

US EPA ARCHIVE DOCUMENT

Shaughnessy No.: 080804

Date out of EFGWB: JUL 27 1989

TO: B. Crompton  
Product Manager 50  
Registration Division (H7505C)

FROM: Emil Regelman, Supervisory Chemist  
Chemistry Review Section #2

THRU: Hank Jacoby, Chief(acting)  
Environmental Fate and Ground Water Branch  
Environmental Fate and Effects Division(H7507C)



Attached, please find the EAB review of ...

Reg./File #: 080804; 000100-00443

Common Name: Prometon

Chemical Name: 2,4-bis(isopropylamino)-6-methoxy-s-triazine

Type Product: Herbicide

Company Name: Ciba-Geigy Corporation

Purpose: Review of hydrolysis and soil photodegradation studies

Date Received: 31 May 1989

Date Completed: 27 July 1989

Action Code: 660

EFGWB #: 90620

Total Reviewing Time: 8.0 days

Deferrals to: Ecological Effects Branch, EFED

Science Integration and Policy Staff, EFED

Non-Dietary Exposure Branch, HED

Dietary Exposure Branch, HED

Toxicology Branch

1. CHEMICAL:

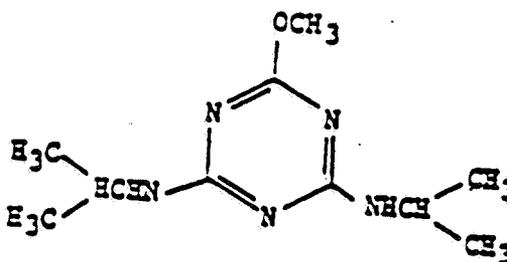
Chemical name: 2,4-bis(isopropylamino)-6-methoxy-s-triazine

CAS No.: 1610-18-0

Common name: Prometon

Trade name: Pramitol, Conquer

Chemical structure:



Molecular formula: C<sub>10</sub>H<sub>19</sub>N<sub>5</sub>O

Molecular weight: 225.3

Physical/Chemical properties of active ingredient:

Physical characteristics: white-beige powder

Vapor Pressure:  $3.1 \times 10^{-6}$  mbar @ 20°C

Water Solubility: 620 ppm @ 20°C

Octanol/Water partition Coefficient: log K<sub>ow</sub> = 4.3 @ 20°C

2. STUDY/ACTION TYPE:

Review of environmental fate studies (hydrolysis and photodegradation on soil) submitted in response to a Ground-Water Data Call-In for prometon.

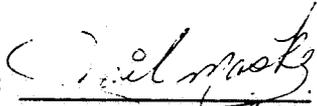
3. STUDY IDENTIFICATION:

-Das, Y. T. Hydrolysis of [Triazine(U)-14C]Prometon In Aqueous Solution Buffered At pH 5, 7, And 9. Performed by Innovation Scientific Services Inc.(ISSI) under Laboratory project no. ISSI No. 89010. Sponsored and submitted by Ciba-Geigy Corporation, Greensboro, NC, dated 23 March 1989. Received EPA 7 June 1989 under MRID # 41114801.

-Das, Y. T. Photodegradation of [Triazine(U)-14C] Prometon On Soil Under Artificial Sunlight. Performed by Innovation Scientific Services Inc. (ISSI) under Laboratory project no. ISSI No. 89021. Sponsored and submitted by Ciba-Geigy Corporation, Greensboro, NC, dated 25 March 1989. Received EPA 7 June 1989 under MRID # 41114802.

4. REVIEWED BY:

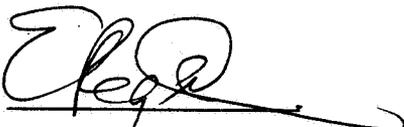
Gail Maske  
Chemist, Review section #2  
OPP/EFED/EEGWB.

Signature: 

Date: July 1989

5. APPROVED BY:

Emil Regelman  
Supervisory Chemist  
Review section #2  
OPP/EFED/EEGWB

Signature: 

Date: JUL 27 1989

6. CONCLUSIONS:

a. Hydrolysis

The submitted study is acceptable in support of the hydrolysis data requirement. Prometon is hydrolytically stable at all pH's tested, and thus prometon has the tendency to persist in water.

b. Photodegradation on soil

The submitted study is basically acceptable in support of the photodegradation on soil data requirements for prometon since it is hydrolytically, metabolically, and photolytically stable. The study would not be acceptable due to lack of moisture control and moisture monitoring of the soil samples during the photodegradation on soil test if prometon had not been demonstrated to be highly stable. (See Table B)

7. RECOMMENDATIONS:

The registrant should be informed of the following.

