Shaughnessy No.: 068103

Date out EAB: 30 JUL 1984

To: H. Jacoby
Product Manager #21
Registration Division (TS-767)

FILE COPY

From: Samuel M. Creeger, Chief
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769c)

Attached, please find the EAB review of:

Reg./File No.: 2139 - REA

Chemical: Methyl isothiocyanate

Type Product: F

Product Name:

Company Name: Noram

Submission Purpose: support registration for utility pole treatment

ZBB Code: ?

Action Code: 171

Date In: 4/24/84

EAB No.: 4309

Date Completed:

	TAIS (Level II)	Days
Deferrals To:	63	2

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

Noram has submitted hydrolysis data in support of its registration of the fungicide methyl isothiocyanate for utility pole treatment. Acc. No. 252920. A copy of a previous review (1/16/84) which provides the directions for use and data requirements is attached.

2.0 SN-584: MITC
methyl isothiocyanate

$$CH_3 - N = C = S$$

3.0 DISCUSSION

This submission contains several studies concerning the reaction of SN 584 with water.

3.1 E1. Stability Test of MITC Aqueous Solution. J. Imose and K. Namba.

Two different solutions (7.7 ppm and 0.76 ppm) were prepared and 100 ml was placed into polyethylene feeding bottles while controls of the same concentration were placed in "measuring" flasks, stoppered and allowed to stand. All samples were placed in a pharmacological breeding room (25°C; 40-60% humidity) and analyzed.

Results indicate that 38% and 92% of the 7.7 ppm MITC aqueous solution was unchanged parent after 8 days in the feeding bottle and measuring flask, respectively. In addition 22% and 96% of the 0.76 ppm MITC solution was unchanged parent after 8 days in polyethylene and "glass" bottles, respectively.

EAB linear regression analysis indicates that the t1/2 of MITC in the plastic bottle is 5-6 days for the 0.76 ppm and the 7.7 ppm solutions, respectively and in the glass flask; the t1/2 is 96-53 days for the 0.76 ppm and the 7.7 ppm solution, respectively.

Conclusion

This study indicates a lower stability of MITC in plastic bottles than in glass bottles.

3.2 E2. Hydrolysis of methyl isothiocyanate in aqueous solutions. (Summary of data of experiments done in 1973).

This report apparently is a summary report of several studies conducted in 1973. Three different buffer solutions (pH 5.6-6.2; 7.1-7.3; 9.0-9.1) and three different temperatures (rt, 40°, 50°). Half-lives ranged from 54 days at pH 7.2 to 88 days at pH 6.1 for the room temperature studies. At elevated temperatures, halflives were 10 days or less.

Conclusion

This compilation of data appears to produce halflife ranges at environmental pH's and temperatures that agree with the half lives obtained in the stability study above (50-100 days).

3.3 E3. Determination of the Rate of Hydrolysis of Methyl Isothiocyanate at 25°C (1978).

The hydrolysis of methyl isothiocyanate was studied using the buffer system listed in the table (attached). As the table indicates, the pH ranged from 1-13. Methylene chloride was used to extract the MITC and residues were analyzed using GC techhiques. The results obtained are shown in the second table (attached). Halflife estimates at environmental pHs are 0.5 day (pH 9), 1.4 days (pH 5) and 10 days (pH 7).

Conclusion

Depending on pH and buffer system, the halflife of MITC at environmental conditions in this study appears to be 10 days or less.

3.4 E4. Decomposition of Methyl Isothiocyanate in Aqueous Solution. Bridgart, G.J., and Wilson, I.R., Austrian J. Chem. 1971, 24, 2695.

This literature report identifies the products resulting from the decomposition of MITC in water. The products are: N-methyl dithiocarbamate and 2,4-dimethyl-1, 2, 4-thiodiazolide 3,5-dithione. The formation of products was noticed after about 1 month.

4.0 DISCUSSION

This submission containing hydrolysis data provides inconclusive results. Some data indicate a halflife less than 10 days (E1 and E3) and other data indicated a halflife range of 2-3 months (E1 and E2). No study submitted is an acceptable hydrolysis study. Each study was deficient for at least the following reasons:

1) identification of hydrolysis products not conducted; material balance not provided

2) radiolabel was not used

3) not performed under sterile conditions (glassware and solutions)

4) not conducted in darkness

5) analytical method not described.

5.0 RECOMMENDATION

EAB does not accept these data and recommends that a new hydrolysis study be conducted using Guidelines procedures.

In addition, the registrant indicated in his cover letter that treated poles will not be placed in water precluding the need for a leaching study. Eny active ingredient leaching out of the poles into the soil will not be detectable on a per acre basis. EAB recommends that the registrant's suggestion to place a statement on the label keeping treated poles out of water is appropriate and EAB agrees to waive the leaching data requirement on this basis.

Richard V. Moraski
Chemist

Page _____ is not included in this copy.

Pages 5 through 6 are not included.

The material not included contains the following type of information:

_____ Identity of product inert ingredients.

_____ Identity of product impurities.

_____ Description of the product manufacturing process.

_____ Description of quality control procedures.

_____ Identity of the source of product ingredients.

_____ Sales or other commercial/financial information.

_____ A draft product label.

_____ The product confidential statement of formula.

_____ Information about a pending registration action.

✓ FIFRA registration data.

_____ The document is a duplicate of page(s) _____.

_____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Shaughnessy No.: 068103

Date out EAB: 16 JAN 1984

To: H. Jacoby
Product Manager #21
Registration Division (TS-767)

From: Samuel M. Creeger, Chief
Environmental Chemistry Review Section 1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769c)

Attached, please find the EAB review of:

Reg./File No.: 2139 - REA

Chemical: Methyl isothiocyanate

Type Product: F

Product Name: SN 584

Company Name: Noram

Submission Purpose: new use - wood preservative

ZBB Code: other

Action Code: 170

Date In: 12/2/83

EFB No.: 4097

Date Completed: 13 JAN 1984

TAIS (Level II)	Days
63	1

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

Nor-Am Agricultural Products has requested a waiver for all environmental fate studies for its active ingredient SN 584, a fungicide to be used to prevent decay of utility poles.

2.0 SN 584; methyl isothiocyanate

$CH_3N=CS$

3.0 DISCUSSION

SN 584 is technical methyl isothiocyanate encapsulated in a gelatin capsule measuring 5/8" diameter and 4" long. Each capsule contains 19 grams of the active ingredient. To use, holes are drilled into the pole at a steep downward angle in a spiral pattern beginning at ground level with up to 6 holes per pole depending on pole circumference. Up to 5 capsules are placed in each hole for a maximum of 30 capsules. After capsules are placed in hole, water is added and a tight fitting plug is placed to seal the hole. The complete label is attached.

4.0 RECOMMENDATION

EAB recommends that an hydrolysis study be performed by the registrant for the proposed specialized usage; and, if any part of the treated pole is to be placed in water, then an assessment of the leaching potential from treated wood will be required. Following evaluation of these studies, additional data requirements may be imposed.

Richard V. Moraski, Ph.D.
Chemist, Review Section No. 1

Page ____ is not included in this copy.

Pages 9 through 11 are not included.

The material not included contains the following type of information:

____ Identity of product inert ingredients.

____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

__✓__ Sales or other commercial/financial information.

__✓__ A draft product label.

____ The product confidential statement of formula.

____ Information about a pending registration action.

____ FIFRA registration data.

____ The document is a duplicate of page(s) _____.

____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.