Shaughnessy No.: 129016 (2/12/92)
JUN 28 1990

Date out of EFGWB:_____

TO: J. Miller/R. Ikeda
Product Manager #23
Registration Division (H7507C)

FROM: Emil Regelman, Supervisory Chemist
Chemistry Review Section #2
Environmental Fate and Ground Water Branch

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

Attached, please find the EFGWB review of ...

Reg./File #: 62719-EUP-RG formerly 464-EUP-RNG

Chemical Name: N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo[1,5a] pyrimidine-2-sulfonamide

Type Product: Herbicide

Common Name: XRD-498

Company Name: DowElanco

Purpose: Review of minutes of meeting

Date Received: 27 June 1990 Date Completed: 28 June 1990

Action Code: 352

EFGWB #(s): 90-0649

Total Reviewing Time: 0.4 day

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:

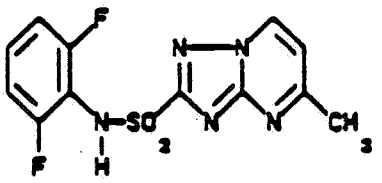
Chemical name: N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo[1,5a] pyrimidine-2-sulfonamide

CAS no.: 98967-40-9

Common name: XRD-498

Trade name: DR-0238-5651/K-170,711

Chemical structure:



Molecular formula: $C_{12}H_9F_2N_5O_2S$

Molecular weight: 325.3

Formulation: N-(2,6-difluorophenyl)-5-methyl(1,2,4)triazolo[1,5a] pyrimidine-2-sulfonamide.....74.9%
Inert Ingredients.....25.1%

Physical/Chemical properties of active ingredient:

Physical characteristics: Light tan power

Melting point: 253°C

Vapor Pressure: 0.8×10^{-15} mmHg at 20°C

Solubility: 49.1 mg/l at pH 2.5 (25°C)
5.65 g/l at pH 7.0 (25°C)

Octanol/water partition coefficient: Kow = 1.62

2. TEST MATERIAL:

N/A

3. STUDY/ACTION TYPE:

Review of minutes of meeting on application for an Experimental Use Permit.

4. STUDY IDENTIFICATION:

Vatne, R.D. CORRESPONDENCE TO J. MILLER. DowElanco, Indianapolis, IN; Received by EPA on 4 June 1990.

McCall, P.J. MINUTES OF 14 MAY 1990 MEETING CORRESPONDENCE TO R.D. VATNE AT DowElanco. DowElanco, Midland, MI; Received by EPA on 4 June 1990.

5. REVIEWED BY:

Gail Maske
Chemist, Review section #2
OPP/EFED/EFGWB

Signature: Gail Maske
Date: 28 June 90

6. APPROVED BY:

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

Signature:
Date: JUN 28 1990

7. CONCLUSIONS:

The minutes of the 14 May 1990 meeting of the Agency and DowElanco correctly reflects EFGWB's understanding of the issues. EFGWB does not suggest any changes to the minutes.

8. RECOMMENDATIONS:

The registrant should be informed of the following:

a. EFGWB does not suggest any changes to the minutes of the 14 May 1990 meeting of DowElanco and the Agency.

b. The status of the Environmental Fate Data Requirements for an experimental use (terrestrial food crop) permit is as follows:

Environmental Fate Data Requirement	Status of Data Requirement	MRID No.
Degradation Studies-Lab		
161-1 Hydrolysis	Satisfied	41263229

Metabolism Studies-Lab			
162-1	Aerobic soil	Partially (WGM;06/22/90)	41263230
Mobility Studies			
163-1	Leaching, Adsorption/ Desorption	Not Satisfied (WGM;06/22/90)	41263231 41290403
Accumulation Studies			
165-1 165-4	Rotational crops-confined in Fish	Satisfied (for EUP) Not Required (WGM;06/22/90)	41263232

9. BACKGROUND:

General Background

XRD-498 is a selective experimental herbicide proposed for use to control broadleaf weeds in soybeans and field corn. At this time, it is for use only at an application site of a cooperator and in accordance with the terms and conditions of the experimental use permit. Single active ingredient formulations include 75% G. XRD-498 may be applied using preplant incorporation, preemergence, or postemergence treatment. Proposed application rates are 0.03-0.13 lb ai/A for preplant incorporation and preemergence treatment; postemergence rates on field corn are 0.015-0.062 lb ai/A, and postemergence rates on soybeans are 0.0078-0.015 lb ai/A. Application is by ground spray; sufficient agitation should be maintained during mixing and spraying to ensure a uniform spray mixture. When applied by preplant incorporation, XRD-498 should be incorporated into the top 2 to 3 inches of the final seedbed. Preemergence and postemergence applications are made by broadcast spraying. Livestock should not be allowed to graze in treated areas, and harvest-treated silage or grain should not be feed to meat or dairy animals.

February 1990 a review of and EUP application for use of XRD-498 on corn and soybean was completed. There were several issues addressed in the review concerning the aerobic soil metabolism study, the leaching, adsorption/desorption study, and the confined rotational crop study. DowElanco requested a meeting on 14 May 1990 in order to clarify these issues. A written rebuttal (mentioned at the May meeting) to the issues was completed June 1990. This review is of the minutes taken at the 14 May 1990 meeting.

