128821

Date Out EFB: FILE

FEB 01 1985

TO: Robert Taylor
Product Manager 25
Registration Division
TS-767

FROM: Samuel M. Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 241-EUP RRU

Chemical: AC 243,997

Type Product: Herbicide

Product Name: ARSENAL Herbicide

Company Name: American Cyanamid

Submission Purpose: EUP for use on forests

Date in: 11/16/84

Date Completed: 2/1/85

ACTION CODE: 740

EFB # 5157

TAIS (level II)	Days
22	1.5

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

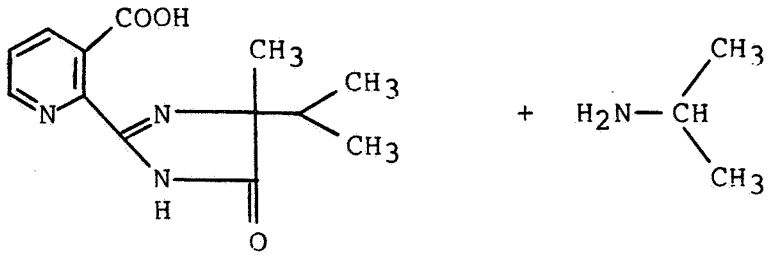
_____ Toxicology Branch

1.0 CHEMICAL

Common name: CL 243,997, AC 243,997 (free acid); AC 252,925 (2-propanamine/isopropylamine salt)

Chemical name: 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid with 2-propanamine (1:1) salt

Chemical structure:



Trade name: ARSENAL® herbicide

Formulation: 53.6% active ingredient, equivalent to 4 lbs acid per gallon.

2.0 TEST MATERIAL

Studies considered here were conducted with carboxyl-^{14}C-CL 243,997 (when position of label is identified).

3.0 ACTION

Application for an experimental use permit (EUP).

4.0 STUDY IDENTIFICATION

The following studies will be considered in supporting this application:

4.1 Hydrolysis: CL 243,997 Herbicide: The Hydrolysis of Carbon-14 Labeled CL 243,997, M. Hussain, 5/28/82, American Cyanamid Report No. PDM 19-8, Acc. No. 251505, Exhibit 1.

4.2 Aerobic soil metabolism: ARSENAL Herbicide (AC 243,997): Aerobic Soil Metabolism of Carboxyl-Carbon-14 labeled AC 243,997 [Nicotinic acid, 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl-3-pyridinecarboxylic acid) in Sandy Loam Soil, M. Mallipudi, 9/12/83, Cyanamid Report No. PD-M Vol 20-17, Acc. No. 251505, Exhibit 3

4.3 Leaching: ARSENAL Herbicide (AC 243,997): Adsorption and Desorption Coefficient for Soils, M. Mallipudi, 9/15/83, . Cyanamid Report No. PD-M Vol 20-18, Acc. No. 251505. Exhibit 5.

5.0 REVIEWED BY

Clinton Fletcher, Chemist
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Signature: Clinton Fletcher
Date: 2/1/85

6.0 APPROVED BY

Samuel Creeger, Section Head
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Signature: Samuel M Creeger
Date: FEB 01 1985

7.0 CONCLUSIONS

7.1 No additional data were submitted to support the proposed use. Data considered in this review were evaluated in the EAB review dated 3/15/84 and are included here in a summary review.

7.2 Hydrolysis: CL 243,997 is stable to hydrolysis at environmental pH and temperature.

This data requirement has been satisfied for the proposed use.

7.3 Aerobic soil metabolism: Carboxyl-^{14}C-AC 243,997 degraded very slowly with a half-life of approximately 17 months. No degradation products, other than CO_2, were identified.

The soil metabolism of AC 243,997 (CL 243,997) has been sufficiently characterized to support the proposed use. However, for registration, an additional degradation soil metabolism study using AC 243,997 radio-labeled in another portion of the molecule is needed. This study is necessary to identify other soil degradation products.

7.4 Leaching: Aged AC 243,997 (CL 243,997) residues will have a moderate potential for soil adsorption [with K values ranging from 1.7 in a clay loam soil (4.6% organic matter) to 4.9 in a silt loam soil (4.6% organic matter)] and high potential for desorption (no values calculated). These conclusions suggest that AC 243,997 will have a potential for leaching.

This data requirement has been satisfied for the proposed use.

The above study used aged residues only. However, since data have been presented which show AC 243,997 to be stable in the soil over the 30 day aging period, this study also satisfies the requirement for the unaged leaching study.

8.0 RECOMMENDATION

8.1 Sufficient data are not available to define the environmental fate of ARSENAL® Herbicide for the proposed use. Data on the fish accumulation data requirement have not been submitted.

American Cyanamid requested a waiver from this data requirement for an EUP for non-cropland use. However, EAB, in review dated 11/21/84, did not agree to waive this study. The very low octanol/water partition coefficient of 1.3 is not sufficient basis alone to waive the study since the parent compound is stable in water and in soil. Thus, the parent compound could be taken up by fish.

8.2 The registrant should be informed that, for registration, an additional aerobic soil metabolism study must be submitted. Also, data on the environmental fate of 2-propanamine will be required. The fact that 2-propanamine is only a small portion of the amount of chemical being applied is not reason enought to waive the data requirements for 2-propanamine. EAB recommends the registrant consider open literature references (or any other source) for this information.

9.0 BACKGROUND

American Cyanamid has submitted an application for an experimental use permit (EUP) for evaluating ARSENAL® Herbicide (AC 243,997 as a. i.) for forestry use. The proposed program will require 6,000 acres (9,000 lb active ingredient) in the 1985 and 10,000 acres (15,000 lb active ingredient) in the 1986 program.

The objective of the experimental program is to evaluate ARSENAL as an herbicide in pines on 95 target pests, at 5 application timings, in two type uses (site preparation and conifer release), at four rates, in three pine species, in 12 states.

See attached label for complete use directions. Briefly, uniformily apply with properly calibrated aerial or ground equipment: 1 - 3 pints per acre for biennial/ perennial and annual weeds and 2 - 4 pints per acre for woody brush and trees (a total 0.75 to 1.0 lb ae/acre).

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES

No additional data were submitted with the application. Data considered in this review were evaluated in EAB review dated 3/15/84. For complete details of the supporting studies, see the previous EAB review.

11. COMPLETION OF ONE-LINER

No additional information was submitted to add to the one-liner.

12. CBI APPENDIX

No CBI data are included in this review.