did not total the amount adsorbed (ug); the desorption values were greater than the adsorption values.

Use this form for individual studies & to submit pesticide applications.



United States Environmental Protection Agency
Office of Pesticide Programs
Washington, DC 20460

Data Review Record

Confidential Business Information - Does not contain
National Security Information (E.O. 12065)

Pack Number 50275 EFED	Date Received 3-21-90
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1. Product Name Avenge	Chemical Name Difenzquat
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2. Identifying Number	3. Record Number	4. Action Code	5. MRID/ Accession Number	6. Study Guideline or Narrative
106401	261,463	660	41415302	163-1 Absorption/Desorption on Soil

7. Reference No. 1	8. Date Rec'd (EPA) 3-13-90	9. Prod/Review Mgr/DCI 3 BAKER 02	10. PM/RM Team No. 74	11. Date to HED/EFED/RD/BEAD 3/14/90	12. Proj Return Date 7/12/90	13. Date Returned to RD/SRRD
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Instructions
- Please review for groundwater data call-in as requested in A-list inventory of 1989.

This Section Applies to Review of Studies Only

14. Check Applicable Box <input type="checkbox"/> Adverse 6(a)(2) Data (405) <input type="checkbox"/> Special Review Data (870) <input checked="" type="checkbox"/> Generic Data (Reregistration)(660) <input type="checkbox"/> Product Specific Data (Reregistration)(655)	15. No. of Individual Studies Submitted 1
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16. Have any of the above studies (in whole or in part) been previously submitted for review? <input type="checkbox"/> Yes (Please identify the study(ies)) <input checked="" type="checkbox"/> No	17. Related Actions
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18.	To	Type of Review	19. Reviews Also Sent to	20. Data Review Criteria
HED		Science Analysis & Coordination	<input type="checkbox"/> SAC <input type="checkbox"/> PC	A. Policy Note No. 31 <input type="checkbox"/> 1 = data which meet 6(a)(2) or meet 3(c)(2)(B) flagging criteria <input type="checkbox"/> 2 = data of particular concern from registration standard <input type="checkbox"/> 3 = data necessary to determine tiered testing requirements
		Toxicology/HFA	<input type="checkbox"/> TOX/HFA <input type="checkbox"/> PL	
		Toxicology/IR	<input type="checkbox"/> TOX/IR	
		Dietary Exposure	<input type="checkbox"/> DEB <input type="checkbox"/> EA	
		Nondietary Exposure	<input type="checkbox"/> NDE <input type="checkbox"/> AC <input type="checkbox"/> BA	
EFED	<input checked="" type="checkbox"/>	Ecological Effects	<input type="checkbox"/> EEB	B. Section 18 <input type="checkbox"/> 1 = data in support of section 3 in lieu of section 18 C. Inert Ingredients <input type="checkbox"/> 1 = data in support of continued use of List 1 inert
		Environmental Fate & Groundwater	<input type="checkbox"/> EFGWB	
SRRD		Special Review	<input type="checkbox"/> SR	
		Reregistration	<input type="checkbox"/> RER	
		Generic Chemical Support	<input type="checkbox"/> GSC	
RD		Insecticide-Rodenticide	<input type="checkbox"/> IR	
		Fungicide-Herbicide	<input type="checkbox"/> FH	
		Antimicrobial	<input type="checkbox"/> AM	
		Product Chemistry		
BEAD		Precautionary Labeling		
		Economic Analysis		
		Analytical Chemistry		
		Biological Analysis		

<input type="checkbox"/> Confidential Statement of Formula (EPA Form 8570-4) Attached (Trade Secrets)	<input type="checkbox"/> Label Attached
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