- a. The current status of the Ground-Water Data Call-In requirements is summarized below:

| STATUS OF DATA                            | MRID NO.<br>REQUIREMENTS                  |          |
|---|---|----------|
| Ground-Water Data Call-in Review.         |   |          |
| Degradation Studies-lab                   |   |          |
| 161-1 Hydrolysis                          | Fulfilled(This review)                    | 41114801 |
| 161-2 Photodegradation in water           | Fulfilled (06/01/88)                      | 40225801 |
| 161-3 Photodegradation on soil            | Fulfilled(This review)                    | 41114802 |
| Metabolism Studies-lab                    |   |          |
| 162-1 Aerobic(soil)                       | Fulfilled(06/01/88)                       | 40145501 |
| 162-2 Anaerobic(soil)                     | Fulfilled(06/01/88)                       | 40145501 |
| Mobility Studies-lab                      |   |          |
| 163-1 Leaching,<br>Absorption/Desorption  | Fulfilled(06/01/88)                       | 40225803 |
| Dissipation Studies-field                 |   |          |
| 164-1 Terrestrial                         | Replaced(06/01/88)<br>See paragraph below |          |
| 158.75 Ground-Water<br>Monitoring Studies | Requested(06/01/88)                       |          |

A ground-water monitoring study as defined in the draft Small-Scale Retrospective Ground-Water Monitoring Guidelines is required. The study, as required in the 1 June 1988 recommendations, must include test in three geographically and hydrogeologically diverse locations representative of the areas in the United States where prometon is used. This study is requested instead of field dissipation studies since the primary deficiency of the submitted field dissipation studies, lack of definition of the depth of leaching, will be addressed through the ground-water monitoring studies and the available data already indicate a strong potential for prometon to leach to ground water.

- b. The deficiency of the moisture control and moisture monitoring in the photodegradation on soil protocol.

8. BACKGROUND:

Prometon is a nonselective herbicide used for weed control on noncrop-land at a rate of 10 to 60 lbs. ai/A. Prometon is a s-triazine compound which from the studies completed has shown stability, persistence, and slight mobility with the same leaching possibility to ground water as other s-triazine related compounds, atrazine and simazine.

9. DISCUSSION:

See attached reviews of individual studies.

10. COMPLETION OF ONE-LINER

See attached Table A.

11. CBI APPENDIX:

The information submitted is considered CBI by the registrant and must be treated as such.

TABLE A

ENVIRONMENTAL FATE & GROUND WATER BRANCH  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY

Page 1

Common Name: **PROMETON** Date: 07/22/89  
 Chem. Name : 2,4-BIS(ISOPROPYLAMINO)-6-METHOXY-S-TRIAZINE  
 Shaugh. # : 80804 CAS Number: 1610-18-0  
 Type Pest. : Herbicide  
 Formulation:  
 Uses : weed killer on noncropland  
 Empir. Form: C<sub>10</sub>H<sub>19</sub>N<sub>5</sub>O  
 Mol. Weight: 225.3  
 Solub.(ppm). 750 @ 20 C  
 VP (Torr): 2.3E-6  
 Log Kow : 4.3 @ 20C  
 Henry's : 9.10E-7

|                             |                                   |
|-----------------------------|-----------------------------------|
| Hydrolysis (161-1)          | Photolysis (161-2 -3, 4)          |
| pH 5:[*] Does not Hydrolyse | Air :[ ]                          |
| pH 7:[*] Does not Hydrolyse | Soil :[*] 357 days ARTIFIC. LIGHT |
| pH 9:[*] Does not Hydrolyse | Water:[*] >> 30 DAYS              |
| pH :[ ]                     | : [ ]                             |
| pH :[ ]                     | : [ ]                             |
| pH :[ ]                     | : [ ]                             |

