

US EPA ARCHIVE DOCUMENT

See File

Shaughnessy No.: 059101

Date Out of EAB: APR 15 1986

Signature: [Signature]

To: Jay Ellenberger  
Product Manager #12  
Registration Division (TS-767)

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

[Handwritten Initials]

COPY

Attached, please find the EAB review of...

Reg./File # : 464-404

Chemical Name: Chlorpyrifos

Type Product : Insecticide

Product Name : Dursban

Company Name : Dow Chemical, U.S.A.

Purpose : To inquire whether or not additional crop

accumulation studies are required.

Date Received: 12/6/85

Action Code(s): 616

Date Completed: 04/14/86

EAB #(s) : 6096

Monitoring Requested:                     

TAIS Code: 46

Monitoring Voluntarily Done:                     

Total Reviewing Time: 1 day

Deferrals to:

- Ecological Effects Branch
- Residue Chemistry Branch
- Toxicology Branch

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**REGISTRATION DIVISION DATA REVIEW RECORD**

Confidential Business Information - Does Not Contain National Security Information (E.O. 12065)

HED  
126-95

**1. CHEMICAL NAME**

*CHLORPYRIFOS*

12628

<b>2. IDENTIFYING NUMBER</b> <i>464-404</i>	<b>3. ACTION CODE</b> <i>616</i>	<b>4. ACCESSION NUMBER</b> <i>-</i>	<b>TO BE COMPLETED BY PM</b>
			<b>5. RECORD NUMBER</b> <i>163398</i>
			<b>6. REFERENCE NUMBER</b> <i>1</i>
			<b>7. DATE RECEIVED (EPA)</b> <i>11-4-85</i>
			<b>8. STATUTORY DUE DATE</b>
			<b>9. PRODUCT MANAGER (PM)</b> <i>Ellen Allen</i>
			<b>10. PM TEAM NUMBER</b> <i>121</i>

**14. CHECK IF APPLICABLE**

- Public Health/Quarantine
- Minor Use
- Substitute Chemical
- Part of IPM
- Seasonal Concern
- Review Requires Less Than 4 Hours

*ALL*

<b>TO BE COMPLETED BY PCB</b>
<b>11. DATE SENT TO HED/TSS</b> <i>12-06-85</i>
<b>12. PRIORITY NUMBER</b> <i>50</i>
<b>13. PROJECTED RETURN DATE</b> <i>02-04-86</i>

**15. INSTRUCTIONS TO REVIEWER**

- A. HED**
  - Total Assessment - 3(c)(5)
  - Incremental Risk Assessment - 3(c)(7) and/or E.L. Johnson memo of May 12, 1977.
- B. SPRD (Send Copy of Form to SPRD PM)**
  - Chemical Undergoing Active RPAR Review
  - Chemical Undergoing Active Registration Standards Review
- C.**
  - BFS D
  - TSS/RD
  - Other

**F. INSTRUCTIONS**

*Hand carried data to EAB for Hudson Boyd Requirement for Rotational Field crop study*

**16. RELATED ACTIONS**

**17. 3(c)(1)(D)**

- Use Any or All Available Information
- Use Only Attached Data
- Use Only the Attached Data for Formulation and Any or All Available Information on the Technical or Manufacturing Chemical.

**18. REVIEWS SENT TO**

- TB
- EEB
- EF
- PL
- RCB
- EFB
- CH
- BFS D

19. To	TYPE OF REVIEW	NUMBER OF ACTIONS							
		Registration	Petition	EUP	SLN	Sec. 18	Inert	MNR. USE	Other
HED	TOXICOLOGY								
	ECOLOGICAL EFFECTS								
	RESIDUE CHEMISTRY								
RD/TSS	ENVIRONMENTAL DATA <i>12/5</i>								
	CHEMISTRY								
	EFFICACY								
BFS D	PRECAUTIONARY LABELING								
	ECONOMIC ANALYSIS								<i>2</i>

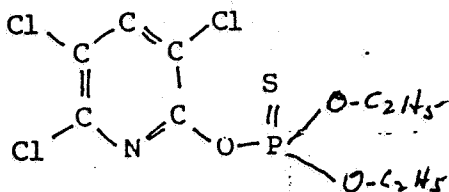
- 20.**  Label Submitted with Application Attached
- 21.**  Confidential Statement of Formula
- 22.**  Representative Labels Showing Accepted Uses Attached
- 23.** Date Returned to RD (to be completed by HED)
- 24.** Include an Original and 4 (four) Copies of This Completed Form for Each Branch Checked for

1. CHEMICAL: Chlorpyrifos

Chemical name 0,0-Diethyl O-(3, 5, 6-trichloro-2-pyridyl)-phosphorothioate

Common Name Dursban

Structure



2. TEST MATERIAL:

No test data submitted

3. STUDY ACTION TYPE:

Registrant requests Agency to confirm position alluded to by comments in a previous review, viz, confined accumulation, rotational crops (165-1).

