

US EPA ARCHIVE DOCUMENT

120301

Date Out EAB: _____

TO: G. Werdig
Product Manager 50
Registration Division (TS-767)

APR 5 1988

FROM: Patrick W. Holden, Team Leader *CE. for*
Ground-Water Team
Exposure Assessment Branch/HED (TS-769C)

THRU: Paul Schuda, Chief *Paul F. Schuda*
Exposure Assessment Branch/HED (TS-769C)

Attached please find the environmental fate review of:

Reg./File No.: _____

Chemical: Thidiazuron

Type Product: Herbicide

Product Name: _____

Company Name: Nor-Am

Submission Purpose: Ground-Water Data Call-In Response

ACTION CODE: _____

Date In: _____

EAB # 80468

Date Completed: 04/05/88

TAIS (level II) Days

1.0

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

Monitoring study requested by EAB:

Monitoring study voluntarily conducted by registrant:

REGISTRATION DIVISION DATA REVIEW RECORD
 Confidential Business Information - Does Not Contain National Security Information (E.O. 12065)

4434211
2/26/88

1. CHEMICAL NAME <i>Thidiazuron</i>			
2. IDENTIFYING NUMBER <i>120301</i>	3. ACTION CODE <i>495</i>	4. ACCESSION NUMBER <i>—</i>	TO BE COMPLETED BY PM
			5. RECORD NUMBER <i>215,396</i>
			6. REFERENCE NUMBER
			7. DATE RECEIVED (EPA) <i>11/5/87</i>
			8. STATUTORY DUE DATE
			9. PRODUCT MANAGER (PM) <i>Wardig/Whiters</i>
			10. PM TEAM NUMBER <i>50</i>

14. CHECK IF APPLICABLE		TO BE COMPLETED BY PCB
<input type="checkbox"/> Public Health/Quarantine	<input type="checkbox"/> Minor Use	11. DATE SENT TO HED/TSS <i>2-26-88</i>
<input type="checkbox"/> Substitute Chemical	<input type="checkbox"/> Part of IPM	12. PRIORITY NUMBER <i>29</i>
<input type="checkbox"/> Seasonal Concern	<input type="checkbox"/> Review Requires Less Than 4 Hours	13. PROJECTED RETURN DATE <i>3-28-88</i>

15. INSTRUCTIONS TO REVIEWER A. HED <input type="checkbox"/> Total Assessment - 3(c)(5) <input type="checkbox"/> Incremental Risk Assessment - 3(c)(7) and/or E.L. Johnson memo of May 12, 1977. B. SPRD (Send Copy of Form to SPRD PM) <input type="checkbox"/> Chemical Undergoing Active RPAR Review <input type="checkbox"/> Chemical Undergoing Active Registration Standards Review	F. INSTRUCTIONS <i>Nor-Am's responses to questions raised in your review of 12/5/86.</i> <i>Ground water</i>
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16. RELATED ACTIONS

17. 3(c)(1)(D) <input type="checkbox"/> Use Any or All Available Information <input type="checkbox"/> Use Only Attached Data <input type="checkbox"/> Use Only the Attached Data for Formulation and Any or All Available Information on the Technical or Manufacturing Chemical.	18. REVIEWS SENT TO <input type="checkbox"/> TB <input type="checkbox"/> EEB <input type="checkbox"/> EF <input type="checkbox"/> PL <input type="checkbox"/> RCB <input type="checkbox"/> EFB <input type="checkbox"/> CH <input type="checkbox"/> BFSD
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19. To	TYPE OF REVIEW	NUMBER OF ACTIONS							
		Registration	Petition	EUP	SLN	Sec. 18	Inert	MNR. USE	Other
HED	TOXICOLOGY								
	ECOLOGICAL EFFECTS								
	RESIDUE CHEMISTRY								
	<input checked="" type="checkbox"/> ENVIRONMENTAL DATA <i>ATTN. C. Eiden</i>								
RD/TSS	CHEMISTRY								
	EFFICACY								
	PRECAUTIONARY LABELING								
BFSD	ECONOMIC ANALYSIS								<i>2</i>