**MOBILITY STUDIES (163-1)**

|                                      |                             |
|--------------------------------------|-----------------------------|
| Soil Partition (Kd)                  | Rf Factors                  |
| 1.[ ] Kd=0.4-2.9 IN 5 SOILS (SdLm,   | 1.[*] .73 PLAINFIELD SAND   |
| 2.[ ] SiLm, ClLm, SiLm,PLAINFIELD Sd | 2.[*] .72 MISSISSIPPI SiLm  |
| 3.[ ]                                | 3.[*] .44 DUBUQUE SiLm      |
| 4.[ ]                                | 4.[*] .30 CALIFORNIA SdLm   |
| 5.[ ] Koc = 48-100                   | 5.[*] .58 HAGERSTOWN SiClLm |
| 6.[ ]                                | 6.[ ]                       |

**METABOLISM STUDIES (162-1,2,3,4)**

|                                      |                                 |
|--------------------------------------|---------------------------------|
| Aerobic Soil (162-1)                 | Anaerobic Soil (162-2)          |
| 1.[*] >1 YR AT 25C SdLm,75% OF.33BAR | 1.[*] VIRTUALLY NO LOSS OF PRO- |
| 2.[ ]                                | 2.[ ] METON AFTER 90 DAYS       |
| 3.[ ]                                | 3.[ ]                           |
| 4.[ ]                                | 4.[ ]                           |
| 5.[ ]                                | 5.[ ]                           |
| 6.[ ]                                | 6.[ ]                           |
| 7.[ ]                                | 7.[ ]                           |

|                         |                           |
|-------------------------|---------------------------|
| Aerobic Aquatic (162-4) | Anaerobic Aquatic (162-3) |
| 1.[ ]                   | 1.[ ]                     |
| 2.[ ]                   | 2.[ ]                     |
| 3.[ ]                   | 3.[ ]                     |
| 4.[ ]                   | 4.[ ]                     |

[\*] - Acceptable Study. [#] = Supplemental Study

Common Name: **PROMETON**

Date: 07/22/89

**VOLATILITY STUDIES (163-2,3)**

- Laboratory.
- Field:

**DISSIPATION STUDIES (164-1,2,3,5)**

Terrestrial Field (164-1)

1.  PHOTODEGRADATION NOT AN IMPORTANT DISSIPATION MODE.
2.  T1/2 = 200-400 DAYS. PROMETON IS EXTREMELY PERSISTENT AND
3.  CARRYOVER OF RESIDUES FROM ONE YEAR TO THE NEXT WOULD BE EX-
4.  PECTED. DEPTH OF LEACHING AT LEAST 12" TO 18" IN NEBRASKA
5.  SiLm AND NEW YORK SiLm.
6.

Aquatic (164-2)

1.
2.
3.
4.
5.
6.

Forestry (164-3)

1.
2.

Other (164-5)

1.
2.

**ACCUMULATION STUDIES (165-1,2,3,4,5)**

Confined Rotational Crops (165-1)

1.
2.

Field Rotational Crops (165-2)

1.
2.

Irrigated Crops (165-3)

1.
2.

Fish (165-4)

1.
2.

Non-Target Organisms (165-5)

1.
2.

ENVIRONMENTAL FATE & GROUND WATER BRANCH  
PESTICIDE ENVIRONMENTAL FATE ONE LINE SUMMARY

Page 3

Common Name. **PROMETON**

Date: 07/22/89

**GROUND WATER STUDIES (158.75)**

1. [ ] REQUIRED 06/01/88 instead of dissipation studies.
2. [ ]
3. [ ]

**DEGRADATION PRODUCTS**

1. 2-AMINO-4-(ISOPROPYLAMINO)-6-METHOXY-s TRIAZINE
2. 2 4-DIAMINO-6-METHOXY-s TRIAZINE
3. 2-HYDROXY-4,6-BIS(ISOPROPYLAMINO)-s-TRIAZINE
- 4.
- 5.
6. see attached sheet
- 7.
- 8.
- 9.
- 10.

**COMMENTS**

THE SLOW RATE OF DEGRADATION OF PROMETON AND ITS LEACHING CHARACTERISTICS SUGGEST THAT IT MIGHT REACH GROUNDWATER.  
SOIL K<sub>oc</sub> = 300.

