

4-18-84

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028501

SHAUGHNESSY NO.

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN January 12, 1984 OUT April 18, 1984

FILE OR REG. NO. 38906-T

PETITION OR EXP. PERMIT NO. _____

DATE OF SUBMISSION December 27, 1983

DATE RECEIVED BY HED January 10, 1984

RD REQUESTED COMPLETION DATE April 30, 1984

EEB ESTIMATED COMPLETION DATE April 23, 1984

RD ACTION CODE/TYPE OF REVIEW 160/Old Chemical

TYPE PRODUCT(S): I, D, H, F, N, R, S Microbiocide

DATA ACCESSION NO(S). _____

PRODUCT MGR. NO. A. E. Castillo (32)

PRODUCT NAME(S) Dantochlor

COMPANY NAME Tabershaw Occupational Medicine Associates, P.A.

Submission Purpose Submission of data to support registration

SHAUGHNESSEY NO.

CHEMICAL & FORMULATION

% A.I.

006315
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Dibromodimethylhydantoin

Pesticide Name

Dantochlor

100.0 Submission Purpose and Labeling Information

Submission of data to support registration.

100.1 Submission Purpose and Pesticide Use

100.1.1 Manufacturing Use

For Reformulating and/or Repackaging Use

It is a violation of Federal law to use this product in a manner inconsistent with the labeling.

For use as a disinfectant, algaecide, fungicide, bactericide and/or slimicide for industrial uses only. See bulletin...for additional information.

Active Ingredients:

028501	1,3-Dichloro-5,5-dimethylhydantoin	75.6%
New	1,3-Dichloro-5,5-dimethylhydantoin	13.5%
New	1-Chloro-5,5-dimethylhydantoin	8.4%
New	1-Chloro-5-ethyl-5-methylhydantoin	1.5%
		<u>98.0%</u>

100.1.2 Formulation Information

Active Ingredients:

028501	1,3-Dichloro-5,5-dimethylhydantoin	86.0%
New	1,3-Dichloro-5-ethyl-5-methylhydantoin	3.0%
	Other relative compounds	10.4%
		<u>99.0%</u>

100.3 Application Methods, Directions, Rates: End Uses

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with the labeling.

RECIRCULATING COOLING WATER SYSTEMS

DantoChlor™ RW aids in the control of bacterial, fungal and algal slimes in evaporative condensers, heat exchange water towers, influent systems such as flow-through filters, lagoons etc., industrial water scrubbing systems and brewery pasteurizers.

FOR CONTROL OF BACTERIA AND FUNGI
- INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the sytem is noticeably fouled add 0.1 to 1.0 lbs. to 1000 gallons or 12 to 120 parts per million of the water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: When microbial control is evident add 0.1 to 0.75 pounds to 1000 gals. or 12 to 90 parts per million of water in the system every 3 days or as needed to maintain control.

CONTINUOUS FEED METHOD

INITIAL DOSE: When a system is noticeably fouled add 0.1 to 1.0 lbs. to 1000 gallons or 12 to 120 parts per million of water in the system.

SUBSEQUENT DOSE: Continuously feed to maintain a dosage of 0.1 to 0.75 pounds to 1000 gals. or 12 to 90 parts per million of water in the system.

FOR CONTROL OF ALGAE
INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the system is noticeably fouled add 0.1 to 1.0 lbs. per 1000 gallons or 0.12 to 1.20 parts per million of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: When algae control is evident add 0.1 to 0.25 pounds to 1000 gals. daily or 12 to 90 parts per million daily or as needed to maintain control.

CONTINUOUS FEED METHOD

INITIAL DOSE: When the system is noticeably fouled add 0.1 to 1.0 lbs. to 1000 gallons or 12 to 120 parts per million of water in the system. Repeat until control is achieved.

SUBSEQUENT DOSE: Continuously feed to maintain a dosage of 0.1 to 0.75 pounds to 1000 gals. or 12 to 90 parts per million of water in the system.

