Shaughnessy No.: 122010

Date Out of EAB: FEB 28 1986

Signature:

To: Robert Taylor
Product Manager #25
Registration Division (TS-767)

From: Emil Regelman, Chief
Review Section #3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769C)

Attached, please find the EAB review of...

Reg./File # : 352-UGL

Chemical Name: METSULFURON methyl

Type Product : Herbicide

Product Name : Ally

Company Name : duPont

Purpose : To fill data gaps for full registration (new data and also chlorsulfuron surrogate (Triazine data) anaerobic aquatic, field dissipation, crop rotation studies.

Action Code(s): 111

Date Received: 11/29/85

Date Completed: 02/28/86

EAB #(s) : 5852; 6099; 6270

TAIS Code: 61

Total Reviewing Time: 4.0 days

Deferrals to:

____ Ecological Effects Branch

____ Residue Chemistry Branch

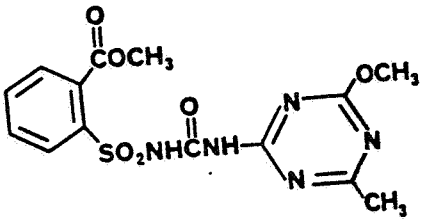
____ Toxicology Branch

1. CHEMICAL: Common name: Metsulfuron methyl

Chemical name: Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl] benzoate.

Trade name(s): Ally Herbicide, DPX-T6376

Structure:



Formulations: 60% DF

Physical/Chemical properties:

Empirical formula: $C_{14}H_{15}N_5O_6S$
Molecular weight: 381.40
Physical state: Technical-white to pale yellow solid.
60% DF formulation - off-white solid.
Odor: Technical-faint, sweet ester-like
60% DF formulation - odorless.
Specific gravity: 1.47 g/cc
Melting point: 158°C
Vapor pressure at 25°C: 5.8×10^{-5} mm Hg
Bulk density: 60% DF formulation: 33.9 lb/ft^3
Solubility: in distilled water at 25°C = 109 mg/l
in 0.05 N sodium phosphate buffer at 25°C as a function of pH:

pH 6.7	9500 mg/l
pH 5.4	1750 mg/l
pH 4.6	270 mg/l

in organic solvents at 20°C:

n-hexane	0.79 mg/l
methylene chloride	121000 mg/l
acetone	36000 mg/l
methanol	7300 mg/l
ethanol	2300 mg/l
xylene	580 mg/l

Ionization constant (pKa): 3.5
pH: Technical - 4.1 (distilled water at 25°C)
60% DF formulation - 5.0 (1% v/v slurry in low conductivity water).
Octanol/water partition coefficient (K_{OW}): 0.018
Stability: Stable in air and nitrogen to ~140°C
Corrosivity: Not corrosive upon storage in plastic containers.

2. TEST MATERIAL: See individual studies.

3. STUDY/ACTION TYPE: Addendum to metsulfuron methyl for the purpose of fulfilling remaining data gaps.

4. STUDY IDENTIFICATION: The following studies are new submittals:

Han, J.C-Y. 1984a. ^{14}C-DPX-W4189 soil disappearance studies in the field. Document No. AMR-54-81. E.I. duPont de Nemours and Company, Wilmington, DE. Acc. No. 260974.

Han, J.C-Y. 1984b. Crop rotation study with ^{14}C-DPX-W4189 in the field. Document No. AMR-46-81. E.I. duPont de Nemours and company, Wilmington, DE. Acc. No. 260975.

McFetridge, R.D. and G.E. Cadwgan. 1985. Photodegradation of [triazine-2-^{14}C]metsulfuron methyl in water. Document No. AMR-451-85. E.I. du Pont de Nemours and Company, Wilmington, DE. Acc. No. 074003. Exhibit 1.

Buchta, R.C. 1985. Photodegradation of [triazine-2-^{14}C]metsulfuron methyl on soil. Document No. AMR-450-85. E.I. du Pont de Nemours and Company, Wilmington, DE. Acc. No. 074003. Exhibit 2.

Chrzanowiski, R.L. 1984a. Degradation of ^{14}C-DPX-W4189 in anaerobic aquatic environments. Document No. AMR-38-81. E.I. du Pont de Nemours and Company, Inc., Wilmington, ED. Acc. No. 260973.

5. REVIEWED BY:

John H. Jordan, Ph.D.
Microbiologist
EAB/HED/OPP

Signature: John H. Jordan

Date: 2/27/86

6. APPROVED BY:

Emil Regelman, Chief
Review Section #3, EAB/HED/OPP

Signature: E Regelman

Date: FEB 28 1986

7. CONCLUSIONS:

Several new studies and the chlorsulfuron surrogate data satisfied data requirements and gaps concerning the fate of the triazine moiety. Therefore, the registrant has completed the requirements for the present use pattern.

8. RECOMMENDATIONS:

Full registration of metsulfuron methyl (Ally) is recommended for the present use pattern.

