US EPA ARCHIVE DOCUMENT

CASE GS238 METIRAM STUDY 7 PM —

CHEM 014601 Metiram/ETU BRANCH EAB DISC —

ACTIVE INGREDIENT-$^{14}$C-Ethylene labeled ETU of 10.08 mCi/mmole and 97.8% radiochemical purity.

FICHE/MASTER ID 00157031
M. Carpenter and M. Fennessey. 1987. Determination of the Photolysis Rate of $^{14}$C-Ethylenethiourea in pH 7 aqueous solution. Unpublished study prepared by ABC laboratories for Roam and Haas and received Jan. 18, 1988 in response to the Mancozeb Registration Standard. Acc. 404661-02.

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CONCLUSION:

Photodegradation in Water:

1. The portion of the study dealing with the exposure of non-sensitized ETU to a xenon lamp light source is acceptable and along with study 3 on metiram satisfy EPA Photodegradation in Water Data Requirement on ETU and metiram for Registration.

2. No significant degradation of ETU occurred at pH 7 water solution during the 30 days study period and thus no breakdown of ETU due to photodegradation is expected in the environment in absence of photosensitizers. Half-lives of 76.2 and 96.8 were recorded for exposed and non-exposed samples, respectively, under the study condition (temperature was not specified).

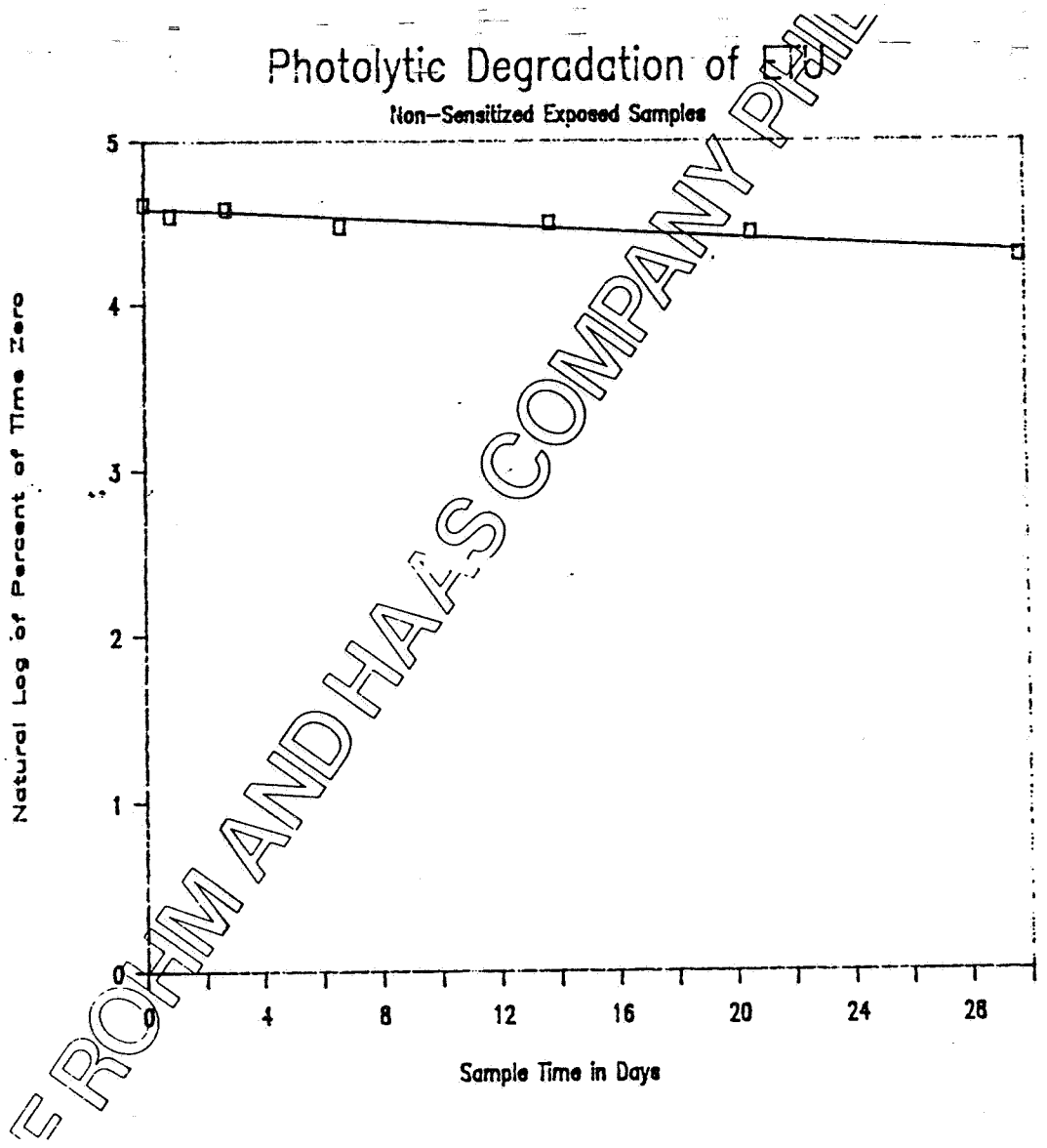
MATERIALS AND METHODS:

A non-sensitized pH 7 test solution was prepared and was found by LSC to contain 9.06 ug/ml of the 97.8% pure $^{14}$C labeled ETU. Aliquots of the test solution were transferred to 28 ten ml culture tubes. Twelve tubes were kept wrapped in aluminum foil and placed in the photolysis apparatus to serve as control.

A Xenon light source whose intensity was measured to be half of that of natural sunlight was irradiating continuously for 24 hours to simulate 12 hours of sunlight exposure.

