

US EPA ARCHIVE DOCUMENT

CONFIDENTIAL

Shaughnessy #: 056002

EAB Logout Due Date: 12 DEC 1983

Init: *[Signature]*

To: Taylor/Stavola
Product Manager #
Registration Division (TS-767)

From: Lionel A. Richardson Chief, *[Signature]*
Environmental Chemistry Review Section # 3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769c)

Attached please find the EAB review of...

Reg./File No.: 264-29, - 141, - 142, - 137; 336, -248

Chemical: Naphthalene acetic acid

Type Product: G

Product Name: _____

Company Name: Union Carbide

Submission Purpose: Registration Standard: hydrolysis

ZBB Code: _____

Date In: 10/11/83

Date Completed: 12 / 09 83

ACTION CODE: 600

EAB #: 4012 - 4017

TAIS (level II)	Days
<u>46</u>	<u>8</u>
<u> </u>	<u> </u>

- Deferrals To:
- Ecological Effects Branch
 - Residue Chemistry Branch
 - Toxicology Branch

REGISTRATION DIVISION DATA REVIEW RECORD

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

7053

1. CHEMICAL NAME

N-methylbenzoic acid

10-11-83

2. IDENTIFYING NUMBER	3. ACTION CODE	4. ACCESSION NUMBER	TO BE COMPLETED BY PM
<i>264-29</i>	<i>600</i>	<i>250640</i>	5. RECORD NUMBER <i>106701</i>
<i>264-141</i>	<i>600</i>	<i>250640</i>	6. REFERENCE NUMBER <i>101</i>
<i>264-142</i>	<i>600</i>	<i>250640</i>	7. DATE RECEIVED (EPA) <i>6/6/83</i>
<i>264-137</i>	<i>600</i>	<i>250640</i>	8. STATUTORY DUE DATE
<i>264-336</i>	<i>600</i>	<i>250640</i>	9. PRODUCT MANAGER (PM) <i>Taylor/Stavola</i>
<i>264-248</i>	<i>600</i>	<i>250640</i>	10. PM TEAM NUMBER <i>25</i>

14. CHECK IF APPLICABLE

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

HND

TO BE COMPLETED BY PCB

11. DATE SENT TO HED/TSS
10-11-83

12. PRIORITY NUMBER
50

13. PROJECTED RETURN DATE
12-12-83

15. INSTRUCTIONS TO REVIEWER

- A. HED Total Assessment - 3(c)(5) C. BFS
- Incremental Risk Assessment - 3(c)(7) and/or E.L. Johnson memo of May 12, 1977. D. TSS/RD
- Other
- B. SPRD (Send Copy of Form to SPRD PM)
- Chemical Undergoing Active RPAR Review
- Chemical Undergoing Active Registration Standards Review

F. INSTRUCTIONS

Review hydrolytic degrad. study - Standard data callin

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

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								
RD/TSS	CHEMISTRY								
	EFFICACY								
	PRECAUTIONARY LABELING								
BFS	ECONOMIC ANALYSIS								

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.

June 6, 1983

EPA Correspondence No. 163-83

Mr. Robert J. Taylor
Fungicide-Herbicide Branch
Registration Division (TS 767C)
Office of Pesticide Programs
U. S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

25064C
TO ISE 7/5/83

Dear Mr. Taylor:

Re: Registration Standard for NAA
(21-Month Progress Report)
TRE-HOLD® Aerosol, EPA Reg. No. 264-248
TRE-HOLD® Sprout Inhibitor A-112, EPA Reg. No. 264-336
ROOTONE® F, EPA Reg. No. 264-29
NAA 800, EPA Reg. No. 264-142
AMID-THIN® W, EPA Reg. No. 264-137
FRUITONE® N, EPA Reg. No. 264-141

We are submitting a naphthaleneacetic acid hydrolytic degradation study. This data was generated as partial fulfillment of the Section 3 Guidelines for Registering Pesticides in the United States; and we, therefore, hold that the data are fully compensable under Section 3(c)(1)(D) and 3(c)(2)(D) of the September 30, 1978 amended FIFRA. Additionally, this data is not to be used to support a new registration, existing registration or amended label for any other registrant without the expressed written consent of Union Carbide Agricultural Products Company, Inc. Please assign and communicate an accession number to this data to facilitate future reference.

