

US EPA ARCHIVE DOCUMENT



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

FEB 12 1993

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Data Review of Chlorpropham  
DP Barcodes: D184167 & D183382  
ID Nos: 018301

FROM:  Anthony F. Maciorowski, Chief  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C) 

TO: Walter Waldrop, PM 71  
Reregistration Branch  
Special Review/Reregistration Division (H7508W)

EEB has reviewed the acute daphnia and bobwhite studies for chlorpropham and has found the studies to fulfill guideline requirements. The studies indicate that the chemical is practically nontoxic to bobwhite quail ( $LC_{50} > 5620$  ppm) and moderately toxic to *Daphnia magna* ( $EC_{50} = 3.7$  ppm) on an acute basis.

EEB files indicate that the only supported use of chlorpropham is a post-harvest application to potatoes for sprout inhibition. If sprout inhibition is the sole use, the data requirements for the chemical have been fulfilled. REFS, however, still lists spinach, easter lilies, and St. augustine and zoysia grass as active use sites. If REFS is correct, the following studies will be required-- 71-1(a) avian  $LD_{50}$  with the bobwhite or mallard; 71-2(b) acute dietary with the mallard; 122-1 seed germination/seedling emergence and vegetative vigor; and 122-2 aquatic plant growth.

Attached is a table reiterating the current status of chlorpropham.

If you have any questions please call Heather Mansfield at 305-5064.



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Date: 2/1/93

Case No:

Chemical No: 018301

PHASE IV  
DATA REQUIREMENTS FOR  
ECOLOGICAL EFFECTS BRANCH  
CHLORPROPHAM

Data Requirements	Composition <sup>1</sup>	Use Pattern <sup>2</sup>	Does EPA Have Data To Satisfy This Requirement? (Yes, No)	Bibliographic Citation (MRID, date study was reviewed)	Must Additional Data Be Submitted under FIFRA3(c)(2)(B)?
<b>6 Basic Studies in Bold</b>					
<b>71-1(a) Acute Avian Oral, Quail/Duck</b>	TGAI	A,C	No		No <sup>3</sup>
71-1(b) Acute Avian Oral, Quail/Duck	(TEP)	---	No		No
<b>71-2(a) Acute Avian Diet, Quail</b>	TGAI(98.1%)	A,C,L	Yes	424904-01, 1/29/93	No
<b>71-2(b) Acute Avian Diet, Duck</b>	TGAI(98.1%)	A,C	No		No <sup>3</sup>
71-3 Wild Mammal Toxicity	---	---	No		No
71-4(a) Avian Reproduction, Quail	---	---	No		No <sup>4</sup>
71-4(b) Avian Reproduction, Duck	---	---	No		No <sup>4</sup>
71-5(a) Simulated Terrestrial Field Study	---	---	No		No
71-5(b) Actual Terrestrial Field Study	---	---	No		No
<b>72-1(a) Acute Fish Toxicity Bluegill</b>	TGAI(98.8%)	A,C,	Yes	402086-03, 10/7/87	No
72-1(b) Acute Fish Toxicity Bluegill	(TEP)	---	No		No
<b>72-1(c) Acute Fish Toxicity Rainbow Trout</b>	TGAI(98.8%)	A,C,L	Yes	402086-04, 9/29/87	No
72-1(d) Acute Fish Toxicity Rainbow Trout	(TEP)	---	No		No
<b>72-2(a) Acute Aquatic Invertebrate Toxicity</b>	TGAI(98.1%)	A,C,L	Yes	425076-01, 1/29/93	No
72-2(b) Acute Aquatic Invertebrate Toxicity	(TEP)	---	No		No
72-3(a) Acute Estu/Mari Tox Fish	TGAI	---	No		No
72-3(b) Acute Estu/Mari Tox Mollusk	TGAI	---	No		No
72-3(c) Acute Estu.Mari Tox Shrimp	TGAI	---	No		No

\* In Bibliographic Citation column indicates study may be upgradeable

Date: 2/1/93

Case No:

Chemical No: 018301

PHASE IV  
DATA REQUIREMENTS FOR  
ECOLOGICAL EFFECTS BRANCH  
CHLORPROPHAM

Data Requirements	Composition <sup>1</sup>	Use Pattern <sup>2</sup>	Does EPA Have Data To Satisfy This Requirement? (Yes, No)	Bibliographic Citation (MRID, date study was reviewed)	Must Additional Data Be Submitted under FIFRA3(c)(2)(B)?
72-3(d) Acute Estu/Mari Tox Fish	(TEP)	---	No	---	No
72-3(e) Acute Estu/Mari Tox Mollusk	(TEP)	---	No	---	No
72-3(f) Acute Estu/Mari Tox Shrimp	(TEP)	---	No	---	No
72-4(a) Early Life-Stage Fish	---	---	No	---	No <sup>4</sup>
72-4(b) Live-Cycle Aquatic Invertebrate	---	---	No	---	No <sup>4</sup>
72-5 Life-Cycle Fish	---	---	No	---	No
72-6 Aquatic Org. Accumulation	---	---	No	---	No
72-7(a) Simulated Aquatic Field Study	---	---	No	---	No
72-7(b) Actual Aquatic Field Study	---	---	No	---	No
122-1(a) Seed Germ./Seedling Emerg.	TGAI	---	No	---	No <sup>3</sup>
122-1(b) Vegetative Vigor	TGAI	---	No	---	No <sup>3</sup>
122-2 Aquatic Plant Growth	TGAI	---	No	---	No <sup>3</sup>
123-1(a) Seed Germ./Seedling Emerg.	---	---	No	---	No
123-1(b) Vegetative Vigor	---	---	No	---	No
123-2 Aquatic Plant Growth	---	---	No	---	No
124-1 Terrestrial Field Study	---	---	No	---	No
124-2 Aquatic Field Study	---	---	No	---	No
141-1 Honey Bee Acute Contact	TGAI	A,C	Yes	00018842	No
141-2 Honey Bee Residue on Foliage	---	---	No	---	No
141-5 Field Test for Pollinators	---	---	No	---	No

\* In Bibliographic Citation column indicates study may be upgradeable

1. Composition: TGAI=Technical grade of the active ingredient; FAIRA=Pure active ingredient, radiolabeled; TEP=Typical end-use product
2. Use Patterns: A=Terrestrial Food Crop; B=Terrestrial Feed Crop; C=Terrestrial Non-Food Crop; D=Aquatic Food Crop; E=Aquatic Non-Food Outdoor; F=Aquatic Non-Food Industrial; G=Aquatic Non-Food Residential; H=Greenhouse Food Crop; I=Greenhouse Non-Food Crop; J=Forestry; K=Outdoor Residential; L=Indoor Food; M=Indoor Non-Food; N=Indoor Medical; O=Indoor Residential; Z=Use Group for Site 00000
3. EEB files indicate that the only supported use of chlorpropham is an indoor post-harvest application to potatoes for sprout inhibition. REFS, however, still lists spinach, easter lilies, and St. augustine and zoysia grass as active use sites. IFREFS is correct, the avian LD<sub>50</sub> with the bobwhite or mallard, avian LC<sub>50</sub> with the mallard, and tier one plant studies will be required.
4. This study is held in reserve if outdoor uses are retained.

DP Barcode : D184167  
 PC Code No : 018301  
 EEB Out :

To: Walter Waldrop  
 Product Manager 71  
 Special Review and Reregistration Division (H7508W)

From: Anthony F. Maciorowski, Chief  
 Ecological Effects Branch/EFED (H7507C)

Attached, please find the EEB review of...

Reg./File # : 018301  
 Chemical Name : Chlorpropham  
 Type Product : Herbicide  
 Product Name : Chlorpropham Technical  
 Company Name : Chlorpropham Task Force  
 Purpose : Submission of acute Daphnia study in support  
 of reregistration.

Action Code : 627 Date Due : 01/29/93  
 Reviewer : H. Mansfield Date In : 11/06/92

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1(A)			72-2(A)	425076-01	Y	72-7(A)		
71-1(B)			72-2(B)			72-7(B)		
71-2(A)			72-3(A)			122-1(A)		
71-2(B)			72-3(B)			122-1(B)		
71-3			72-3(C)			122-2		
71-4(A)			72-3(D)			123-1(A)		
71-4(B)			72-3(E)			123-1(B)		
71-5(A)			72-3(F)			123-2		
71-5(B)			72-4(A)			124-1		
72-1(A)			72-4(B)			124-2		
72-1(B)			72-5			141-1		
72-1(C)			72-6			141-2		
72-1(D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur  
 P=Partial (Study partially fulfilled Guideline but  
 additional information is needed  
 S=Supplemental (Study provided useful information but Guideline was  
 not satisfied)  
 M=Unacceptable (Study was rejected)/Nonconcur

AC

# CHLORPROPHAM TASK FORCE

5 VICTORY LANE  
SUITE 201  
LIBERTY, MO 64068

PHONE: (816) 781-1763

TELEFAX: (816) 792-3191

1. NAME AND ADDRESS OF SUBMITTER:

CHLORPROPHAM TASK FORCE  
c/o John Wise & Associates, Ltd  
5 Victory Lane Suite 201  
Liberty, MO 64068  
Consortium No: 64592

425076-00

Submitted on Behalf Of the Following Members:

Aceto Agricultural Chemicals Corporation: EPA No. 2749  
Atochem North America, Inc.: EPA No. 2792

In Support of the Following Registrations:

All registrations for the above companies containing the active ingredient Chlorpropham (018301).