20. <input type="checkbox"/> Label Submitted with Application Attached	21. <input type="checkbox"/> Confidential Statement of Formula	22. <input type="checkbox"/> Representative Labels Showing Accepted Uses Attached	23. Date Returned to RD (to be completed by HED)	24. Include an Original and 4 (four) Copies of This Completed Form for Each Branch Checked for Review.
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REGISTRATION DIVISION DATA REVIEW RECORD
 Confidential Business Information - Does Not Contain National Security Information (E.O. 12065)

141842
5/24/88

1. CHEMICAL NAME

Thidiazuron

2. IDENTIFYING NUMBER

120301

3. ACTION CODE

495

4. ACCESSION NUMBER

—

TO BE COMPLETED BY PM

5. RECORD NUMBER

215,396

6. REFERENCE NUMBER

7. DATE RECEIVED (EPA)

11/5/87

8. STATUTORY DUE DATE

9. PRODUCT MANAGER (PM)

Meridi/Whiters

10. PM TEAM NUMBER

50

14. CHECK IF APPLICABLE

Public Health/Quarantine

Minor Use

Substitute Chemical

Part of IPM

Seasonal Concern

Review Requires Less Than 4 Hours

AH

TO BE COMPLETED BY PCB

11. DATE SENT TO HED/TSS

2-26-88

12. PRIORITY NUMBER

29

13. PROJECTED RETURN DATE

3-28-88

15. INSTRUCTIONS TO REVIEWER

A. HED

Total Assessment - 3(c)(5)

C. BFS/D

Incremental Risk Assessment - 3(c)(7) and/or E.L. Johnson memo of May 12, 1977.

D. TSS/RD

E. Other

B. SPRD (Send Copy of Form to SPRD PM)

Chemical Undergoing Active RPAR Review

Chemical Undergoing Active Registration Standards Review

Ground-water

F. INSTRUCTIONS

Not-AM's responses to questions raised in his review of 12/5/87.

16. RELATED ACTIONS

17. 3(c)(1)(D)

Use Any or All Available Information Use Only Attached Data Use Only the Attached Data for Formulation and Any or All Available Information on the Technical or Manufacturing Chemical.

18. REVIEWS SENT TO

TB EEB EF PL RCB EFB CH BFS/D

19. To	TYPE OF REVIEW	NUMBER OF ACTIONS							
		Registration	Petition	EUP	SLN	Sec. 18	Inert	MNR. USE	Other
HED	TOXICOLOGY								
	ECOLOGICAL EFFECTS								
	RESIDUE CHEMISTRY								
	<input checked="" type="checkbox"/> ENVIRONMENTAL DATA <i>ATN. C. Eiden</i>								
RD/TSS	CHEMISTRY								
	EFFICACY								
	PRECAUTIONARY LABELING								
BFS/D	ECONOMIC ANALYSIS								3

20. Label Submitted with Application Attached

21. Confidential Statement of Formula

22. Representative Labels Showing Accepted Uses Attached

23. Date Returned to RD (to be completed by HED)

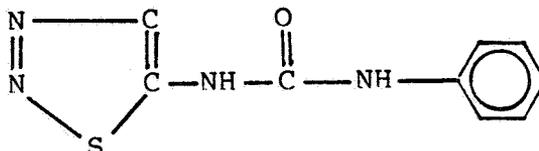
24. Include an Original and 4 (four) Copies of This Completed Form for Each Branch Checked for Review.

1. Chemical:

Common name: Thidiazuron

Chemical name: 1-phenyl-3-(1,2,3-thidiazol-5-yl)-urea

Structure:



2. Test Material:

Not applicable.

3. Study/Action Type:

Registrant's response to a previous data call-in review on Thidiazuron for ground-water concerns.

