Shaughnessy Number: 128857

Date out of EAB: MAR 20 1989

To: Lois Rossi/Larry Schnaubelt
Product Manager 21
Registration Division (TS 767C)

From: Emil Regelman, Supervisory Chemist
Environmental Fate Review Section #2
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (TS 769C)

Thru: Hank Jacoby, Acting Chief
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (TS 769C)

Attached, please find the EAB review of...

Reg./File #: 707-EER

Chemical Name: Myclobutanil

Type Product: Fungicide

Company Name: Rohm and Haas

Purpose: submission of adsorption/desorption study on 1,2,4-triazole

Date Received: 1/5/89

Action Code: 101

Date Completed: _____

EAB #(s): 90255

Monitoring Study Requested: _____

Total Reviewing Time: 3-0 days

Monitoring Study Volunteered: _____

Deferrals to: ___Ecological Effects Branch, EFED

___Science Integration and Policy Staff, EFED

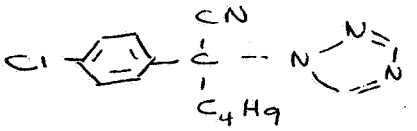
___Non-Dietary Exposure Branch, HED

___Dietary Exposure Branch, HED

___Toxicology Branch

1. CHEMICAL:

chemical name: α-butyl-α(4-chlorophenyl)-1H-1,2-triazole-1-propanenitrile
common name: Myclobutanil
trade name: Systhane, Rally
structure:



CAS #: 66871-89-0
Shaughnessy #: 128857

2. TEST MATERIAL:

3. STUDY/ACTION TYPE: submission of adsorption/desorption study on 1,2,4-triazole

4. STUDY IDENTIFICATION:

Hawkins, D.R. Soil Adsorption and Desorption of 1,2,4-Triazole (Tech. Rpt. No. 34S-88-27). performed and submitted by Rohm and Haas Co., Phila., Pa. received EPA 11/1/88 under MRID # 408915-00

5. REVIEWED BY:

Typed Name: E. Brinson Conerly
Title: Chemist, Review Section 2
Organization: EFGWB/EFED/OPP

E.B. Conerly 3/17/89

6. APPROVED BY:

Typed Name: Emil Regelman
Title: Supervisory Chemist, Review Section 2
Organization: EFGWB/EFED/OPP

MAR 20 1989

7. CONCLUSIONS:

This study satisfies the data requirement for mobility of 1,2,4-triazole. The compound is highly mobile in five different soils.

8. RECOMMENDATIONS:

The applicant should be informed that the data requirement is now fulfilled.

9. BACKGROUND:

The status of data requirements is as follows:
hydrolysis -- satisfied -- stable at pHs 5, 7, 9
photolysis in water -- satisfied -- stable to photolysis in water
photolysis in soil -- satisfied -- extrapolated $t_{\frac{1}{2}}$ ca. 143 days
aerobic soil metabolism -- satisfied -- $t_{\frac{1}{2}}$ 61-71 days -- major product is 1,2,4-triazole up to ca 15%, with CO_2 and unextractables in lesser amounts

anaerobic soil metabolism -- satisfied -- resistant to anaerobic metabolism -- no detectable degradation after ca. 60 days

leaching - satisfied for parent -- moderately mobile -- k_ds 1.46 - 9.77 for adsorption, 0.47-4.18 for desorption in five soils: clay loam, sand, silt loam, sandy loam, clay -- additional data which was required re "aged" compound is satisfied by the study discussed in this review

terrestrial field dissipation -- not satisfied -- a submitted study was deemed unacceptable, due to:

- inadequacy of sampling;
- lack of immediate post-treatment sampling of the PA site (application rate was not confirmed)
- a difference of almost an order of magnitude in soil concentration between the two sites, in what should have been comparable samples
- apparent difficulties with the analytical method

Additional discussion relative to these deficiencies did not resolve the problems. EFGWB has recommended that the applicant agree to perform a field dissipation study on myclobutanil as a condition of registration, after submitting and obtaining approval for the protocol. This should include pre and post-application day-zero samples, multiple core samples at each time period, and shorter intervals between samples. At least three sites should be used, including one without a cover crop. Application should be at the maximum label rate, or, at the applicant's option, a 2 or 3x rate.

fish bioaccumulation -- waived, based on low k_{ow}s for parent and degradates. The compound is not expected to bioaccumulate.

These data indicate the following:

A major route of disappearance of myclobutanil will be diffusion/dilution since it appears to be resistant to most environmental breakdown processes.