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Environmental Fate Background

Degradation

[^{14}C]XRD-498 did not hydrolyze in sterile aqueous pH 5, 7, 9 buffered solutions incubated in the dark at 25°C for 66 days. [^{14}C]XRD-498, present in all solutions at $\geq$ 99%, was the sole compound identified in the buffer solutions at all sampling intervals.

Metabolism

5-Triazolopyrimidine-labelled [^{14}C]XRD-498 degraded with half-lives of 23, 60, 93, 102 days in sandy loam, clay, silt loam, and loam soils, respectively. Six unidentified degradates were each isolated at up to 3.4% of the applied [^{14}C]XRD-498. At 371-382 days posttreatment $^{14}CO_2$ comprised 34.5 - 53.3% of the applied radioactivity. An aerobic soil metabolism study of the phenyl-labelled [^{14}C]XRD-498 is required to fulfill the data requirement for registration.

Mobility

[^{14}XRD-498 was determined to be very mobile in twenty-three soils ranging in texture from sandy loam to clay. The adsorption coefficients (K_d) were 0.05 to 2.42, and K_{oc} values were 5 to 182. It appeared that adsorption increased with decreasing pH, with increasing half-life, and with increasing soil organic matter content. Freundlich K_{des} values were determined to be 0.15 to 0.57, and corresponding K_{oc} values were 14 to 25 in silt loam, sandy loam, clay, and loam soils. Mobility of degradates have not been addressed.

Accumulation in Rotational Crops

Samples were analyzed only for total [^{14}C]XRD-498 residues. Total [^{14}C] XRD-498 residues were found at low levels (<0.01 ppm XRD equivalents) in lettuce, carrot roots and tops, and soybean beans planted 30 to 52 or 120 days after plots of sandy loam soil were treated with [^{14}C]XRD-498. Total [^{14}C]XRD-498 residues were 0.010-0.047 ppm in green bean plants, wheat grain, and wheat straw/chaff planted at the 30 day rotational, and in soybean plant trash and wheat straw/chaff planted at 120 days.

In the 0 to 15 cm soil depth samples, total [^{14}C]residues were 0.066 ppm at 30 days posttreatment, 0.019 ppm at 105 days, and 0.014 ppm at 208 days. Extractable [^{14}C]residues accounted for 0.035 and 0.003 ppm at 30 and 118 days posttreatment.

10. DISCUSSION:

None

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11: COMPLETION OF ONE-LINER:

See attached one-liner.

12: CBI APPENDIX:

The information is considered to be CBI by the registrant, and should be treated as such.

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

Common Name: XRD-498 Date: 01/23/90
Chem. Name : N-(2,6-difluorophenyl)-5-methyl-1,2,4-triazolo[1,5a]
: pyrimidine-2-sulfonamide
Shaugh. # : CAS Number: 98967-40-9
Type Pest. : Herbicide
Formulation: 75G
Uses : used to control broadleaf weeds on soybeans and field corn
:
:

Empir. Form: $C_{12}H_9F_2N_5O_2S$ VP (Torr): 10-15
Mol. Weight: 325.3 Log Kow : 0.209
Solub.(ppm): 5650 at pH 7 @ 25 °C Henry's :

Hydrolysis (161-1)
pH 5:[#] Stable
pH 7:[#] Stable
pH 9:[#] Stable
pH :[ ]
pH :[ ]
pH :[ ]

Photolysis (161-2, -3, -4)
Air :[ ]
Soil :[ ]
Water:[ ]
:[ ]
:[ ]
:[ ]

MOBILITY STUDIES (163-1)

Soil Partition (Kd)
1.[ ]
2.[ ]
3.[ ]
4.[ ]
5.[ ]
6.[ ]

Rf Factors
1.[ ]
2.[ ]
3.[ ]
4.[ ]
5.[ ]
6.[ ]

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

Aerobic Soil (162-1)
1.[ ]
2.[ ]
3.[ ]
4.[ ]
5.[ ]
6.[ ]
7.[ ]

Anaerobic Soil (162-2)
1.[ ]
2.[ ]
3.[ ]
4.[ ]
5.[ ]
6.[ ]
7.[ ]

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

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

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

Common Name: XRD-498 Date: 01/23/90

VOLATILITY STUDIES (163-2,3)

[ ] Laboratory:
[ ] Field:

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

Terrestrial Field (164-1)
1.[ ]
2.[ ]
3.[ ]
4.[ ]
5.[ ]
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.[ ]

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

Common Name: XRD-498 Date: 01/23/90

GROUND WATER STUDIES (158.75)

1.[ ]
2.[ ]
3.[ ]

DEGRADATION PRODUCTS

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

COMMENTS

To be updated 1 Feb. 1990

References: EPA reviews of studies
Writer : g. maske

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

RIN # 4644-93 EFGW Review & Residue Chemistry Review for Flumetsulam (129016)

Page_____ is not included in this copy.

Pages 10 through 11 are not included.

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.

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.