References:

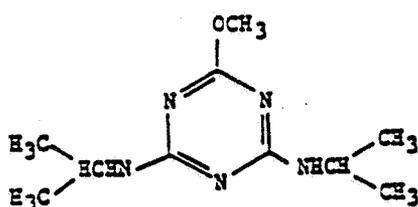
Writer : G. Maske

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[\*] Acceptable Study. [#] = Supplemental Study

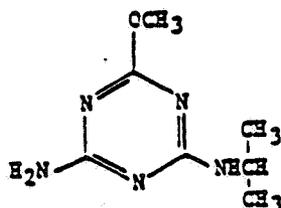
8

Prometon



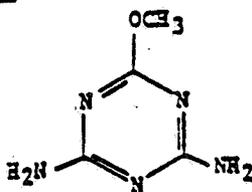
2,4-bis (isopropylamino)-6-methoxy-s-triazine

GS-14626



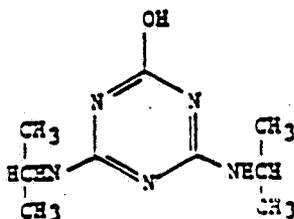
2-amino-4-(isopropylamino)-6-methoxy-s-triazine

GS-12853



2,4-diamino-6-methoxy-s-triazine

GS-11526



2-hydroxy-4,6-bis (isopropylamino)-s-triazine

DATA EVALUATION RECORD

Shaughnessy No. 080804

STUDY 1

PM 50

CHEMICAL PROMETON(2,4-BIS(ISOPROPYLAMINO)-6-METHOXY-S-TRIAZINE)

BRANCH Environmental Fate and Ground Water; 161-1

FORMULATION Radiolabeled active ingredient

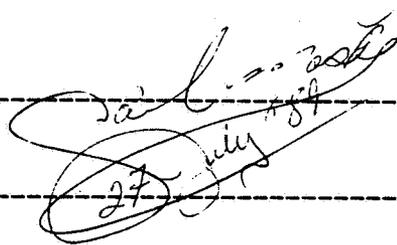
MRID NO. 41114802

Das, Y. T. 1989. HYDROLYSIS OF [TRIAZINE(U)-14c]PROMETON IN AQUEOUS SOLUTION BUFFERED AT pH 5,7, AND 9. Conducted and submitted by Ciba-Geigy Corporation, Agricultural Division, Greensboro, NC. Laboratory Project No.: ISSI No. 89010. Study completed 23 March 1989.

SUBST. CLASS: Herbicide

REVIEWED BY: Gail Maske  
TITLE: Chemist  
ORG: EFGWB/EFED/OPP  
TEL: (703) 557-9734

SIGNATURE:



CONCLUSIONS:

The hydrolysis study is acceptable to fulfill the Subdivision N Data Requirements. The reported results indicated that prometon is hydrolytically stable (that is, prometon is persistent in aqueous media). There were no noticeable degradation in aqueous solutions buffered at pH 5, 7, and 9. A material balance of applied radioactivity in the study was calculated to be 98.6% for pH 5; to be 101.5% for pH 7; and to be 101.2% for pH 9. Therefore, data was not amenable to the examination of the pathway, rate constant, or degradate products.

MATERIALS AND METHODS

Test materials: [Triazine(U)-14C]Prometon, radiochemical purity 97.1% and specific activity of 29.4 uCi/mg. After storage at -20C, the purity of [Triazine(U)-14C]Prometon was tested by thin layer chromatography (TLC) and found to be 98.3%. Its chemical structure and properties are shown in Figure 1.

Stock Solution: A stock solution of [Triazine(U)-14C]Prometon was prepared in absolute ethyl alcohol at a concentration of 0.5 mg/mL.

Reference standard solution: A 7.4 mL aliquot of the stock solution was dissolved in 66.6 ml of sterile deionized water to yield a 50 ug/mL prometon reference solution.

Equipment: The hydrolysis apparatus is depicted in Figures 2. Glassware and apparatus were sterilized by twice rinsing thoroughly with 80% methanol and allowing to dry overnight in an incubator at 35C.

Test solutions: For each pH (5, 7, & 9) separate solutions containing [Triazine(U)-14C]Prometon were prepared by dilution of 12 mL of reference standard to 60 mL with the respective buffer solution. The buffers used were an acetic acid buffer for pH 5, a phosphate buffer for pH 7, and a borate buffer for pH 9. Test solutions were made up using sterile deionized water and transferred using sterile needle and syringe equipped with micrometer membrane filter (0.2).