In a previous review (EBC 11/8/88), EFGWB reserved any further data requirement on triazole, and deferred the following matters on myclobutanil and its triazole metabolite:

- to the Residue and Toxicology Branches for an assessment of the dietary risk potential
- to the ground water team for a ground water assessment. This assessment has been done and a copy is attached. The compound is mobile and persistent in laboratory studies, and has been identified as a potential leacher, but, to date, field dissipation data have been inconclusive. Results from field studies now in progress are expected to clarify the need for additional studies such as ground water monitoring. Because of limited use of the compound, imposition of further data requirements is deferred until these field studies are received and evaluated.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: see DERs

11. COMPLETION OF ONE-LINER: attached

12. CBI APPENDIX: included

DATA EVALUATION REVIEW

I. Study Type: adsorption/desorption

II. Citation:

Hawkins, D.R. Soil Adsorption and Desorption of 1,2,4-Triazole (Tech. Rpt. No. 34S-88-27). performed and submitted by Rohm and Haas Co., Phila., Pa. received EPA 11/1/88 under MRID # 408915-01

III. Reviewer:

Typed Name: E. Brinson Conerly
Title: Chemist, Review Section 2
Organization: EFGWB/EFED/OPP

IV. Conclusions:

The study fulfills the data requirement for mobility of 1,2,4-triazole.

V. Materials and Methods:

test compound -- ^{14}C-1,2,4-triazole uniformly labelled in the 3 and 5 positions, sp.act. 182.4 mCi/gm (404,900 dpm/ug), radiopurity>95% by TLC and HPLC
stock solution -- above @ nominal 10 ppm (10 ug/ml) in deionized water
test solution -- stock solution diluted to nominal 0.1 ppm (actual 0.086 dpm/ml), 0.05 ppm (actual 0.043), 0.01 ppm (actual 0.0085), and 0.005 ppm (actual 0.0043) with 0.01M $CaCl_2$
test soils -- sand, sandy loam, silty clay loam, clay loam, and silty clay (details attached)
test procedure
adsorption -- soil slurries (see table for weights of soils and volumes of solution) were sealed into teflon tubes and equilibrated 95 hours with shaking in an environmental chamber at 25°± 1°C. The mixtures were then centrifuged, and the supernatants decanted.
desorption -- the supernatant removed was replaced with an equal volume of fresh $CaCl_2$ and the preparations equilibrated for 46 hours. The mixtures were then centrifuged, the supernatant removed, and the desorption procedure repeated.
analytical methods
LSC -- on solutions, on trapping solutions from combustion of extracted soil
HPLC -- to confirm identity of radiolabelled compound

VI. Study Author's Results and/or Conclusions:

Triazole was stable under the test conditions, as verified by HPLC. Radioactivity was not lost to wall adsorption or as volatile products.

The adsorption coefficients, k_a, and the adsorption constants, k_{oc}, for the five soils were:

soil	$K_a$ads	$K_a$des 1	$K_a$des 2	% om	k_{oc}
Alpaugh Silty Clay	0.833	2.130	7.93	1.2	120
Hollister Clay Loam	0.748	1.143	1.86	3.0	43
Lakeland Sand	0.234	0.610	7.60	0.2	202
Lawrenceville Silty Clay Loam	0.722	0.816	2.04	1.2	104
Pachappa Sandy Loam	0.719	1.065	3.49	1.4	89

The average of k_{oc} for these soils was found to be 112±58. On this basis, one would classify triazole in the high potential mobility category in soil (50-150 being the range for "high mobility").

The k_as for the desorptions were found to be much higher than those for the adsorptions (an average of 77% higher for the first desorption and 704% higher for the second), suggesting that some of the triazole may be irreversibly bound to the soils. This would indicate that triazole may not be as mobile as one would predict based upon the adsorption results.

VII. Reviewer's Comments:

The applicant's general conclusions are correct. The adsorption k_a values are all low, < 1, indicating little adsorption, and desorption occurs fairly readily, but with some material adsorbed irreversibly.

There is an apparent error in table 5, where -logCe for the lowest concentration is given as 2.432. The correct value is 2.438 (rounded to 3 decimal places). The resulting $k_a$ads is 0.872. However, using 6-place logarithms, the $k_a$ads is 0.832, as the applicant has reported.

VIII. CBI Information Addendum: included

Myclobutanil environmental fate review

Page _____ is not included in this copy.

Pages 7 through 23 are not included in this copy.

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 product 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

_X_ 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.