AIRWASHERS

For use only in industrial airwasher systems that maintain effective mist eliminating components.

DantoChlor™ RW controls slime-forming bacteria, fungi and algae in industrial airwasher systems. Add DantoChlor™ RW at the rate of 0.1 to 1.0 pounds (12 to 120 ppm) per 1000 gallons of water in the system, depending upon the severity of the contamination.

Control the application by measuring the free chlorine residual in the treated water. There is no need to exceed 1.0 ppm as free chlorine.

Badly fouled systems must be cleaned before treatment is begun.

INTERMITTENT OR SLUG METHOD

INITIAL DOSE: When the system is noticeably fouled add to airwasher sump or chill water sump to insure uniform mixing. Add 0.1 to 1.0 pound to 1000 gallons or 12 to 120 parts per million of water.

SUBSEQUENT DOSE: When microbial control is evident add 0.1 to 0.65 pounds to 1000 gals. or 12 to 72 parts per million of water.

INITIAL DOSE: When the system is noticeably fouled add to airwasher sump or chill water sump to insure uniform mixing. Add 0.1 to 1.0 pound to 1000 gallons or 12 to 120 parts per million of water.

SUBSEQUENT DOSE: When microbial control is evident add 0.1 to 0.6 pounds to 1000 gals. or 12 to 72 parts per million of water.

100.4 Target Organisms

100.4.1 Manufacturing Use

Algaecide, fungicide, bactericide and/or slimicide.

100.4.2 End Uses

Bacteria, fungus and algae

100.5 Precautionary Labeling

DANGER

HARMFUL IF SWALLOWED. HIGHLY CORROSIVE. DO NOT TAKE INTERNALLY. Causes eye and skin damage. Irritating to nose and throat. Avoid breathing dust. Use with adequate ventilation.

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Do not get into eyes, on skin or clothing. Wear rubber gloves, chemical goggles and face shield when handling. Wash thoroughly after handling. Immediately remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not discharge into lakes, streams, ponds or public water unless in accordance with NPDES permit. For guidance contact your Regional Office of the EPA. Do not contaminate water by cleaning of container and equipment or disposal of wastes. Apply this pesticide only as specified on this label.

100.6 Toxicology Data (Formulated Product)

Bobwhite Quail LD ₅₀	>2510 mg/kg	Supplemental
Bobwhite Quail LC ₅₀	>5620 ppm	Supplemental
Mallard Duck LC ₅₀	>5620 ppm	Supplemental
Rainbow Trout LC ₅₀	0.58 ppm	Supplemental
Bluegill Sunfish LC ₅₀	0.75 ppm	Supplemental
Daphnia Magna LC ₅₀	≅ 0.84 ppm	Supplemental

101 Hazard Assessment

101.1 Discussion (Manufacturing Use)

For use in reformulating products for use as a disinfectant, algaecide, fungicide, bactericide and/or slimicide for industrial uses only.

101.2 Discussion (End Uses)

For the control of bacteria, fungal and algal slimes in evaporatives condensers, heat exchange water towers, influent systems such as flow through filters, lagoons, etc., industrial water scrubbing systems and brewery pasteurizers. The treatment levels will range from 0.1 to 1.0 lb. a.i./1000 gallons or 0.12 to 1.20 ppm of water in the system.

101.3 Likelihood of Adverse Effects to Non-Target Organisms

EEB can not comment on the adverse effects of Dantochlor to terrestrial wildlife and aquatic organisms due to lack of fish and wildlife toxicity data.

101.4 Endangered Species Considerations

EEB can not comment on the hazard of DantoChlor to the endangered species due to lack of fish and wildlife toxicity data.

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101.5 Adequacy of Toxicity Data

No DantoChloro data were submitted.

101.6 Adequacy of Labeling

No comment at this time.

102 Classification

None at this time.

102.1 Toxicological Properties

No DantoChlor data were submitted with this submission.

