

MRID No. ⁰⁰⁰250-70704

DATA EVALUATION RECORD

1. **CHEMICAL:** Bayleton
Shaughnessey No.: 109901
2. **TEST MATERIAL:** Bayleton Technical; Batch No. 5030047; 93% active ingredient.
3. **STUDY TYPE:** Freshwater Fish Static Acute Toxicity Test.
Species Tested: Bluegill Sunfish (Lepomis macrochirus), Channel Catfish (Ictalurus punctatus), and Rainbow Trout (Salmo gairdneri)
4. **CITATION:** Lamb, D.W. and D.J. Roney. 1977. Acute Toxicity of BayletonTM Technical to Bluegill, Channel Catfish, and Rainbow Trout. Study No. 74-211. Submitted by Chemagro Agricultural Division, Mobay Chemical Corporation, Stilwell, KS. EPA MRID No. ~~250~~⁰⁰⁰-70704.

5. **REVIEWED BY:**

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

Signature: *Louis M. Rifici*
Date: *1/23/91*
Don Rifici 3-11-93

6. **APPROVED BY:**

Pim Kosalwat, Ph.D.
Senior Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: *P. Kosalwat*
Date: *1/23/91*

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

Signature: *Allen W. Vaughan* 7-5-91
Date: *Henry T. Craven* 4/13/93

7. **CONCLUSIONS:** This study is not scientifically sound. The study did not monitor water chemistry or temperature before or during the test and a solvent control was not used. Based on nominal concentrations, the 96-hour LC₅₀ values of Bayleton Technical to bluegill sunfish, channel catfish and rainbow trout were 11.0, 14.5 and 15.5 mg/L, respectively. These values classify Bayleton Technical as slightly toxic to the three species involved.

8. **RECOMMENDATIONS:** Repeat the study using currently recommended protocols.
9. **BACKGROUND:**
10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A
11. **MATERIALS AND METHODS:** Except for temperature, no distinctions in the test conditions between the three species were made. Therefore the materials and methods used in the three toxicity tests will be considered together with exceptions noted.
 - A. **Test Animals:** The fish were obtained from commercial hatcheries and acclimated for a minimum of 5 days. The fish were approximately 35 mm in length and weighed 0.5 to 1.0 g.
 - B. **Test System:** Aliquots of a stock solution were added to 15 liters of reconstituted bioassay water in 5 gal wide mouth glass jars. The recipe for the water was 30 mg CaSO_4 , 30 mg MgSO_4 , 48 mg NaHCO_3 , and 2 mg KCl per liter of deionized water followed by saturation with dissolved oxygen. The final pH was 7.6. Acetone was used as stock solution solvent.

A water bath was used to maintain desired temperature at 18°C for bluegill and channel catfish and 12°C for rainbow trout. The loading factor was less than one gram of fish per liter of water. The fish were not fed during the test.
 - C. **Dosage:** Ninety-six-hour static test. Five or six nominal concentrations (five for bluegill and channel catfish, six for rainbow trout; Table II, attached) and dilution water control jars were selected for the test.
 - D. **Design:** Ten fish were introduced into each of the test containers. The presence of mortality was observed daily.
 - E. **Statistics:** The 96-hour median lethal concentration (LC_{50}) and associated 95% confidence interval (C.I.) for each species was calculated using the method of Weil (1952).
12. **REPORTED RESULTS:** The 96-hour LC_{50} values for Bayleton Technical based on nominal concentrations were 11, 15, and

14 mg/L for bluegill sunfish, channel catfish, and rainbow trout, respectively (Table II, attached).

No data of environmental conditions during the test were provided.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

No conclusions were made by the author.

No statements were made regarding quality assurance and good laboratory practice.

As a quality assurance measure, a reference chemical, p,p'DDT, was tested concurrently under the same experimental conditions.