The status of pending research is provided below.

Toxicology

1. Rabbit Teratology

Work is continuing as projected, and completion of study is still anticipated by late third quarter of 1983.

Mr. Robert J. Taylor
EPA Correspondence No. 163-83
June 6, 1983
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2. Skin Sensitization

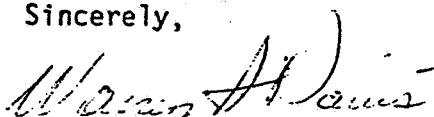
Due to laboratory scheduling problems, the initiation of this study has been delayed. We expect work will begin within the next couple of months. A completion target date is planned for fourth quarter of 1983.

Residue

Analysis of samples is in progress, and the results should be finished by end of third quarter of 1983.

If you have any questions, contact us promptly.

Sincerely,



Warren A. Davis
Registration Manager
Herbicides/Growth Regulators

WAD:db

CASE GS0023

Naphthaleneacetic Acid

PM

CHEM 056002

BRANCH EAB

DISC 20

TOPIC 0510

GUIDELINE 40 CFR 163.62

FORMULATION 06 - ACTIVE INGREDIENT

FICHE/MASTER ID NO FISCH CONTENT CAT

Feung, C.S., and G.K. Carswell. 1983. Naphthalene acetic acid. Hydrolysis of ethyl naphthaleneacetate and naphthaleneacetamide. Report No. 860R10. File NO. 31573. Unpublished study submitted by Union Carbide Agr. Products Co., Inc. June 6, 1983. CONFIDENTIAL BUSINESS INFORMATION

SUBST, CLASS

OTHER SUBJECT DESCRIPTORS

PRIM
SECI

DIRECT RVM TIME (MM) START-DATE END DATE

REVIEWED BY: Hudson Boyd
TITLE: Chemist
ORG: EAB, HED, EPA
LOC/TEL: CM-2 Rm 807-I 557.02-67

SIGNATURE: *Hudson Boyd* DATE:

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

Conclusion:

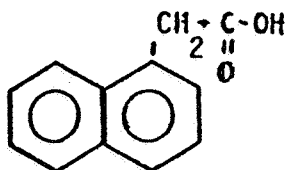
Degradation - Hydrolysis

1. This study is scientifically valid.
2. The hydrolysis of Et-NAA to NAA is pH dependent. The half-life of Et-NAA in pH 9 and 7 is approximately 7.5 and 266 days, respectively. No hydrolysis at pH 5 is expected. Neither is NAA-amide expected to hydrolyze at either pH tested.
3. This study fulfills EPA Hydrolysis Data Requirements for Registering Pesticides (1983).

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Materials and Methods



1- Naphthaleneacetic acid

Non-labeled standards of naphthaleneacetic acid (NAA), naphthaleneacetamide (NAA - amide) and ethyl naphthalene - acetate (Et-NAA), each at least 99% pure, were prepared by Union Carbide Agricultural Products Co., Inc. Radiolabeled standards, 97% or better pure, were purchased from California Bionuclear Corp., Sun Valley, CA. Specific activities were 6.6, 2.4, and 6.6 mCi/mole, respectively.

Aqueous buffer solutions adjusted to pH 5, 7, and 9, first autoclaved at 250°C, 15 psi, were used for measurement of hydrolysis rates of the acetamide and acetate to NAA. pH values of these solutions were unaffected by the autoclaving.