4. STUDY IDENTIFICATION:

Letter from Dow Chemical's Bischoff to EPA's Ellenberger, October 29, 1985 (attached).

Registrant refers to an EPA review of a confined rotational crop study with chlorpyrifos (EPA Accession No. 256636) submitted to the Agency February 12, 1985.

5. REVIEWED BY:

Hudson Boyd  
Chemist, Review Section #3  
EAB/HED/OPP

Signature: Hudson K Boyd

Date: 4-14-86

6. APPROVED BY:

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

Signature: Emil Regelman

Date: APR 15 1986

7. CONCLUSION:

Registrant

EPA reviewer of the rotational crop (confined) study with chlorpyrifos (EPA Accession No. 256636) reported that the study satisfied the guideline requirements under 165-1. Consequently, additional rotational crop studies, viz, field studies per guidelines § 165-2 are not required.

EAB reviewer (current)

This reviewer concurs with the registrant's argument. It is supported by the data reported and the conclusions reached by the initial EAB reviewer (attached).

8. RECOMMENDATIONS:

Accept the confined accumulation (rotational crop) study previously reviewed for both the confined (165-1) and field (165-2) study requirements.

9. BACKGROUND:

The guidance document for the chlorpyrifos registration standard required rotational crop accumulation data (165-2) to be submitted by Oct. 6, 1986. Residues reported from the confined studies were less than established tolerance for the crop groups. 40CFR 158.130 requires the field studies only when significant residues are likely as evidenced by the confined studies.

10. COMPLETION OF ONE-LINER:

The current one-liner was amended

11. CBI APPENDIX:

No CBI is appended



DOW CHEMICAL U.S.A.

October 29, 1985

MIDLAND, MICHIGAN 48640

Mr. Jay S. Ellenberger  
Registration Division  
U.S. - EPA  
Room 202, Crystal Mall #2  
1921 Jefferson Davis Highway  
Arlington, Virginia 22202

Dear Mr. Ellenberger:

**Subject: Chlorpyrifos Reregistration  
Rotational Crops (Field)**

The attached EPA review shows that the rotational crop (confined) study with chlorpyrifos (EPA Accession No. 256636) that was submitted to the Agency on February 12, 1985 satisfies the EPA guideline requirements under 165-1. Furthermore, the reviewer commented that the study showed little residue of chlorpyrifos in crops or soils after applying it at the recommended rates on a sandy loam soil. Accordingly, because no significant radiolabeled residues of chlorpyrifos were found in the test crops analyzed we believe that additional rotational crop studies, namely a field study per EPA guideline 165-2, are not required. We trust that the Agency will agree with this action. However, if the Agency believes that a rotational crop (field) study is needed, we will need a response concerning this subject on or before December 31, 1985 to meet the timeline requirement of October 1986 as shown in the chlorpyrifos reregistration guidance document.

Sincerely,

Robert F. Bischoff  
Product Registration Manager  
Agricultural Products Department

ec

Attachment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

APR 29 1985

OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

RECEIVED

MAY 1 1985

REGISTRATION

Mr. Robert F. Bischoff  
Dow Chemical USA  
P.O. Box 1706  
Midland, MI 48640

Dear Mr. Bischoff:

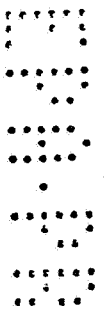
Subject: Dursban F  
Chlorpyrifos Reregistration  
Crop rotation study- 165.1  
EPA Reg. No. 464-404  
Your letter dated Feb. 12, 1985

Please find enclosed our environmental fate review for the subject product. These data meet the Agency's guideline requirements for this study. These data have been assigned EPA accession no. 256636.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Ed Allen".