The test solutions buffered at 0.01M were found to have adequate buffering capacity, as revealed by the checks made on the sampled test solutions at the beginning and at the end of the study (Table 2).

The test solutions were found to be devoid of microbial contamination and remained sterile throughout the study. Triplicate 20 uL aliquots of test solution at Day 0 and Day 30 were examined under a microscope for the presence of microbes.

Sampling: The test solutions were sampled at 0, 1, 3, 7, 14, 21, and 30 days from initiation of test. At each sampling event, 2 mL aliquots of the test solution were removed aseptically using a sterilized needle and syringe. Triplicate 10 uL aliquots of the test solution and triplicate 1 mL aliquots of the ethylene glycol/NaOH trapping solutions were assayed by liquid scintillation counter (LSC).

Experimental procedure: Test solutions were kept in darkness at a temperature of  $25 \pm 1\text{C}$  (See Table 1). Sterility was checked by microscopy on days 0 and 30.

After sampling, total radioactivity was determined LSC. Composition of radioactivity was determined by thin layer chromatography (TLC) using two different solvent systems, i.e., solvent system I (SS-I): chloroform/methanol (95:5), and solvent system II (SS-II): ethyl acetate/hexane (90:10). In order to determine if there was any loss of radioactivity during the course of TLC analysis, each TLC lane was scraped in discrete zones (see Figure 3).

The parent product was confirmed and determined by GC-MS after suitable aliquots of the test solutions were evaporated to dryness in a vacuum evaporator at  $30\text{C}$  and finally redissolved in 100  $\mu\text{L}$  of methanol.

REPORTED RESULTS: The amounts of radioactivity recovered from the test solutions at each sampling events are shown in Table 2. The average (pH 5, 7, and 9) mean recovery (material balance) was  $100.4 \pm 2.7\%$  of the applied radioactivity with no noticeable contribution by the volatiles.

Prometon showed mean  $R_f$  values of 0.62 and 0.46 in the solvent systems I and II, respectively (Table 3). TLC analysis of the pH 5, 7, and 9 test solutions of the subsequent scanning of the radioactive spots revealed no significant peaks other than the parent (Table 4-7). Representative radiochromatograms are shown in Figure 4 and 5. The resolutions were adequate to evaluate the parent concentration at various sampling times during the 30 day study period. On Day 0, the parent constituted 94.2% (mean of 2 TLC systems) (Tables 4 & 5). At the end of the 30 day study period, it dropped only to a mean value of 92.4%, accounting for a net degradation of only 1.9%.

The quantities of the minor degradates that remained at the TLC origin ranged from 1.6 to 2.6 yielding an average of 2.1 and from 2.8 to 4.1 yielding an average of 3.4 which are shown in Tables 6 & 7.

The average (pH 5, 7, and 9) mean recovery of the applied radioactivity was  $98.6 \pm 2.1\%$  (Table 8). These recovery levels indicate the absence of any volatile compounds in the test solutions. This substantiates the findings of no measurable radioactivity at various sampling events in the volatile traps.

The autoradiograms showed essentially one primary (intense) image per lane in both solvent systems (Figures 6 & 7). When superimposed on the TLC plates, the primary image (#1) coincided with the UV-visualized analytical standard prometon. There were three other faintly discernable images. Image #3 appeared to be GS-14626 based on its independently determined Rf value (Table 3). The identity of the other minor compounds (#0 & #2) were not determined

The images on the autoradiograms with respect to their position and intensity were in conformity with the results obtained with the radiochromatographic scanner.

The major single peak that was seen as parent prometon on the TLC plates was confirmed by the GC-MS analyses (Figures 8-10). There were no major degradates. Trace amount of a degradate (M.W. 183) was seen in both of the samples (Figure 11). The degradate appears to be GS-14626, the result of an isopropyl group from the parent molecule.

REVIEWER'S COMMENTS:

1. There was no further attempts made to confirm the identity of the degradate GS-14626(#3).
2. A standard test media would have shown any possible contamination of test solutions more efficient. This would have been crucial if a less stable pesticide had been studied.
3. Storage of samples before analysis was not mention. The effects of storage would have been an important factor if samples were stored.

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RIN-0334-94      PROMETON REVIEWS (080807)

Page      is not included in this copy.