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

- A. Test Procedure: The test procedures were generally in accordance with protocols recommended by the guidelines, but deviated from the SEP as follows:

A solvent control was not utilized during the test. If a solvent other than water is used as a carrier for the test material, the highest concentration of the solvent that was added to any of the study chambers should be tested as the control.

Basic water chemistry of the dilution water and test solutions was not provided. Without this information, environmental stresses on the test organisms, such as D.O. below 40% saturation and extremes of pH, have not been monitored and cannot be assumed to not have occurred. This point alone invalidates the study.

The temperature was not monitored during the study, therefore it cannot be assumed the temperature maintenance system maintained set temperatures.

Full descriptions of the test system and methodology were not included in the report. There was no information on the age, length range, year class, acclimation to dilution water, and pretest mortality of the fish used in the toxicity test. No information on test parameters like average temperature, and test solution and vessel depth was provided.

No photoperiod was given.

Loading was listed as less than 1 g/L in the report. For static tests, the recommended loading is 0.5 g/L for warm water and 0.8 g/L for cold water (at or below 17°C).

No toxic symptoms other than mortality were monitored during the test. Therefore, a no-observed-effects concentration could not be estimated.

The fish acclimation period (reported as being greater than 5 days) was less than the recommended two weeks.

- B. Statistical Analysis: The reviewer used EPA's Toxanal program to calculate the LC₅₀ values and obtained comparable results (see attached printouts).
- C. Discussion/Results: It is the opinion of the reviewer that variable water quality can affect the toxicity of chemicals. Monitoring water chemistry is an essential part of every aquatic toxicity test for this reason. No good information can be gleaned from this study report if statements of the toxicity of the chemical are not qualified with the experimental conditions.

The study is not scientifically sound because no water quality measurements (D.O., pH, hardness, etc.) were done and the potential toxicity of the solvent was not controlled for. The 96-hour LC₅₀ values of 11, 14.5, and 15.5 mg/L (based on nominal concentrations) for bluegill sunfish, channel catfish and rainbow trout, respectively, classify Bayleton Technical as slightly toxic to these fish species.

D. Adequacy of the Study:

(1) Classification: Invalid

(2) Rationale: a) No water quality measurements were done before or during the test. b) A solvent control was not used. c) The materials and methods were not fully described. d) The temperature was not monitored during the study.

(3) Repairability: No.

15. COMPLETION OF ONE-LINER FOR STUDY: Yes, 01-15-91.

RIN 5710-93

TRIADMEFON EFB REVIEW

Page 5 is not included in this copy.

Pages _____ through _____ are not included.

The material not included contains the following type of information:

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LOUIS M. RIFICI BAYLETON LEPOMIS MACROCHIRUS 1-14-91

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
21.8	10	10	100	9.765625E-02
14.8	10	10	100	9.765625E-02
10.1	10	3	30	17.1875
6.9	10	0	0	9.765625E-02
4.7	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 6.9 AND 14.8 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 11.02051

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.

LOUIS M. RIFICI BAYLETON ICTALURUS PUNCTATUS 1-14-91

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
28.9	10	10	100	9.765625E-02
20.6	10	10	100	9.765625E-02
14.7	10	3	30	17.1875
10.5	10	2	20	5.46875
7.5	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 7.5 AND 20.6 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 15.8771

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS
4	.1144044	14.11419	11.94995 16.49347

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
5	.2381646	1	.2502291

SLOPE = 9.261601

95 PERCENT CONFIDENCE LIMITS = 4.741744 AND 13.78146

LC50 = 14.4903

95 PERCENT CONFIDENCE LIMITS = 12.4361 AND 16.88742

LC10 = 10.56701

95 PERCENT CONFIDENCE LIMITS = 7.43138 AND 12.33649

LOUIS M. RIFICI BAYLETON SALMO GAIRDNERI 1-14-91

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
21.8	10	10	100	9.765625E-02
14.8	10	4	40	37.69531
10.1	10	0	0	9.765625E-02
6.9	10	1	10	1.074219
4.7	10	0	0	9.765625E-02
3.2	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 10.1 AND 21.8 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 15.54496

THE MOVING AVERAGE METHOD CANNOT BE USED WITH THIS DATA SET
BECAUSE NO SPAN WHICH PRODUCES MOVING AVERAGE ANGLES THAT
BRACKET 45 DEGREES ALSO USES TWO PERCENT DEAD BETWEEN 0 AND
100 PERCENT.