Analysis was conducted by HPLC and TLC in reference to authentic samples of parent and potential degradates. Also, it was measured by LSC that an average of 96.2% of the radiolabeled material was retained in solution and no volatilization occurred.

REPORTED RESULTS:

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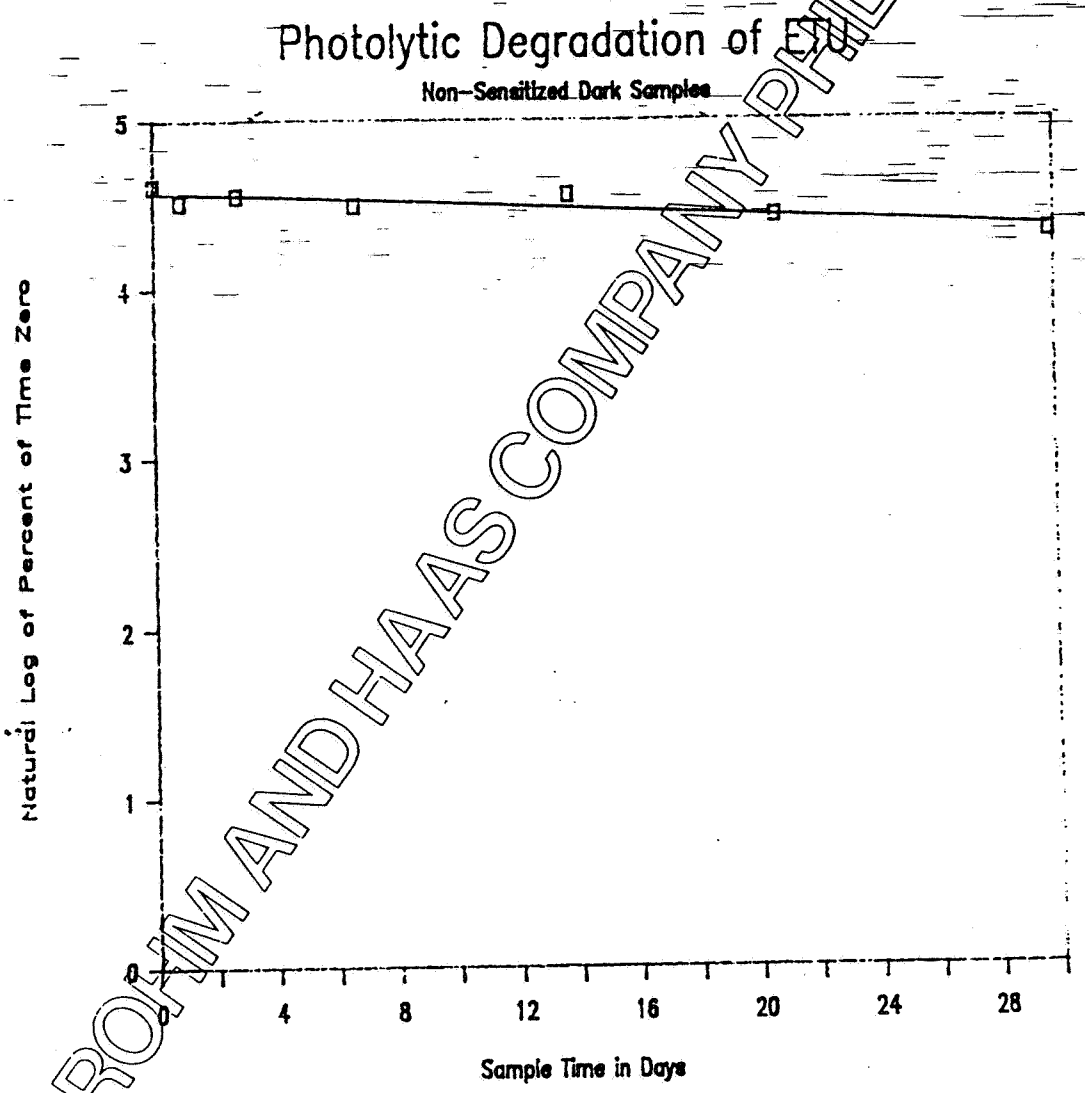


High Performance Liquid Chromatographic Analysis
of Selected Study Samples

| Sample | Percent as $^{14}C$-Ethylenethiourea | HPLC Column Recovery |
|---|---|---|
| | Non-Sensitized Exposed Samples | |
| Primary Stock | 99.5 | 102 |
| Day Zero | 99.4 | 101 |
| Day Three | 99.6 | 96.0 |
| Day Fourteen | 99.9 | 103 |
| Day Thirty | 99.7 | 97.9 |

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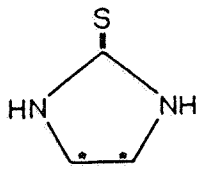
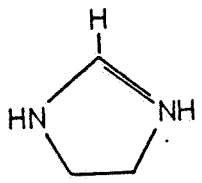
FIGURE 1

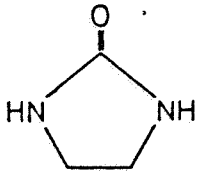
Test Material and Nomenclature



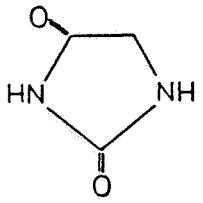

Test Article
$^{14}$C-Ethylenethiourea



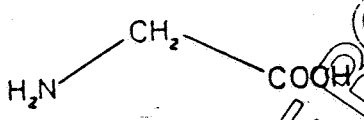

2-Imidazoline




Ethylene urea




Hydantoin




Glycine

*Denotes $^{14}$C-labeling.

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