Pages 14 through 32 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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DATA EVALUATION RECORD

Shaughnessy No. 080804

STUDY 2

PM 50

CHEMICAL PROMETON(2,4-BIS(ISOPROPYLAMINO)-6-METHOXY-S-TRIAZINE)

BRANCH Environmental Fate and Ground Water; 161-3

FORMULATION Radiolabeled active ingredient

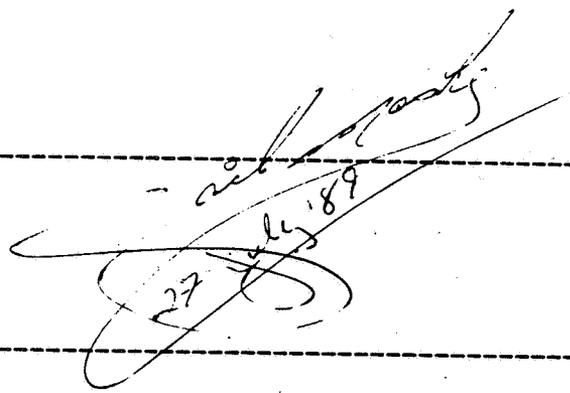
MRID NO. 41114802

Das, Y. T. 1989. PHOTODEGRADATION OF [TRIAZINE(U)-14C] PROMETON ON SOIL UNDER ARTIFICIAL SUNLIGHT. Conducted and submitted by Ciba-Geigy Corporation, Agricultural Division, Greensboro, NC. Laboratory Project No.: ISSI No. 89021. Study completed 25 March 1989.

SUBST. CLASS: Herbicide

REVIEWED BY: Gail Maske  
TITLE: Chemist  
ORG: EFGWB/EFED/OPP  
TEL: (703) 557-9734

SIGNATURE:



CONCLUSIONS:

The photodegradation on soil study is basically acceptable to fulfill Subdivision N Data Requirements for prometon since it is hydrolytically, metabolically, and photolytically stable. The study would not be acceptable due to lack of moisture control and moisture monitoring of the soil samples during the photodegradation on soil test if prometon had not been demonstrated to be highly stable. [Triazine(U)-14C]Prometon showed a small degree of degradation on a sandy loam soil maintained at 25C under irradiated conditions. The estimated half-life was 357 days. There were no major degradates. The data was not amenable to the examination of the pathway or degradation products.

## MATERIALS AND METHODS

- Test materials:** [Triazine(U)-14C]Prometon radiochemical purity 97.1% and specific activity of 29.4 uCi/mg. After storage at -20C, the purity of [Triazine(U)-14C]Prometon was tested by thin layer chromatography (TLC) and found to be 98.3%. Its chemical structure and characteristics are shown in Figure 1.
- Stock Solution:** A stock solution of [Triazine(U)-14C]Prometon was made at a concentration of 20.0 mg/mL by dissolving 60.0 mg of the test material in 3.0 mL of absolute ethyl alcohol.
- Reference standard solution:** A 300 uL aliquot of the stock solution was mixed with 11.7 mL of absolute ethyl alcohol. By assay using a liquid scintillation counter, this reference solution was found to contain 35506 dpm/uL.
- Equipment:** The soil photodegradation apparatus are depicted in Figures 2 & 5. The artificial sunlight lamp used was a xenon-arc lamp, with a UV special glass filter (300 nm cutoff). Comparison of artificial lamp energy output with that of sunlight is shown in Figure 4. Irradiance measured were 541.6 and 555.8 watts/m<sup>2</sup> for the artificial and natural sunlight, respectively.
- Soil:** A sandy loam soil obtained from a field dissipation study site in California was used. The soil was sieved sequentially through 2 mm and 1 mm sieve and the resulting fine (1 mm and less) soil was used for the preparation of soil plates and for the soil analyses. The characteristics of the sieved soil are shown in Table 1.
- Test samples:** The soil plates were targeted to received a dose of approximately 10 ppm based on the soil weight. Before dosing, the soil weight on each plate was estimated by subtracting the average weight of the glass slide from the weight of the soil plate. Appropriate amounts of the reference solution were applied to individual soil plates using glass microliter syringes. After applying the reference solution uniformly on the soil layer, the plates were allowed to dry for an hour at room temperature before study initiation.

