

US EPA ARCHIVE DOCUMENT

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Date Out of EFGWB: APR 25 1989

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Registration Division (H7505C)

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Attached, please find the EFGWB review of . . .

Reg./File #: 224, 225

Chemical Name: methylisothiocyanate (MITC)

Type Product: soil sterilizer

Product Name: Vorlex

Company Name: Nor-Am Chemical Co.

Purpose: Review of an anaerobic aquatic metabolism study

Date Received: 6/10/88 EFGWB # (s): 80825

Action Code: 495 Total Review time (days): 1.0

- 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





The hydrochloric acid extracts of the unextractable residues plus the day 59 water fraction and water extract of the soil fraction were analyzed using TLC on silica gel plates developed in: acetonitrile:chloroform:water (7:1:1, v:v:v); acetone:chloroform (1:1 and 95:5, v:v); and butyl acetate:butanol:glacial acetic acid:water (85:15:44:22, v:v:v:v). The samples were cochromatographed with reference standards. The plates were analyzed using a TLC linear analyzer.

Samples of the derivatized day 29 water fraction and water extract of the soil fraction, and the days 29 and 59 hydrochloric acid extract of the previously extracted soils were alkalized with sodium hydroxide and reacted with phenylisothiocyanate. The radiolabeled conversion products were extracted with chloroform and analyzed using HPLC with diode array detection.

The volatile trapping solutions were analyzed using ISC. The benzylamine traps of days 3 and 29 were also analyzed using HPLC with diode array detection.

#### DATA SUMMARY:

Methyl-labeled [<sup>14</sup>C]methylisothiocyanate (radiochemical purity >96%), at a nominal concentration of 100 mg ai/kg, degraded with a half-life of ≈19.6 days ( $r^2 = 0.98$ ) in anaerobic (flooded plus nitrogen atmosphere) loamy sand soil incubated in the dark at 23°C for 59 days. The major degradates were highly polar (unextractable) [<sup>14</sup>C]residues in the soil, which increased to ≈55% of the applied by 59 days posttreatment. Extractable [<sup>14</sup>C]residues, other than methylisothiocyanate, were a maximum 10.2% of the applied (day 29), and included:

monomethylthiourea;

methylamine;

dimethylthiourea;

and one unidentified compound (PIII, present at up to 3.5 ppm). Methylisothiocyanate, at up to 8.1% of the applied, was the only volatile. Radioactive [<sup>14</sup>C]residues became less water-soluble with time; [<sup>14</sup>C]-residues associated with the water fraction of the soil:water systems decreased from 37.6-55% of the applied during the first 3 days of the study to 8% at day 59. During the study, the material balance of the soil:water systems ranged from 73.5 to 89.3% of the applied.

#### COMMENTS:

1. One degradate (PIII), present at up to 2.0% of the applied in the water fraction and up to 1.5% of the applied in the water extract of the soil fraction, was not identified; Subdivision N guidelines specify that all degradates present at ≥0.01 ppm must be identified.

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MITC

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Pages 5 through 10 are not included.

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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.
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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.

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APPENDIX

STRUCTURES OF METHYLISOTHIOCYANATE  
AND ITS METABOLITES

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