103 Conclusions

It appeared that the registrant's intention was to use Dibromodimethylhydantoin data conducted in 1981 to support a DantoChlor registration. Dibromodimethylhydantoin data cannot be substituted for DantoChlor data requirements in support of registration. Data shall be derived from tests conducted with the technical grade of each active ingredient in the product as outlined in 158.145(b)(1)(i).

Prior to consideration of registration of the proposed uses of DantoChlor, the following minimal studies are required:

- a. The avian acute oral LD₅₀ for one species of waterfowl (mallard duck, preferably) or one species of upland game bird (bobwhite quail or ring-necked pheasant);
- b. The dietary LC₅₀ for one species of waterfowl (mallard Duck) and one species of upland game bird (bobwhite quail or ring-necked pheasant);
- c. The 96-hour LC₅₀'s for a coldwater species (rainbow trout) and a warmwater species (bluegill sunfish) of fish;
- d. The acute 48-hour LC₅₀ for an aquatic invertebrate (Daphnia sp., preferably).

The above basic studies are required on the technical of each active ingredient.

Further, additional data may be required to support this registration. However, EEB can not make this determination until EEB has received and reviewed the above studies. (Also, see comments below.)

Also, EEB notes that the manufacturing use label lists four active ingredients whereas the end use label lists two active ingredients plus other related compounds. EEB does not see how the registrant

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can list it both ways. On insecticide products which list an active or actives plus other related compounds the technical or manufacturing use label also lists the actives in the same manner. If the registrant chooses to list four actives on either of the labels, then data on the technical grade of each active ingredient is required.

Relative to the end uses listed, a better description of "lagoons, etc.," is required. If such uses involve bodies of water likely to feed into lakes, streams, ponds, or rivers, then further aquatic testing may be required.

Note to PM

On the end use label under section For Control of Algae Intermittent or Slug Method, Subsequent Dose: "add 0.1 to 0.25 pounds" should read "0.1 to 0.75 pound to yield 12 to 90 ppm."

Curtis E. Laird 4.18.84
Curtis E. Laird
Fishery Biologist
EEB/HED (TS-769)

Norman Cook 4.18.84
Norman Cook
Head, Section #2
EEB/HED (TS-769)

Clayton Bushong 4/18/84
Clayton Bushong
Chief
EEB/HED (TS-769)

1. Chemical: Dibromodimethylhydantoin
2. Formulation: Unknown
3. Citation: Fink, R. (1981) Acute Oral LD₅₀ - Bobwhite Quail; Project #178-106; Prepared by Wildlife International LTD for Tabershaw Service, Inc., Rockville, Maryland 20852. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 13, 1984
6. Test Type: Avian Acute Oral LD₅₀

A. Test Species: Bobwhite quail

7. Reported Results: Controls - There were no mortalities in either of the negative control groups. All birds were normal in appearance and behavior throughout the test period.

Experimental Material - This study was initially conducted at dosage levels of 159 mg/kg, 251 mg/kg, 398 mg/kg, 631 mg/kg and 1000 mg/kg. No mortalities occurred during the course of the study.

One cock at the 398 mg/kg dosage level exhibited symptoms of lethargy and reduced reaction to external stimuli (sound and movement) on Day 1, and slight lethargy was observed at the 398 mg/kg, 631 mg/kg, and 1000 mg/kg dosage levels on Day 6. At all other times all birds at all dosage levels were asymptomatic. There was no apparent effect on body weight or feed consumption at any dosage level.

A study utilizing a single dosage level of 2510 was subsequently conducted. One mortality occurred at this dosage level. Lethargy with some depression was observed after dosing with some birds at this level continuing to display lethargy through day 10. One hen was noted in frank convulsions on Days 12 and 13, and exhibiting prostrate posture and loss of righting reflex on Day 14. Because of the severity of symptoms displayed by this bird the study was extended for two additional days. The hen was found dead on Day 15. All other birds at this dosage level appeared normal from Day 11 through termination of the study on Day 16.