Sampling: The soil plates were sampled in duplicate at 0, 1, 3, 7, 14, 21, and 30 days. The plates were extracted with methanol-water and analyzed on the same day of sampling. A liquid scintillation counter was used to measure radioactivity.

Experimental procedure: The test compound was applied to a 1 mm thick soil layer (on glass plates) at an application rate of 10.3 to 12.1 ppm, based on soil weight (Figure 7 & 8; Table 4 & 5). The soil plates (irradiated) were exposed to artificial sunlight (Figure 3) intermittently (approximately 12 hr. light and 12 hr. dark) for a total period of 30 days (Figure 4). The temperature of the soil was maintained at  $25 \pm 1$  C (Table 3; Figure 5 & 6). Evaluation of organic volatiles and production of  $^{14}\text{CO}_2$  was monitored by using traps. Control samples (non-irradiated) were treated in the same manner as the irradiated samples, but they were incubated in the dark at  $25 \pm 1$  C (Table 2).

The soil plates (irradiated and non-irradiated) were sampled in duplicate at 0, 1, 3, 7, 14, 21, and 30 days of exposure.

The soil extracts were analyzed by two different thin layer chromatographic (TLC) systems, (solvent system I (SS-I): chloroform/methanol (95:5) and solvent system II (SS-II): ethyl acetate/hexane (90:10)) for the parent and photoproducts. In order to examine if there is any loss of radioactivity during the course of the TLC analyses, each TLC lane was scraped in discrete zones (Figure 9). The identity of the parent and its degradates was confirmed by GC-MS.

#### REPORTED RESULTS:

The amounts of radioactivity recovered from the non-irradiated soil plates at each sampling event are shown in Table 6. The mean recovery (material balance) was  $99.6 \pm 2.2\%$  of the applied radioactivity, with no noticeable contribution by the volatiles (less than 0.1%). The amounts of radioactivity recovered from the irradiated soil plate at each sampling event are shown in Table 7. The mean recovery (material balance) was  $100.0 \pm 2.3\%$  of the applied radioactivity, with no noticeable contribution by the volatiles (less than 0.1%).

The mean Rf values for prometon were 0.62 and 0.46 in solvent systems I and II respectively (Table 8). Thin layer chromatographic analyses and subsequent scanning of the radioactive spots revealed no significant peaks in both the non-irradiated (Tables 9-14) and the irradiated (Tables 15-20) soil extracts other than the parent. Representative radiochromatograms are shown in Figures 10-13. The resolutions were adequate to evaluate the parent concentration at various sampling times during the 30 day study period.

The mean recovery of the applied radioactivity was  $97.4 \pm 2.0$  (Table 21). These recovery levels indicate the absence of any volatile compounds in the soil extracts. This is not surprising in view of the fact that these volatile traps at the various sampling event did not contain any measurable radioactivity.

The autoradiograms showed essentially one primary (intense) image per lane in both solvent systems (Figure 14). When superimposed on the TLC plates, the primary image (#1) coincided with the UV-visualized analytical standard prometon. There were 5 other faintly discernable images. The image #3 appeared to be GS-14626 based on its independently determined Rf value (Table 8). The identities of the other minor compounds were not determined.

The images on the autoradiograms with respect to their position and intensity were in conformity with the results obtained with the radiochromatogram scanner.

The major single peak that was seen as prometon on the TLC plates was confirmed by the GC-MS analyses (Figure 15-19). There were no major degradates seen by GC-MS. Trace amount of a minor degradate (M.W. 183; Figure 20) was seen in both the irradiated and non-irradiated samples. This degradate by GC-MS appears also to be GS-14626, which resulted from the loss of an isopropyl group loss from the parent molecule.

There was no noticeable breakdown of the parent under non-irradiated conditions (Table 22; Figure 21). However, there was a small degree of breakdown under irradiated conditions. The estimated half-life under irradiated conditions was 357 days (Table 23; Figure 22).

REVIEWER'S COMMENTS:

1. There was no further attempts shown to confirm the identity of the degradate assigned as GS-14626.
2. The total energy received by test samples was not determined in the data given.
3. There was no further attempts to confirm the vitality of the soil used in the photodegradation on soil testing since its use in aerobic soil metabolism study.

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RIN-0334-94 PROMETON REVIEWS (088807)

Page      is not included in this copy.

Pages 38 through 83 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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