4. Study Identification:

A letter dated November 4, 1987 from Nor-Am Chemical Company to the RD.

5. Reviewed by:

Catherine Eiden
Ground-Water Team

Catherine Eiden
4/5/88

6. Approved by:

Patrick W. Holden, Leader
Ground-Water Team

P. W. Holden for
4/5/88

7. Conclusion:

Thidiazuron partially meets the criteria indicating persistence: it is stable to hydrolysis, has an aerobic soil half-life of 26 or 144 days, degradation slows under anaerobic conditions, it photolyzes rapidly. ←

Thidiazuron does not meet criteria indicating mobility: Kd values on a sandy loam with 3.3 % organic matter = 21.3 ml/g, on a river sand = 2.22 ml/g. In column studies, thidiazuron was leached under worst-case conditions. The majority of thidiazuron remained in the upper 6 cm of the soil columns (67-93 %) and less than 2 % leached in all columns. Aged thidiazuron leached in columns only slightly, 0.31-0.69 %. The majority remained in the upper 5 cm of the columns. The thidiazuron photoproduct was leached in columns under worst-case conditions and found to be immobile. ↗

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Field dissipation studies indicate some movement to the deepest depths sampled, 9-12 inches, under worst-case conditions. The depth of leaching for thidiazuron and degradates is undefined.

EAB concludes, thidiazuron is not expected to be a leacher. However, there are several discrepancies in the data presented:

Aerobic soil metabolism studies were conducted twice with the same soil. The half-life was calculated as 26 days the first time and 144 days the second time. This is a large discrepancy. The registrant states the soils were activated for both experiments. Is the half-life 26 days or 144 days?

Also, the depth of leaching for thidiazuron and degradates is undefined. Residues were detected at 100 ppb (minimum detection limit on the soil method) at the 9-12 inch depth in coarse, sandy loam soils in California and Georgia after injection application treatment of bare ground plots with incorporation to 2-3 inches. Under normal use conditions, thidiazuron residues are not detected below 6 inches at < 100 ppb in the soil. The bare ground plots represent a worst-case situation for thidiazuron regarding leaching.

In order to clarify the persistence of thidiazuron and its degradates and their mobility under normal field conditions, a new field dissipation is required.

8. Recommendations:

EAB recommends a new field dissipation study be conducted for thidiazuron and degradates according to the following:

1. The study should be conducted on a sandy loam soil with < 2 % organic matter as in California or Georgia where cotton is grown. Thidiazuron should be applied under normal field use conditions as a cotton defoliant. The half-life for thidiazuron must be established in the field.
2. The minimum detection limit (MDL) for the soil analyses must be lowered for thidiazuron; a MDL of 10 ppb is preferred.
3. A method for the identification of thidiazuron's degradates is also necessary. Specifically, 1,2,3-thiadiazol-5-yl-urea was detected in the aerobic soil metabolism study as the major degradate, and should be tracked in the field dissipation study. The pattern of formation and decline of the degradates must be established. The MDL on this method for degradate(s) should be as low as possible.

9. Background:

Thidiazuron is a cotton defoliant used prior to harvest for cotton as a spray application for ease in harvesting.

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10. Discussion of Individual Studies:

Not applicable.

11. One-Liner:

Not applicable.

12. CBI:

Not included in this package.

