


Shaughnessy No.: 125851

Date Out of EAB: DEC 31 1985

To: R. Taylor / Yowell
Product Manager 25
Registration Division (TS-767)

From: Samuel Creeger, Chief 
Review Section #1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached, please find the EAB review of...

Reg./File # : 1471-EUP-TN
Chemical Name: EL-107
Type Product : Herbicide
Product Name : EL-107 50H
Company Name : Elanco
Purpose : EUP for use on wheat and barley

Action Code(s): 730

EAB #(s) : 5305

Date Received: 2/15/85

TAIS Code: _____

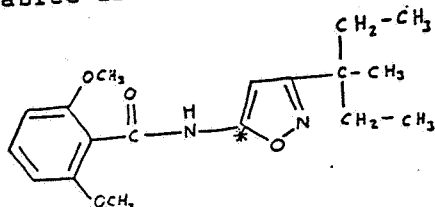
Date Completed: DEC 31 1985

Total Reviewing Time: 1 day

Deferrals to: Ecological Effects Branch
Residue Chemistry Branch
Toxicology Branch

1. CHEMICAL: EL- 107, N-[3-(1-ethyl-1-methylpropyl)-5-isoxazolyll]-2,6-dimethoxybenzamide

2. TEST MATERIAL: C¹⁴ radiolabeled EL-107



3. STUDY/ACTION TYPE:

Experimental Use Permit for application to 4400 acres in 31 states for weed control on wheat and barley.

4. STUDY IDENTIFICATION:

Graper, L. K. "Behavior of ¹⁴C EL-107 in field soil" Eli Lilly and Co. Study No. AEC-0097 and ABC-0146, June, 1984, EPA Acc. No. 073291.

5. REVIEWED BY:

Stephen J. Simko
Chemist
EAB/HED/OPP

Signature:

S. Simko

Date:

12/31/85

6. APPROVED BY:

Samuel M. Creeger
Chief, Section 1
EAB/HED/OPP

Signature:

Samuel M. Creeger

Date:

DEC 31 1985

7. CONCLUSIONS:

This field dissipation study using radiolabeled EL-107 applied to small area enclosed by a metal cylinder demonstrated that the parent compound had a half-life of approximately six months. The two major degradates were N-[3-(1-Hydroxyethyl)-5-isoxazolyll]-2,6-dimethoxybenzamide ($\leq 3.9\%$ of the applied) and N-[3-(1-Hydroxy-1-methylpropyl)-5-isoxazolyll]-2,6-dimethoxybenzamide ($\leq 8.6\%$ of the applied).

This study is not acceptable because the use of a metal cylinder does not represent actual field use conditions. Additionally, soil samples were not taken to a sufficient depth to define the extent of leaching. However, this study is not required for an EUP.

EAB files currently contain the following satisfactory data:

Hydrolysis - stable

K_{ow} = 434 (not required for this EUP)

8. RECOMMENDATIONS:

A field dissipation study is not required for this EUP.

EAB recognizes the problem of detecting the low levels of residues resulting from application of small amounts of the newer pesticides and encourages the development of new and innovative techniques for detecting lower levels of these potent pesticides.

The data requirements for this EUP and their current status are:

hydrolysis - satisfied (9/29/83 review)

aerobic soil metabolism - not submitted

leaching - found to be unacceptable (9/29/83 review)

fish accumulation - not submitted

rotational crop - not submitted

The fate of EL-107 is not known at this time; therefore, we cannot concur with the proposed EUP.

9. BACKGROUND:

A copy of the EUP label is appended.

A copy of the experimental program is appended.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

10.1 Study Identification

Graper, L.K. "Behavior of ¹⁴C EL-107 in field soil" Eli Lilly and Co. Study No. ABC-0097 and ABC-0146, June, 1984, EPA Acc. No. 073291.

Materials and Methods

Field dissipation was studied using ¹⁴C EL-107 (purity > 99%) labeled in the carbonyl carbon (specific activity 4.45 uCi/mg) in the first study and labeled in the carbonyl

carbon (specific activity 9.78 uCi/mg) or the 5-position of the isoxazole ring (specific activity 11.21 uCi/mg) in the second study. The soil was a silty loam (34.8% sand, 50.4% silt, 14.8% clay, 3.3% organic matter, pH 6.6, CEC 14.5 meq/100g) located at the Lilly Research Laboratories in Greenfield, IN. In the first study two plots were seeded with winter barley and later treated at 250 g ai/ha. In the second study two plots were not seeded but were treated at 150 g ai/ha and maintained in a vegetation-free condition during the course of the study. The individual test plots were 0.656 m² in area and were enclosed by a circular metal border extending 20 cm above and 50 cm below the soil surface to prevent runoff or lateral leaching of the test substance. In the first study, sampling was at 21, 30 and 49 weeks post-treatment (plot 1) or at 23, 33 and 51 days (plot 2). Each sample consisted of 6 cores taken to a depth of 15 cm. In the second study, sampling was at 0, 23, 27, 32, 37, 42, 50, 77, 86 and 100 weeks. Each sample consisted of 8 cores taken to a depth of 7.5 cm for the zero time sample, 15 cm for the next five sampling periods and 37.5 cm for the last four sampling periods.

Thirty grams of soil were extracted by refluxing in 80:20 MeOH/H₂O (V/V) for one hour, filtered and dried. The compounds were identified by TLC with four solvent systems. Radioactive zones were visualized by autoradiography, or by spark chamber radiograms. Unlabeled reference compounds were visualized by UV light. For positive identification of the degradates, an extract from 400g of soil was subjected to column chromatography, TLC twice, further column chromatography, HPLC and MS. Portions of soil both before and after extraction were combusted and the evolved ¹⁴C₂O₂ determined by LSC. The total radioactivity of the soil extracts and TLC scrapings were determined by LSC.

Reported Results

Results along with rainfall data are included in the appended tables.

The soil half-life of the parent compound was approximately six months (excluding soil bound fractions). In the second study, using ring labeled EL-107, total radioactivity declined from 100% at week 0 to 34.9% at week 100. In the 15.0-37.5 cm soil layer, levels decreased from 3 to 1.7% of the total over the same time period. In all studies, soil bound fractions ranged from \leq 16% and the degradates comprised \leq 20% of the applied radioactivity. The two major degradates were N-[3-(1-Hydroxyethyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (\leq 3.9% of the applied) and N-[3-(1-Hydroxy-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (\leq 8.6% of the

applied).

Reviewer's Discussion and Interpretation of Study Results

This study is not acceptable because the use of steel cylinders does not represent actual field use conditions. This study, in conjunction with a field study conducted under use conditions showing the difficulties with detecting residues, may satisfy the field dissipation study requirement. EL-107 was found in the deepest soil layers sampled and it is unknown what levels of the compound leached into lower soil layers. Zero weeks samples in the lower soil layers contained 3.0 ppm residues indicating rapid leaching or contaminated samples. The 6 month half-life under field conditions shows the pesticide to be persistent.

11. COMPLETION OF ONE-LINER: Not completed.

12. CBI APPENDIX: Tables.