- \* Chlorpropham Task Force will act as sole agent for all submitters.

2. REGULATORY ACTION IN SUPPORT OF WHICH THIS PACKAGE IS SUBMITTED:

GUIDANCE FOR THE REREGISTRATION OF PESTICIDE PRODUCTS CONTAINING CHLORPROPHAM (OPP NUMBER 018301) AS THE ACTIVE INGREDIENT, CASE NUMBER 0271, ISSUED DECEMBER, 1987.

3. TRANSMITTAL DATE: October 8, 1992

4. LIST OF SUBMITTED STUDIES:

Vol I of I

Chlorpropham (CIPC): A 48-Hour Static Acute Toxicity Test with Cladoceran (*Daphnia magna*)  
40 CFR 158.490  
FIFRA Guideline No. 72-2

COMPANY OFFICIAL: John M. Wise, Chairman

Name

42507601



Signature

COMPANY NAME: Chlorpropham Task Force

COMPANY CONTACT: John M. Wise

Name

(816) 781-1763

Phone No.

Wildlife International, Ltd.  
Project No: 292A-101B  
Page (i)

**DATA EVALUATION RECORD**

1. **CHEMICAL:** Chlorpropham.  
Shaughnessey No. 018301.
2. **TEST MATERIAL:** Chlorpropham technical; Barrel B, Aliquot No. 113; 98.1% active ingredient; a white solid.
3. **STUDY TYPE:** 72-2. Freshwater Invertebrate Static Acute Toxicity Test. Species Tested: *Daphnia magna*.
4. **CITATION:** Sved, D., D. Murphy, and J.P. Swigert. 1992. Chlorpropham (CIPC): A 48-Hour Static Acute Toxicity Test with the Cladoceran (*Daphnia magna*). Project No. 292A-101B. Prepared by Wildlife International Ltd., Easton, MD. Submitted by Chlorpropham (CIPC) Task Force, John M. Wise & Associates, Liberty, MO. EPA MRID No. 425076-01.

5. **REVIEWED BY:**

Louis M. Rifici, M.S.  
Associate Scientist  
KBN Engineering and  
Applied Sciences, Inc.

Signature: *Louis M. Rifici*

Date: *12/14/92*

6. **APPROVED BY:**

Rosemary Graham Mora, M.S.  
Associate Scientist  
KBN Engineering and  
Applied Sciences, Inc.

Signature: *Rosemary Graham Mora*

Date: *12/15/92*

Henry T. Craven, M.S.  
Supervisor, EEB/EFED  
USEPA

Signature: *Henry T. Craven*

Date: *2/1/93*

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a static acute toxicity test using *Daphnia magna*. The 48-hour EC<sub>50</sub> was 3.7 mg/l mean measured concentration which classifies chlorpropham as moderately toxic to daphnids. The NOEC was 0.77 mg/l mean measured concentration.

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**

10. DISCUSSION OF INDIVIDUAL TESTS: N/A.

11. MATERIALS AND METHODS:

- A. Test Animals: *Daphnia magna* neonates (<24 hours old) were obtained from in-house cultures. The adult daphnids were held for at least 14 days prior to collection of neonates for testing. The cultures were judged as in good health and showed no signs of disease or stress. Adult daphnids were fed a mixture of yeast, Cerophyll®, and trout chow, and a suspension of *Selenastrum capricornutum*. Neonates were obtained for testing by transferring individual adult daphnids to dilution water 24 hours prior to test initiation and collecting the progeny of at least three adults on the day of the test.
- B. Test System: The test chambers were 2-l glass beakers containing 1.5 l of test solution at test initiation. The solution depth in each test beaker was approximately 11.5 cm. A 500-ml beaker with two screen-covered holes on opposite sides was placed in each test chamber to contain the daphnids. The chambers were indiscriminately positioned in a temperature-controlled water bath (20 ±1°C) maintained under a 16-hour light photoperiod with 30-minute dawn and dusk simulations. Light intensity was approximately 270 lux at the surface of the solutions.