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NOR-AM Chemical Company, 3509 Silverside Road, P. O. Box 7495, Wilmington, DE 19803 (302) 575-2000 Telex 835475

November 4, 1987

*Ken
Wiskel*

Ms. Geraldine Werdig, Chief
Data Call-In Program
Registration Division (TS-767C)
U.S. Environmental Protection Agency
Crystal Mall #2, Room 728-A
1921 Jefferson Davis Highway
Arlington, VA 22202

Dear Ms. Werdig:

RE: Data Call-In Notice for Groundwater Data-Thidiazuron
James Ackerman's September 1, 1987 letter to NOR-AM

In a letter dated September 1, 1987, James Akerman relayed several comments to NOR-AM Chemical Company regarding environmental fate studies previously submitted to EPA. These studies were submitted on December 4, 1984 in response to a Data Call-In Notice for thidiazuron issued October 31, 1984. Although Mr. Akerman's letter advised us to respond by submitting a Data Call-In Summary Sheet within 30 days, Ms. Ruby Whitters of your office advised me that we could instead submit our response in letter form. The Agency reviewer's comments on our environmental fate data are discussed below.

Photodegradation in Water (161-2)

NOR-AM plans to repeat this study during the fourth quarter of 1988. A final report will be submitted to the Agency on or before December 31, 1988. ✓

Aerobic Soil Metabolism (162-1)

The EPA reviewer questioned whether the report entitled "(W25) Degradation of SN 49 537 in an Activated Loamy Sand" was conducted in the dark. Please be advised that all our aerobic soil metabolism studies, including this one, are conducted in the dark to eliminate the possibility of test compound degradation through photolytic mechanisms. ✓

The reviewer also had two questions on the study entitled "(W26) Report on Degradation of SN 49 537 in Soil." In answer to the first question, please note that the "Neuhofen" soil used in this study was a biologically activated soil. The second Agency comment requested details on soil storage condition. The fresh soil used in this ✓

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study was received from Lufa-Speyer (an official West German agriculture department) in 1973 and was re-analyzed by Lufa-Bonn in 1975. This soil was stored in a greenhouse under aerobic conditions at ambient temperatures and was moistened regularly until the study was started in 1976.

Anaerobic Soil Metabolism (162-2)

NOR-AM intends to repeat an anaerobic soil metabolism study in the second quarter of 1988. A final report will be submitted to EPA on or before December 31, 1989. ✓

Leaching (163-1)

The Agency reviewer commented that all seven leaching studies submitted by NOR-AM were acceptable. NOR-AM also submitted an adsorption/desorption study which the reviewer found unacceptable due to inadequate desorption data. Since additional desorption data are not available to support this study, and since the Pesticide Assessment Guidelines, Subdivision N specify that the mobility of the substance should be assessed by either soil TLC, soil column or adsorption/desorption procedures, NOR-AM does not intend to upgrade or repeat this adsorption/desorption study. It is NOR-AM's position that the seven acceptable soil column studies should provide adequate evidence of thidiazuron's leaching potential.

Field Dissipation (164-1)

NOR-AM submitted reports on six field dissipation studies. One of these studies, which the Agency accepted, was completed on a bare plot, and irrigation was used. The Agency reviewer commented that no irrigation schedules were included in the remaining reports and asked for clarification. Please note:

- 1) The protocols for the remaining five trials specify that the test compound was to be applied as a defoliant to mat~~ure~~ cotton, and that normal cultural practices were to be followed. Cotton crops are not irrigated following application of defoliants and, with the exception of the Alamo, TX trial, there was no need to irrigate the plots after the cotton was harvested. ✓
- 2) In the Alamo, TX trial, cabbage was planted as rotational crop two months after the cotton was harvested. As stated in the report (see pg. 5, "Cultural information..."), the cabbage crop was furrow irrigated four times between October 5, 1976 (planting) and March 15, 1977 (harvest). Unfortunately, no additional details regarding this irrigation schedule are available. 8

Ms. Geraldine Werdig
November 4, 1987
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NOR-AM has no immediate plans to conduct additional field dissipation studies for this compound unless such studies are requested by your office. Please advise me if you see a need to initiate further studies.

I hope these additional comments are helpful, and that our plans to repeat the Water Photolysis and Anaerobic Soil Metabolism studies are acceptable. Please contact me at the above address or call (302) 575-2049 if you require any additional information.

Sincerely,



Cindy Keller
Registration Specialist

CK3.113mh

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