A loss of body weight was observed for the first three days of the study, with subsequent compensatory body weight gain by surviving birds observed through Day 16. A reduction in feed consumption was observed for the first seven days of the study.

8. Reviewer's Conclusions: This study indicates Dibromodimethylhydantoin is practically non-toxic to bobwhite quail with an LD₅₀ >2510 mg/kg. This study does not fulfill the requirement for an avian acute oral LD₅₀.

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Material/Methods

Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

Statistical Analysis

Probit analysis.

Discussion/Results

The acute oral LD₅₀ value was >2510 mg/kg for bobwhite quail.

Reviewer's Evaluation

A. Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

B. Statistical Analysis

No statistics were performed due to lack of mortality.

C. Conclusions

1. Category: Supplemental
2. Rationale: % a.i. is unknown.
3. Repairability: This study can be upgraded to core.

1. Chemical: Dibromodimethylhydantoin
2. Formulation: Unknown
3. Citation: Fink, R. (1981) Eight-Day Oral Dietary LC₅₀ - Bobwhite Quail; Project #178-104; Prepared by Wildlife International LTD for Tabershaw Service, Inc., Rockville, Maryland 20852. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 13, 1984
6. Test Type: Eight-Day Dietary LC₅₀

A. Test Species: Bobwhite quail

7. Reported Results: There were no mortalities in the negative control group. All birds were normal in appearance and behavior throughout the test period.

Dibromodimethylhydantoin did not cause overt symptoms of toxicity or behavioral abnormalities at the concentration levels tested. There were no mortalities at any concentration level tested. There was, however, a slight reduction in feed consumption at both the 1780 ppm and 5620 ppm concentration levels, but no effect was noted in body weight gain at any concentration level tested.

8. Reviewer's Conclusions: This study indicates DBDMH is practically non-toxic to bobwhite quail with an LC₅₀ >5620 ppm. This study does not fulfill the requirement for an avian eight-day dietary study.

Material/Methods

Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

Statistical Analysis

Probit analysis.

Discussion/Results

The eight-day dietary LC₅₀ is >5620 ppm.

Reviewer's Evaluation

A. Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

B. Statistical Analysis

No statistics were performed due to lack of mortality.

C. Conclusions

1. Category: Supplemental
2. Rationale: % a.i. is unknown.
3. Repairability: This study can be upgraded to core.

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1. Chemical: Dibromodimethylhydantoin
2. Formulation: Unknown
3. Citation: Fink, R. (1981) Eight-Day Dietary LC₅₀ - Mallard Duck; Project #178-105; Prepared by Wildlife International LTD for Tabershaw Service, Inc., Rockville, Maryland 20852. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 16, 1984
6. Test Type: Eight-Day Dietary LC₅₀
 - A.. Test Species: Mallard duck
7. Reported Results: Controls - There were no mortalities in the negative control group during the course of the study. All birds were normal in appearance and behavior throughout the test period.

Experimental Material - There was one mortality at the 1780 ppm concentration level on Day 3. No mortalities occurred at any other concentration level and no overt symptoms of toxicity were observed at the 562 ppm through 3160 ppm concentration level.

At the 5620 ppm concentration level a few birds were noted exhibiting depression, reduced reaction to external stimuli (sound and movement), and loss of coordination on Day 4, while the remaining birds at this concentration level appeared lethargic. A few birds continued to appear lethargic on Day 5, but all birds were asymptomatic by Day 6 and remained so until termination of the study.
8. Reviewer's Conclusions: This study indicates DBDMH is practically non-toxic to mallard duck with an LC₅₀ >5620 ppm. This study does not fulfill the requirement for an avian eight-day dietary study.

Material/Methods

Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

Statistical Analysis

Probit analysis.

Discussion/Results

The eight-day dietary LC₅₀ was >5620 ppm.