Edward J. Allen  
Assist. Product Manager (12)  
Insecticide-Rodenticide Branch  
Registration Division (TS-767)



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Shaughnessy #: 059101

Date out of EAB: 4/24/85

Signature: [Handwritten Signature]

APR 25 1985

To: Jay Ellenberger  
Product Manager # 12  
Registration Division (TS-767)

From: John Jordan, Acting Section Chief  
Registration Standards, Section #3  
Exposure Assessment Branch  
Hazard Evaluation Division (TS-769c)

Attached please find the EAB review of:

Reg./File No.: 484-404

Chemical: Chlorpyrifos

Type Product: I

Product Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Submission Purpose: Response to Registration Standard -

Rotational Crop Studies - Action 660

ZBS Code: \_\_\_\_\_ ACTION CODE: 660

Date In : 2/26/85 EAB # 5353

Date Completed: \_\_\_\_\_ TAIS (level II) 42 Days 3

Deferrals To: \_\_\_\_\_

- \_\_\_\_\_ Ecological Effects Branch
- \_\_\_\_\_ Residue Chemistry Branch
- \_\_\_\_\_ Toxicology Branch





## Materials and Methods

<sup>14</sup>C-chlorpyrifos (0,0 diethyl C-(3,5,6 trichloro-2-pyridinyl) phosphorothioate), ring labelled, was added to a field plot of Londo sandy loam (1.9% om, 70% sand, 14% clay, 16% silt pH 6.5) by a dropping pipette at a rate of 5 lb ai/acre. It was incorporated to a depth of 1 inch. Rotational crop studies were conducted in the field 30 days, and on a wheat subplot at 365 days after addition. A growth chamber study was also conducted 126 days after compound addition using the top 6 inches of soil which had been removed from the field and placed in steel drums. Crops used at 30 days were lettuce, spinach, turnip and wheat; at 120 days lettuce soybean sugarbeet and wheat and at 365 days only wheat. Values were reported at several times post planting for foliage only in lettuce and spinach; for foliage and root in turnip and sugar beet; for foliage and bean in soybean, and foliage (30 days only) grain and straw in wheat. Studies also included measurements on total chlorpyrifos related residue for known and unsuspected metabolites and soil analyses for <sup>14</sup>C residues of chlorpyrifos.

Analyses for total plant soil and insoluble plant <sup>14</sup>C activity were by combustion and counting. Soluble plant and soil samples were analysed via HPLC with a UV detector and for <sup>14</sup>C by use of a Gilson fraction collector and counted to construct a histogram. Crop residues were identified by extraction using ACR 71.19F.86 validated total residue method followed by GC-MS analysis and by counting for <sup>14</sup>C activity.

Soil extraction technique used as described by Bidlack, 1978, involves extracting chlorpyrifos and residues from at 30 days, acidic soil slurry with diethyl ether followed by concentration. Analyses by HPLC and counting for total <sup>14</sup>C activity.

## Conclusions

1. Study is scientifically valid and follows EPA recommended guidelines for confined accumulation studies on rotational crops.
2. Levels of chlorpyrifos as determined by <sup>14</sup>C, in lettuce ranged from a high of 0.57 ppm in 30 day post application foliage (sampled 33 post planting) down to 0.05 ppm in 129 day foliage. Spinach foliage 30 day levels were 0.22 - 0.27 ppm; the 30 day turnip foliage ranged from 0.29 to 0.08 ppm; 129 day soybean sampled 119 days after planting had a foliage level of 0.36 ppm and ranged down to 0.17 ppm at 59 days post-planting.
3. Wheat was the only crop planted at all three times (30, 129 and 365 days) post application. Levels in wheat grain ranged from 0.42 ppm (planted 30 days post-treatment, sampled 124 days post-planting) down to 0.08 ppm in samples planted 1 year post treatment and sampled 93 days post planting.

4. Wheat straw values were the highest reported in this study at 1.95 ppm in the 129 day study sampled 73 days post-planting. Levels in the 30 day study were 1.78 ppm, 124 days, post planting. In the 365 day study sampled at 93 days post-planting, levels were down to 0.08ppm. The explanation given for the levels in the 30 and 129 day studies is that dehydration of the wheat plant occurs as it matures and increases the apparent  $^{14}\text{C}$  concentration in this portion of the plant.
5. Soil analyses during the study indicate that the level of residual chlorpyrifos decreased during each growth period in the studies.
6. The registrant has fulfilled EPA guidelines 165-1 on rotational crops with this study showing little residual chlorpyrifos in crops or soils after applying it at the recommended rates on a sandy loam soil.

*Paul J. Matcoloni*