Individual test compounds (NAA-amide and Et-NAA) were dissolved in 20% MeOH and added through septums to closed bottles of buffer to achieve final concentrations of 40 ppm of labeled and non-labeled material. Bottles were wrapped with aluminum foil to exclude light. Incubation proceeded at room temperature (unspecified).

Five ml samples from each trial buffer were withdrawn at time zero and at 4 hrs., 1, 4, 7, 12 days, and at 2, 3, 4, and 5 weeks. A 10 ul aliquot was counted on each to monitor radioactivity in the solutions. Quantitative and qualitative analyses of hydrolytic

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products were made by HPLC. External standards of either the amide or ester, or the NAA, as appropriate, (made up in buffer solns), were employed. In addition, the ^{14}C -labeled samples were spotted on reverse phase TLC plates. Following development, and exposure to film, the radioactive spots were scraped and counted, using liquid scintillation. Identification of the hydrolytic product was achieved by co-chromatography of the labeled compound with the unlabeled standards in reverse phase TLC as well as by mass spectrometry and nmr.

Results

The hydrolysis of Et-NAA and NAA-amide was followed by monitoring their disappearance and the concurrent appearance of NAA in aseptic aerobic aqueous buffer solutions at pH 9, 7, and 5, in the dark, at room temperature. The rate of the reaction was assumed to follow first order kinetics:

$$(1) \quad \frac{dx}{dt} = k(a - x)$$

Where a = initial concentration
 x = amount of test substance hydrolyzed at reaction time t .

(2) On integration equation (1) becomes

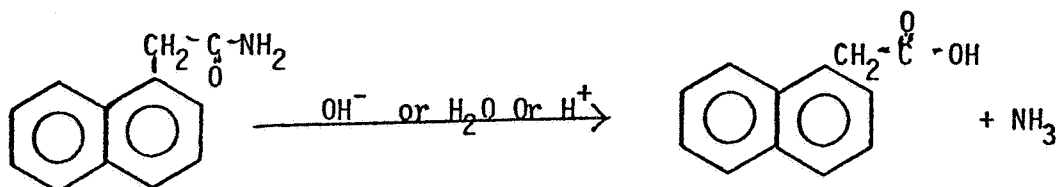
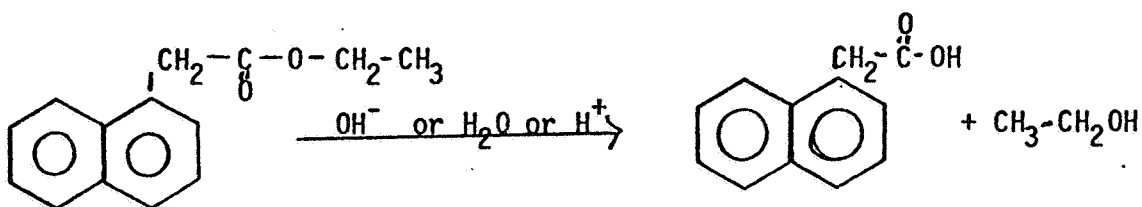
$$kt = \ln \frac{a}{a-x} \quad k = \frac{2.305}{t} \log \frac{a}{a-x} \quad (3)$$

and the half-life of Et-NAA (or NAA amide)

$$t_{1/2} = \frac{0.693}{k}$$

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The reactions are as shown below:



It was concluded that since the solutions were autoclaved prior to use the reaction was nonbiological in nature and was attributed to aqueous hydrolysis. The rate of hydrolysis of Et-NAA differed from pH to pH and also from that for the amide. Hydrolysis at pH 9 was 35X that at pH 7. The halflife of Et-NAA in pH 9 and 7 was approximately 7.5 and 266 days, respectively. There was no hydrolysis of ^{14}C -EtNAA at pH 5, nor of NAA-amide at either pH tested.

Two hydrolytic products in pH 7 and 9 buffers were NAA and B-II; the amount of the former increased with time and the latter decreased. B-II was identified by co-chromatography on TLC as the methyl ester of NAA. Confirmation was by mass spectrometry.