Reviewer's Evaluation

A. Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

B. Statistical Analysis

No statistics were performed because there was only one mortality (1780 ppm concentration).

C. Conclusions

1. Category: Supplemental
2. Rationale: % a.i. is unknown.
3. Repairability: This study can be upgraded to core.

1. Chemical: Dibromodimethylhydantoin
2. Formulation: Unknown
3. Citation: Graney, R. L. (1981) The Acute Toxicity of Glybrom to Rainbow Trout (Salmo gairdneri); Project #371-4; Prepared by Biospherics Incorporated for Glyco Incorporated, Williamsport, Pennsylvania 17701. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 16, 1984
6. Test Type: 96-hour LC₅₀
 - A. Test Species: Rainbow Trout
7. Reported Results: The 96-hour LC₅₀ of 0.575 ppm (C.I. 0.50-.65 ppm) was calculated by the Litchfield and Wilcoxon Abbreviated Method.
8. Reviewer's Conclusions: This study indicates Dibromodimethylhydantoin is highly toxic to rainbow trout with an LC₅₀ of 0.575 ppm. This study does not fulfill the requirement for a coldwater fish study.

Material/Methods

Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % of active ingredient and toxic symptoms are unknown.

Statistical Analysis

Litchfield and Wilcoxon

Discussion/Results

An approximate 96-hour LC₅₀ value was 0.58 ppm.

Reviewer's Evaluation

A. Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % of active ingredient and toxic symptoms are unknown.

B. Statistical Analysis

The binomial test shows the 96-hour LC₅₀ to be 0.58 ppm.

C. Conclusions

1. Category: Supplemental
2. Rationale: See test procedure above.
3. Repairability: This study can be upgraded to core.

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LAIRD DIBROMODIMETHYLHYDANTOIN FOR RAINBOW TROUT 96-HOUR LC50

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1	10	10	100	.0976563
.75	10	10	100	.0976563
.56	10	4	40	37.6953
.38	10	0	0	.0976563
.15	10	0	0	.0976563
.08	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT .38 AND .75 CAN BE
USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT
CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL
ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .581134

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE
PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE
NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.

1. Chemical: Dibromodimethylhydantoin
2. Formulation: -Unknown
3. Citation: Graney, R. L. (1981) The Acute Toxicity of Glybrom to the Bluegill Sunfish (Lepomis macrochirus); Project #371-7; Prepared by Biospherics Incorporated for Glyco Incorporated, P.O. Box 3187, Williamsport, Pennsylvania 17701. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 17, 1984
6. Test Type: 96-hour LC₅₀
 - A. Test Species: Bluegill Sunfish
7. Reported Results: The 96-hour LC₅₀ with 95% confidence limits for Glybrom to the bluegill sunfish is 0.82 (0.74 to 0.90) ppm. The 96-hour no effect concentration was observed to be 0.18 ppm.
8. Reviewer's Conclusions: This study indicates Dibromodimethylhydantoin is highly toxic to bluegill sunfish with an LC₅₀ of 0.82 ppm. This study does not fulfill the requirement for a warmwater fish study.

Materials/Methods

Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % of active ingredient is unknown.

Statistical Analysis

Litchfield and Wilcoxon

Discussion

The reported 96-hour LC₅₀ was 0.82 ppm.

Reviewer's Evaluation

A. Test Procedure

The test procedure complied with the recommended EPA protocol of October 1982 (Part 158), except the % of active ingredient is unknown.

B. Statistical Analysis

The probit analysis shows the 96-hour LC₅₀ value to be 0.75 ppm instead of 0.82 ppm.