9. BACKGROUND:

A. Introduction

Registrant is seeking full registration and supplied surrogate data as well as new studies to fill data gaps.

Information on previously reviewed studies

1) Friedman, P. 1982. Hydrolysis of ^{14}C-phenyl DPX-T6376. Document No. AMR-62-82. Acc. No. 071434. This study was reviewed by EAB (E. Regelman) on 5/20/83. It was determined that the study did not satisfy data requirements because it did not address the fate of the triazine moiety.

2) Friedman, P. 1983. Hydrolysis of ^{14}C-4-methoxy-6-methyl-1,3,5-triazin-2-amine. Document No. AMR-136-83. Acc. No. 252492. This study was reviewed by EAB (E. Regelman) on 7/12/84. It was concluded that this study addresses the EAB's concerns of the fate of the triazine moiety when metsulfuron methyl is hydrolyzed.

3) Rapisarda, C. 1981. Microbial degradation of ^{14}C-DPX-4189 in soil. Document No. AMR-43-81. Acc. No. 250928. The registrant has requested that this study be withdrawn without prejudice (E. Regelman, Memorandum of Meeting, 10/17/84).

4) Friedman, P. 1982. Aerobic soil metabolism of ^{14}C-phenyl-labeled-DPX-T6376. Document No. AMR-75-82. Acc. No. 071434. This study was reviewed by EAB (E. Regelman) on 5/20/83. It was concluded that the study inadequately defined metsulfuron methyl metabolism because there was no monitoring of the triazine moiety.

5) Rhodes, B.C. 1985. Aerobic soil metabolism of [2-^{14}C]4-methoxy-6-methyl-1,3,5-triazine-2-amine (Interim Report). E.I. du Pont de Nemours and Company, Inc. Acc. No. 258879. This study was reviewed by Dynamic Corporation on November 12, 1985. This addressed the triazine moiety, therefore, this requirement is satisfied.

6) Han, J. C-Y. 1981. ^{14}C-DPX-W4189. Soil disappearance studies in the field. Document No. AMR-54-81. Acc. No. 250928. This study was reviewed by EAB (E. Regelman) on 7/12/84. This review concluded that the field dissipation of the aminotriazine moiety was not adequately defined by this study for full registration. EAB has since (E. Regelman, Memorandum of Meeting 10/17/84) deferred assessment of the significance of residual levels of the moiety to the Residue Chemistry and Toxicological Branches. Chlorsulfuron surrogate data was reviewed and found adequate to meet the triazine moiety requirement.

7) Han, J. C-Y. 1982. Residue studies with [^{14}C]-DPX-T6376 in bluegill sunfish. Document No. AMR-81-82. Acc. No. 252492. This study was reviewed by EAB (E. Regelman) on 7/12/84. Insufficient analytical and procedural details were provided to allow the study to fulfill data requirements. A submission of raw data for review was also requested. Octanol/water coefficient is <1000, therefore, fish accumulation study is not required.

The following studies were initially reviewed by Dynamac Corporation on December 17, 1984. In response to the initial reviews, the registrant submitted additional information for each study. This information was reviewed by Dynamac Corporation on September 12, 1985.

8) Friedman, P. 1984. Aqueous photolysis of ^{14}C-DPX-T6376. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-102-82. Acc. No. 072767.

9) Friedman, P. 1984. Photodegradation of ^{14}C-phenyl-DPX-T6376 on soil. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-77-82. Acc. No. 072767.

10) Friedman, P.L. 1984. Anaerobic aquatic metabolism of [^{14}C-phenyl]-metsulfuron methyl. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-134-83. Acc. No. 072767.

11) Chrzanowski, R.L. 1984. Soil column leaching studies with [^{14}C]-DPX-T6376. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-82-82. Acc. No. 072767.

12) Friedman, P.L. 1984. Adsorption of ^{14}C-DPX-T6376 on soil. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-82-82. Acc. No. 072767.

13) Anderson, J.J. and J. Harvey. 1984. Field dissipation study of DPX-T6376 in Delaware, North Carolina, Florida, and Mississippi. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-117-83. Acc. No. 072767.

14) Harvey, J. 1984. Crop rotation study with ^{14}C-DPX-T6376 in the greenhouse. E.I. du Pont de Nemours and Company, Inc. Wilmington, DE. Document No. AMR-120-83. Acc. No. 072767.

15) Anderson, J.J. 1984. Crop rotation with ^{14}C-metsulfuron methyl in the field. E.I. du Pont de Nemours and Company, Inc. Wilmington DE. Document No. AMR-190-84. Acc. No. 072767.

B. Directions for Use

Metsulfuron methyl is a herbicide used for postemergence weed control in wheat and barley and in reduced tillage fallow systems preceding wheat, barley, or oat planting.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

See attached review.

11. COMPLETION OF ONE-LINER:

One liner has not been initiated.

12. CBI APPENDIX:

No CBI is included except the hard copy attached to the original package.