1-30-89 to RD

Shaughnessy Number: 080805

Date Out of EFGWB: _____

TO: J. Miller
Product Manager 25
Registration Division (TS-767C)

FROM: Patrick Holden, Chief
Ground Water Technology Section
Environmental Fate and Ground-Water Branch
Environmental Fate and Effects Division (TS-769C)

THRU: Henry Jacoby, Acting Chief
Environmental Fate and Ground-Water Branch
Environmental Fate and Effects Division (TS-769C)

Attached: please find the EFGWB review of:

Reg./File #: _____

Chemical Name: PROMETRYNE

Type Product: Herbicide

Company Name: CIBA - Geigy Corporation

Purpose: Review mobility studies. Determine if ground water monitoring study is needed.

Date Received: 4/29/88 Action Code: 660

Date Completed: _____ EFGWB #(s): 80731

Monitoring Study Requested: X Total Reviewing Time: 11 days

Monitoring Study Volunteered: ____

Deferrals to: _____ Ecological Effects Branch

_____ Dietary Effects Branch

_____ Toxicology Branch

1

1. CHEMICAL

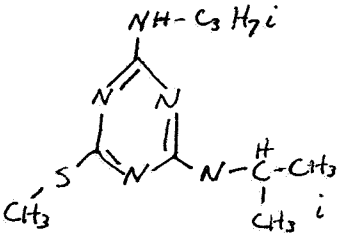
Chemical Name: 2,4-bis(isopropylamino)-6-(methylthio)-S-triazine

Common Name: Prometryn, Prometryne

Trade Names: CAPAROL 80W, Gesagard, Primatol Q, Prometrex, CAPAROL 4L

Formulations: 80% wettable powder and 4 lb/gal liquid

Chemical Structure:



2. TEST MATERIAL:

3. STUDY ACTION/TYPE: Ground water assessment of soil TLC, adsorption/desorption, leaching and volatility data. Generic data reregistration.

4. STUDY IDENTIFICATION:

A. Rustum, A.M. 1988. Determination of the Mobility of ^{14}C-Prometryn in Selected Soils by Soil Thin-Layer Chromatography. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-99.

B. Rustum, A.M. 1988. Determination of the Mobility of ^{14}C-GS-11354 in Selected Soils by Soil Thin-Layer Chromatography. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-88.

C. Rustum, A.M. 1988. Determination of the Mobility of ^{14}C-Hydroxypropazine in Selected Soils by Soil Thin-Layer Chromatography. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-07.

D. Saxena, A.M. 1987. The Adsorption and Desorption of ^{14}C-Prometryn on Representative Agricultural Soils. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED

on April 29, 1988. Accession Number 405737-10.

E. Saxena, A.M. 1988. The Adsorption and Desorption of ^{14}C-GS-11354 on Representative Agricultural Soils. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-11.

F. Saxena, A.M. 1988. The Adsorption and Desorption of ^{14}C-Hydroxypropazine on Representative Agricultural Soils. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-12.

G. Saxena, A.M. 1988. Leaching Characteristics of ^{14}C-Prometryn Aged in Soil. Performed by Hazleton Laboratories America, Inc. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-13.

H. Rhoads, W.D. 1987. Determination of the Volatility of Prometryn from Caprol® 4L. Performed by Colorado Analytical Research and Development Corporation. Submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-14.

I. Balu, K. 1988. Summary of Environmental Fate Studies to Support Reregistration of Prometryn. Conducted and submitted by Ciba-Geigy Corporation. Received by EFED on April 29, 1988. Accession Number 405737-03.

5. REVIEWED BY:

Richard C. Doyle
Chemist, GWTS
EFGWB/EFED/OPP

Date: [signature]

6. APPROVED BY:

Patrick W. Holden
Chief, GWTS
EFGWB/EFED/OPP

Date: [signature]

7. CONCLUSIONS:

A. MOBILITY

Seven studies were submitted. Of these, three studies using soil thin-layer chromatography were acceptable for partially fulfilling Agency requirements for pesticide registration. Prometryn mobility varied from low mobility (R_f

0.15) in a sandy loam, intermediate mobility (R_f 0.36) in a silt loam, and mobile (R_f 0.81) in a sand. On the soils tested, it was less mobile than atrazine and 2,4-D. Hydroxypropazine, a degradate of prometryn, had similar R_f values (0.14 in sandy loam, 0.50 in silt loam, and 0.67 in sand). 2-Methylthio-4-amino-6-isopropylamino-s-triazine (GS-11354), a degradate of prometryn, is somewhat more mobile than the parent. R_f values were 0.42 (intermediate mobility) in sandy loam, 0.62 (intermediate mobility) in silt loam, and 0.84 (mobile) in sand. The mobility of this compound was equal to or less than that of atrazine, but was not as great as that of 2,4-D. The mobility of all these compounds did not strongly correlate to soil texture or the percent organic matter. However, higher mobility can be expected in very light textured soils with low organic matter.

Three studies designed to estimate the mobility of prometryn, hydroxypropazine, and GS-11354 by batch ad/desorption lacked sufficient information to be evaluated by EFGWB. The data generally indicated that prometryn is mobile - highly mobile, hydroxypropazine is mobile, and GS-11354 is highly mobile. However, this cannot be confirmed with the present submissions.

One study was conducted to examine the leaching behavior of aerobically aged prometryn residues. The submission was not complete and the validity of the study could not be determined. The data indicated that the parent prometryn was not very mobile in a sandy loam soil. Breakdown of prometryn during 30 days of aerobic incubation in soil was minimal (90% of radiolabel recovered as the parent). Therefore, the study did not provide information on the mobility of the degradates.

B. VOLATILITY

One study was submitted to provide data on the volatilization of prometryn from soil. The scientific validity of the study is in question. No conclusions can be made.

C. ENVIRONMENTAL FATE

A summary of the environmental fate studies was submitted, but not reviewed.

D. GROUND-WATER CONCERNS

The mobility of prometryn and two of its known degradates (hydroxypropazine and GS-11354) varies substantially with soil. Although it is difficult to predict their mobility from soil texture/% organic matter, it is clear that these compounds will be mobil in some soils. Given the extended persistence of prometryn in soil (EFGWB files) and its potential to leach in some soils, it is probable that prometryn is a threat to ground water.

8. RECOMMENDATIONS:

Available data indicate that prometryn and its degradates (GS-11354 and hydroxypropazine) have the potential to leach into ground water. A ground-water monitoring study should be required to further assess the hazards associated with this chemical.

9. BACKGROUND:

Prometryn is a triazine herbicide used to control annual grasses and broadleaf weeds in cotton and celery. Previous submissions (Memo of 2/20/86 from S. Creeger to G. Werdig) indicated that the compound is persistent in the environment.

The present submissions were reviewed to determine if the potential for prometryn to leach into ground water is sufficient to require a ground-water monitoring study.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See individual DERs.

11. COMPLETION OF ONE LINER:

Additions to the one liner are attached.

12. CBI APPENDIX:

Not applicable.