

JUN 28 1990

Shaughnessy No.: 103601
Date Out of EFGWB: 6/28/90

To: E. Feris
Product Manager 74
Registration Division

From: Henry Nelson, Acting Chief *H Nelson*
Environmental Chemistry Review Section #3
Environmental Fate and Ground Water Branch/EFED

Through: Henry Jacoby, Chief *Henry Jacoby*
Environmental Fate and Ground Water Branch/EFED

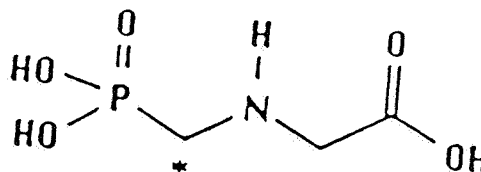
Attached, please find the EFGWB review of . . .

Reg./File # : 524-308
Common Name : Glyphosate
Type Product : Herbicide
Product Name : _____
Company Name : Monsanto
Purpose : Photodegradation on soil data review
Date Received: _____ EFGWB # (s): 90374
Action Code : 160

Deferrals to: _____ Ecological Effects Branch, EFED
_____ Science Integration and Policy Staff,
_____ Non-Dietary Exposure Branch, HED
_____ Dietary Exposure Branch, HED
_____ Toxicology Branch I, HED
_____ Toxicology Branch II, HED

1. CHEMICAL: Glyphosate

2. TEST MATERIAL:



3. STUDY/ACTION TYPE: Review photodegradation on soil data.

4. STUDY IDENTIFICATION:

Photodegradation of ¹⁴C Glyphosate on Soil by natural sunlight), K. Shepler, P.A. McGovern, August, 1987, Performed by Pharmacology and Toxicology Research Laboratory, Richmond, CA submitted by Monsanto, MRID 41335101.

5. REVIEWED BY:

A. Abramovitch
Chemist
EFGWB/EFED/OPP
Review Section #3

Signature: *[Signature]*

Date: JUN 27 1990

6. APPROVED BY:

Henry P. Nelson, Ph.D.
Acting Chief
EFGWB/EFED/OPP
Review Section #3

Signature: _____

Date: JUN 27 1990

7. CONCLUSION:

The photodegradation on soil data requirements is satisfied. Exposure to natural sunlight does not affect the degradation of glyphosate on soil.

8. RECOMMENDATIONS:

The status of the data requirements on glyphosate was discussed in Two January 27, 1988 EFGWB reviews (attached). Since then, only the photodegradation on soil has been satisfied (this review).

9. BACKGROUND:

A. Introduction See two January 27, 1988 reviews and references therein.

B. Directions for Use No label attached.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: See attached
DER
11. COMPLETION OF ONE-LINER: Updated
12. CBI APPENDIX: None

STUDY IDENTIFICATION:

Photodegradation of ^{14}C Glyphosate on Soil by natural sunlight), K. Shepler, P.A. McGovern, August, 1987, MRID 41335101.

TYPE OF STUDY:

Photodegradation on Soil.

REVIEWED BY:

Typed Name: A. ABRAMOVITCH, Ph.D.
Title: Chemist, Review Section 1
Organization: EFGWB/HED/OPP

Date: JUN 27 1990
Signature: *A. Abramovitch*

APPROVED BY:

Typed Name: H. NELSON, Ph.D.
Title: Acting Chief, Review Section 3
Organization: EFGWB/HED/OPP

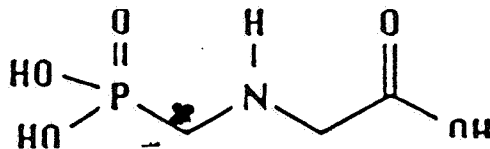
Date: JUN 27 1990
Signature: *H. Nelson*

CONCLUSIONS:

1. The photodegradation on soil data requirement for glyphosate is satisfied by this study.
2. Significant photodegradation of glyphosate does not occur on soil exposed to sunlight. Microbial degradation was the predominate mode of degradation in both irradiated and non irradiated samples with half lives of 90 days and 96 days, respectively.

MATERIAL AND METHOD:

A 97.5% pure glyphosate of 98.9% radiochemical purity and 8.08 mCi/mmol and labeled as shown below was used to prepare a stock solution.



Aliquots of 200 ul of the stock solution were evenly applied to 3.1 grams of a sandy loam soil evenly distributed as a slurry on 50 mm petri dishes. The application rate simulated an application rate of 4 lb/ai/acre. The uniformity of the application was verified by several combustion analyses. The soil characteristics were as follows: pH 7.6, 1.6 organic content, CEC 6, 74% sand, 16 silt and 10% clay). Some fortified soils were maintained at 75% mhc with a humidifier and exposed to natural sunlight (light intensities attached) at 22 C and control samples were maintained unexposed

under identical conditions. Samples were taken at 0,3,7,11,20 and 31 days. Traps were used to collect volatiles. Soil samples were extracted with 0.5 KOH, analyzed by LSC and then by HPLC and TLC in reference authentic samples of parent and potential degradates.

RESULTS:

The experiment provided a complete account for the fate of all applied radiolabeled material. All applied material remained on the plates (no volatiles) and averaged at 105% recoveries. Degradation rates on both exposed and non exposed plates were almost identical with estimated half lives of 90.2 days for exposed samples and 96.3 days for non exposed samples. The degradate on both sunlight exposed and non exposed plates was HMPA (aminomethylphosphonic acid) and carbon dioxide.

DISCUSSION:

The experiment was conducted under EPA approved protocol and guidelines and satisfies data requirements.

Glyphosate environmental fate review

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Pages 6 through 12 are not included in this copy.

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 - ☐ 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
 - ☒ FIFRA registration data
 - ☐ The document is a duplicate of page(s) _____
 - ☐ The document is not responsive to the request
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