7-27-88

Shaughnessy No.: 035506

Date Out of EAB: JUL 27 1988

TO: Mark Boodee, Review Manager
Special Review Branch
Registration Division (TS-767C)

FROM: Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section 3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769C)

THRU: Paul F. Schuda, Chief
Exposure Assessment Branch/HED (TS-769C)

Attached, please find the EAB review of...

Reg./File #: 223601

Chemical Name: 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea

Type Product: herbicide

Product Name: Linuron

Company Name: E.I. du Pont de Nemours and Co., Inc.

Purpose: Review of registrant responses to DER's

Date Received: 5/19/88 Action Code: 870

Date Completed: 7/27/88 EAB # (s): 80777, 80802

Monitoring Study Requested: _____ Total Reviewing time: 1.5 days

Monitoring Study Volunteered: _____

Deferrals to:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

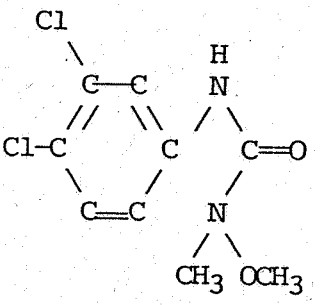
I. CHEMICAL:

Common name: Linuron

Chemical name: 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea

Trade name(s): Afalon, Hoe 002810, Linex 4L, Linorox, Linurex, Lorox, Lorox L, Sarclex

Structure:



Formulations: 0.154-5% G, 7.5-50% WP, 1 lb/gal EC, and 0.9-1.5 lb/gal and 4.34% FlC.

Physical/Chemical properties:

Empirical formula:	$C_9H_{10}Cl_2N_2O_2$
Molecular weight:	249.1
Physical state:	Colorless crystalline solid
Melting point:	93-94°C
Vapor pressure:	2.0 m Pa at 24°C.
Solubility:	81 mg/L in water at 24°C.

II. STUDY/ACTION TYPE: Review of registrant responses to DER's

III. STUDY CITATIONS:

Monson, K.D. 1986. Supplement to: Anaerobic Aquatic Metabolism of [Phenyl(U)-^{14}C] Linuron, MRID 40142501. Du Pont Report No. AMR 622-86, submitted by E. I. du Pont de Nemours and Company, Inc., Wilmington, Delaware.
MRID 40615301

Buchta, R.C.. 1988. Supplement to: Photodegradation of [Phenyl-^{14}C(U)] Linuron in Water, MRID No. 40103601. Du Pont Report No. AMR 616-86, submitted by E. I. du Pont de Nemours and Company, Inc., Wilmington, Delaware.
MRID 40635501

IV. REVIEWED BY:

A. Reiter, Ph.D., Chemist
Environmental Chemistry Review Section 3
EAB/HED/OPP

Allan J. Reiter

Date: July 27, 1988

APPROVED BY:

Emil Regelman, Supervisory Chemist
Environmental Chemistry Review Section 3
EAB/HED/OPP

Emil Regelman

Date: JUL 27 1988

VI. CONCLUSIONS:

Comments were provided by the registrant to clarify minor discrepancies with two studies that had been earlier reviewed and found to be satisfactory. The estimation of the photolytic half-live for linuron in water has now been corrected for the dark control; the $t_{1/2}$ is 54 days.

VII. RECOMMENDATIONS:

In addition to making a copy of this reviewer's Discussion comments available to the registrant's scientists, it is requested that for the record the registrant provide EAB with a description of the model test systems they cited (Brandenton and Landenberg) including representative calculations employed in the relevant anaerobic aquatic metabolism study.

VIII. BACKGROUND

A. Introduction

The Registration Standard for linuron was completed on June 29, 1984. The most recent of four addenda was issued on Jan. 7, 1988. The chemical has been removed from Special Review since it has been classified as a non-quantifiable C oncogen.

The current action is a review of Dupont's rebuttal to Data Evaluation Records of studies that they had submitted in response to the Registration Standard. It is noted that all of the currently submitted supplemental reports are in response to studies that the Agency had found to be acceptable and fulfilling EPA data requirements.

B. Directions for Use

Linuron is a selective herbicide registered for use on terrestrial food crop (soybeans, carrots, celery, asparagus, corn, cotton, parsnips, potatoes, sorghum, and winter wheat) and terrestrial nonfood sites. Linuron is used to control broadleaf weeds and annual grasses by inhibiting photosynthesis. The majority of linuron is applied to soybeans. Single active ingredient formulations consist of 0.154-5% G, 7.5-50% WP, 1 lb/gal EC, and 0.9-1.5 lb/gal and 4.34% FlC. Application rates are 0.3-3 lb ai/A

for terrestrial nonfood sites. Linuron may be applied pre- or post-emergence using either ground equipment or aircraft. Linuron is a restricted use pesticide and may be applied only by certified applicators or personnel under their direct supervision.

IX. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

STUDY 1 (MRID 40615301) - Supplement to: Anaerobic Aquatic Metabolism ...

Comment 1 - The Agency had questioned the registrant's half-life estimates. The registrant clarified the manner in which their calculations were made, but this reviewer is not familiar with the model systems they employed (i.e., Landenberg and Bradenton systems). The registrant must provide literature references and representative calculations for this study.

Comment 2 - The Agency's admonition that several samples should have been taken before 50% of the test chemical had dissipated is derived from the guideline description for conducting a model laboratory soil study. To best describe the pattern of decline of the test material and formation of metabolites more than a single data point should have been sampled before the 50% dissipation point.

Comment 3 - The registrant states that recovery values from fortified samples were not determined and that the detection limit was approximately 0.01 ppm. It is a sound scientific practice to establish recovery data on fortified samples before conducting an analytical study of this type involving complex environmental matrices. Furthermore, it would be in keeping with the "spirit of Good Laboratory Practice regulations". The reported detection limit of 0.01 ppm linuron is satisfactory for the current study.

STUDY 2 (MRID 40635501) - Supplement to: Photodegradation ... in water

Comment 1 - The photolytic half-life is 54 days (corrected for the dark control).

Comment 2 - Since the test was conducted in aqueous media, the need for recovery data is not a major concern. The reported detection limit of 0.018 ppm linuron is satisfactory for the current study.

X. COMPLETION OF ONE-LINER: The one-liner has been updated with this review.

XI. CBI APPENDIX: No claim of confidentiality is made by Dupont for any information contained in the two above-cited studies.