C. Conclusions

1. Category: Supplemental
2. Rationale: % a.i. is unknown.
3. Repairability: This study can be upgraded to core.

LAIRD DIBROMODIMETHYLDANTOIN 96-HOUR LC50 FOR BLUEGILL SUNFISH 006317

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROP. (PERCENT)
3.2	10	10	100	.0976563
1.8	10	10	100	.0976563
1.2	10	10	100	.0976563
.75	10	2	20	5.46875
.32	10	1	10	1.07422
.18	10	0	0	.0976563

THE BINOMIAL TEST SHOWS THAT .32 AND 1.2 CAN BE USED AS STATISTICALLY SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS, BECAUSE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS GREATER THAN 95 PERCENT.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .869577

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
4	.142256	.648512	.473975	.836116

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
8	.259527	1	.0869256

SLOPE = 5.4403
95 PERCENT CONFIDENCE LIMITS = 2.6688 AND 8.21179

LC50 = .748161
95 PERCENT CONFIDENCE LIMITS = .535712 AND .947451

LC10 = .437071
95 PERCENT CONFIDENCE LIMITS = .201363 AND .59018

1. Chemical: Dibromodimethylhydantoin
2. Formulation: Unknown
3. Citation: Graney, R. L. (1981) The Acute Toxicity of Glybrom.to Daphnia magna Strains; Project #371-7; Prepared by Biospherics Incorporated for Glyco Incorporated, P.O. Box 3187, Williamsport, Pennsylvania 17701. Acc #252094.
4. Reviewed by: Curtis E. Laird
Fishery Biologist
EEB/HED
5. Data Reviewed: January 17, 1984
6. Test Type: 48-hour LC₅₀
 - A. Test Species: Daphnia magna
7. Reported Results: The 48-hour LC₅₀ of 0.84 ppm (0.77-0.91) was calculated by the Litchfield and Wilcoxon Abbreviated Method.
8. Reviewer's Conclusions: This study indicates Dibromodimethylhydantoin is highly toxic to Daphnia magna with a reported LC₅₀ of 0.84 ppm. This study does not fulfill the guideline requirement for an aquatic invertebrate study.

Materials/Methods

Test Procedure

The test procedure generally followed the recommended EPA protocol of October 1982 (Part 158), except the % a.i. is unknown.

Statistical Analysis

Litchfield and Wilcoxon

Discussion

The reported 48-hour LC₅₀ was 0.84 ppm. There were no mortalities in the four lowest test concentrations, 25% mortality at the 0.75 ppm and 97.5% mortality at the 1.2 ppm concentration.

Reviewer's Evaluation

A. Test Procedure

The test procedure generally complied with the recommended EPA protocol of October 1982 (Part 158), except the % of a.i. is unknown.

B. Statistical Analysis

The statistics were verified with Stephan's computer program as 0.84 ppm.

C. Conclusions

1. Category: Supplemental
2. Rationale: % a.i. is unknown.
3. Repairability: This study can be upgraded to core.

LAIRD DIBROMODIMETHYLHYDANTOIN 48-HOUR LC50 FOR DAPHNIA MAGNA

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
1.2	40	39	97.5	0
.75	40	10	25	0
.32	40	0	0	0
.18	40	0	0	0
.075	40	0	0	0
.01	40	0	0	0

BECAUSE THE NUMBER OF ORGANISMS USED WAS SO LARGE, THE 95 PERCENT
 CONFIDENCE INTERVALS CALCULATED FROM THE BINOMIAL PROBABILITY ARE
 UNRELIABLE. USE THE INTERVALS CALCULATED BY THE OTHER TESTS.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS .863443

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD
 SPAN G LC50 95 PERCENT CONFIDENCE LIMITS
 2 .0279502 .798074 .724853 .88669

RESULTS CALCULATED USING THE PROBIT METHOD
 ITERATIONS G H GOODNESS OF FIT PROBABILITY
 9 .124436 1 1

SLOPE = 12.9064
 95 PERCENT CONFIDENCE LIMITS = 8.35361 AND 17.4592

LC50 = .845905
 95 PERCENT CONFIDENCE LIMITS = .789487 AND .912374

LC10 = .674405
 95 PERCENT CONFIDENCE LIMITS = .587616 AND .730556
