120301

Date Out EAB: _____

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

APR 5 1988

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

THRU: Paul Schuda, Chief
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)

44342 D.

2/26/88

1. CHEMICAL NAME: Thidiazuron

2. IDENTIFYING NUMBER	3. ACTION CODE	4. ACCESSION NUMBER	TO BE COMPLETED BY PM
120301	495	—	5. RECORD NUMBER: 215,396
			6. REFERENCE NUMBER:
			7. DATE RECEIVED (EPA): 11/5/87
			8. STATUTORY DUE DATE:
			9. PRODUCT MANAGER (PM): Wardig/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)
- ☐ 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)
- ☐ Chemical Undergoing Active RPAR Review
- ☐ Chemical Undergoing Active Registration Standards Review

C. ☐ BFSD

D. ☐ TSS/RD

E. ☒ Other: Ground-water

F. INSTRUCTIONS: Nor-Am's responses to questions raised in June review of 12/5/86.

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
- ☐ BFSD

19.	To	TYPE OF REVIEW	NUMBER OF ACTIONS: Registration	Petition	EUP	SLN	Sec. 18	Inert	MNR. USE	Other
HED		TOXICOLOGY								
HED		ECOLOGICAL EFFECTS								
HED		RESIDUE CHEMISTRY								
HED	X	ENVIRONMENTAL DATE (ATTN: C. Edlow)								
RD/TSS		CHEMISTRY								
RD/TSS		EFFICACY								
RD/TSS		PRECAUTIONARY LABELING								
BFSD		ECONOMIC ANALYSIS								

20.	21.	22.	23.	24.
☐ Label Submitted with Application Attached	☐ Confidential Statement of Formula	☐ Representative Labels Showing Accepted Uses Attached	Date Returned to RD (to be completed by HED)	Include an Original and 4 (four) Copies of This Completed Form for Each Branch Checked for Review.

EPA Form 8570-13 (Rev. 11-81) PREVIOUS EDITIONS ARE OBSOLETE.

REGISTRATION DIVISION DATA REVIEW RECORD

Confidential Business Information – Does Not Contain National Security Information (E.O. 12065)

1. CHEMICAL NAME: Thidiazuron

2. IDENTIFYING NUMBER	3. ACTION CODE	4. ACCESSION NUMBER
120301	495	—

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): Wardell Whiters
10. PM TEAM NUMBER: 50

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

14. CHECK IF APPLICABLE

AH

- ☐ Public Health/Quarantine
- ☐ Minor Use
- ☐ Substitute Chemical
- ☐ Part of IPM
- ☐ Seasonal Concern
- ☐ Review Requires Less Than 4 Hours

15. INSTRUCTIONS TO REVIEWER

A. HED
- ☐ Total Assessment - 3(c)(5)
- ☐ 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)
- ☐ Chemical Undergoing Active RPAR Review
- ☐ Chemical Undergoing Active Registration Standards Review

C. ☐ BFSD
D. ☐ TSS/RD
E. ☒ Other — Ground water

F. INSTRUCTIONS: Mr-Am's responses to questions raised in the review of 12/5/86.

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
- ☐ BFSD

19.	To	TYPE OF REVIEW	NUMBER OF ACTIONS: Registration	Petition	EUP	SLN	Sec. 18	Inert	MNR. USE	Other
HED		TOXICOLOGY								
HED		ECOLOGICAL EFFECTS								
HED		RESIDUE CHEMISTRY								
HED	X	ENVIRONMENTAL DATE ATN: C. Eidon								
RD/TSS		CHEMISTRY								
RD/TSS		EFFICACY								
RD/TSS		PRECAUTIONARY LABELING								
BFSD		ECONOMIC ANALYSIS							3	

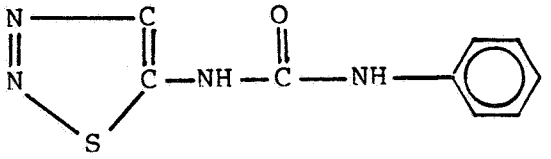
20. ☐ Label Submitted with Application Attached
21. ☐ Confidential Statement of Formula
22. ☐ Representative Labels Showing Accepted Uses Attached
23. Date Returned to RD (to be completed by HED)
24. Include an Original and 4 (four) Copies of This Completed Form for Each Branch Checked for Review.

EPA Form 8570-13 (Rev. 11-81) PREVIOUS EDITIONS ARE OBSOLETE.

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

C. Eiden 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.

4

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.

10. Discussion of Individual Studies:

    Not applicable.

11. One-Liner:

    Not applicable.

12. CBI:

    Not included in this package.

NOR-AM CHEMICAL COMPANY

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

November 4, 1987

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 Whiters 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

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 mature 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

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 J. Keller

Cindy Keller
Registration Specialist

CK3.113mh