Medium-hard well water was aerated and filtered before use as dilution water. During the four-week period immediately preceding test initiation, the water had a conductivity of 350-420 µmhos/cm, a hardness of 140-168 mg/l as CaCO<sub>3</sub>, an alkalinity of 144-176 mg/l as CaCO<sub>3</sub>, and a pH of 7.8-8.0.

The primary stock solution (110 mg/ml) was prepared by dissolving the test material in dimethylformamide (DMF). The test solutions were prepared by mixing the stock with test dilution water.

- C. Dosage: Forty-eight-hour static test. Based on preliminary testing, six nominal concentrations (0.78, 1.3, 2.2, 3.6, 6.0, and 10 mg/l), a solvent control (0.09 ml DMF/l), and a dilution water control were tested. Test concentrations were based on whole product as received, i.e., not corrected for percentage active ingredient.

- D. **Design:** Daphnids were impartially removed in groups of two from the holding tanks and equally distributed to each test beaker, two beakers per concentration, for a total of 20 individuals per concentration. Observations of mortality, immobility, and signs of toxicity were made at 20, 24, and 48 hours. The daphnids were not fed during the test.

The dissolved oxygen concentration and pH were measured in alternating replicates of all concentrations at 24-hour intervals during the study. The temperature of a water-filled beaker located in the water bath was monitored continuously and the temperature of each beaker was measured at the beginning and end of the test.

Water samples were collected at test initiation, 24, and 48 hours. The concentration of chlorpropham in solution was determined using high performance liquid chromatography.

- E. **Statistics:** The median effective concentration ( $EC_{50}$ ) values and 95% confidence intervals were calculated using a computer program developed by C.E. Stephan. In this study, the probit method results were used.

12. **REPORTED RESULTS:** The mean measured concentrations were 0.61, 0.77, 1.8, 2.6, 4.5, and 7.1 mg/l (Table 1, attached). Test concentrations decreased by approximately 10% between day 0 and day 1 but were stable between day 1 and day 2.

Control daphnids appeared healthy and normal throughout the test except for one daphnid in the dilution water control which was immobile at the end of the test (Table 3, attached). No mortalities occurred in any treatment group during the test. Floating daphnids and immobility were observed in the two highest treatments within the first 20 hours of test initiation. After 24 hours, daphnids in the 1.8 and 2.6 mg/l treatments were also affected.

Dissolved oxygen concentration ranged from 7.8 to 8.3 mg/l. The pH values ranged from 8.0 to 8.5. The temperature was 20.0-20.2°C. The hardness, alkalinity, and conductivity of the dilution water at the beginning of the test were 148 mg/l as  $CaCO_3$ , 190 mg/l as  $CaCO_3$ , and 300  $\mu$ mhos/cm, respectively.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** The 48-hour  $EC_{50}$  value was 3.7 mg/l with 95% confidence limits of 3.0 and 4.6 mg/l. The slope of the dose-response

curve was 3.6. The no mortality and no observed effect concentrations were 0.77 mg/l.

Quality Assurance and Good Laboratory Practice statements were included in the report, indicating that the study was conducted in accordance with USEPA Good Laboratory Practice Standards set forth in 40 CFR Part 160. The dates and types of quality assurance audits performed were also presented.

14. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:

- A. Test Procedure: The test procedures were generally in accordance with the SEP, except for the following:

The length of time between test solution preparation and the addition of the daphnids was not given in the report. The daphnids should be placed in the test solutions within 30 minutes of preparation.

First instar *Daphnia magna* used in tests should be from the fourth or later broods of a given parent. The authors did not indicate which brood was the source of the test animals.

- B. Statistical Analysis: The reviewer used EPA's Toxanal computer program to calculate the 48-hour EC<sub>50</sub> value and obtained the same results as the authors (see attached printout).
- C. Discussion/Results: This study is scientifically sound and meets the guideline requirements for a static acute toxicity test using *Daphnia magna*. The 48-hour EC<sub>50</sub> was 3.7 mg/l mean measured concentration which classifies chlorpropham as moderately toxic to daphnids. The NOEC was 0.77 mg/l mean measured concentration.

D. Adequacy of the Study:

- (1) Classification: Core.
- (2) Rationale: N/A.
- (3) Repairability: N/A.

15. COMPLETION OF ONE-LINER FOR STUDY: Yes, 12-11-92.

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Pages 11 through 13 are not included.

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The material not included contains the following type of information:

- Identity of product inert ingredients.
  - Identity of product impurities.
  - Description of the product manufacturing process.
  - Description of quality control procedures.
  - Identity of the source of product ingredients.
  - Sales or other commercial/financial information.
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