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H	GOODNESS OF FIT PROBABILITY
7	1.306713	2.522831	3.891707E-02

SINCE THE PROBABILITY IS LESS THAN 0.05, RESULTS CALCULATED
USING THE PROBIT METHOD PROBABLY SHOULD NOT BE USED.

SLOPE = 6.996921
95 PERCENT CONFIDENCE LIMITS = -1.001367 AND 14.99521

LC50 = 14.54526
95 PERCENT CONFIDENCE LIMITS = 0 AND +INFINITY

LC10 = 9.576634
95 PERCENT CONFIDENCE LIMITS = 0 AND 13.95505

Amphibian No. 109901

Chemical Name BAYLETON
(Technical)

Chemical Class _____

Page 1 of 3

Study/Species/Lab/
Accession _____

Chemical
X a.i.

Results

Reviewer/
Date _____

Validation
Status _____

1-Day Single Dose Oral LD₅₀

LD₅₀ = mg/kg (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Age(Days) = _____

ab _____ 14-Day Dose Level mg/kg/(X Mortality) _____

cc. _____ Comments: _____

1-Day Single Dose Oral LD₅₀

LD₅₀ = mg/kg. (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Age(Days) = _____

ab _____ 14-Day Dose Level mg/kg/(X Mortality) _____

cc. _____ Comments: _____

1-Day Dietary LC₅₀

LC₅₀ = ppm (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Age(Days) = _____

ab _____ 8-Day Dose Level ppm/(X Mortality) _____

cc. _____ Comments: _____

1-Day Dietary LC₅₀

LC₅₀ = ppm (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Age(Days) = _____

ab _____ 8-Day Dose Level ppm/(X Mortality) _____

cc. _____ Comments: _____

3-Hour LC₅₀

LC₅₀ = pp (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Sol. Contr. Mort.(X) = _____

ab _____ 48-Hour Dose Level pp/(X Mortality) _____

cc. _____ Comments: _____

5-Hour LC₅₀

LC₅₀ = 11.0 $\frac{\%}{ppm}$ (95% C.L. binomial) Contr. Mort.(X) = 0

Species Lepomis macrochirus 9307. Slope = N/A # Animals/Level = 10 Sol. Contr. Mort.(X) = N/A

ab Chemagro Agricult. Div. 96-Hour Dose Level $\frac{\%}{ppm}$ /(X Mortality) _____

Mobay Chemical Corp. 4.7 (0), 6.9 (0), 10.1 (30), 14.8 (100), 21.8 (100)

cc. RID No. 250-70704 Comments: Nominal concentrations

5-Hour LC₅₀

LC₅₀ = pp (95% C.L.) Contr. Mort.(X) = _____

Species _____ Slope = # Animals/Level = Sol. Contr. Mort.(X) = _____

ab _____ 96-Hour Dose Level pp/(X Mortality) _____

cc. _____ Comments: _____

Amphibian No. 109901

Chemical Name Bayleton (Technical)

Chemical Class

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Study/Species/Lab/
Accession
14-Day Single Dose Oral LD₅₀

Chemical
& a.i.

Results

Reviewer/
Date
Validation
Status

Species

LD₅₀ = mg/kg (95% C.L.) Contr. Mort.(%) =

Slope = # Animals/Level = Age(Days) =

Sex =

14-Day Dose Level mg/kg/(% Mortality)

() , () , () , () , () , ()

Comments:

14-Day Single Dose Oral LD₅₀

LD₅₀ = mg/kg. (95% C.L.) Contr. Mort.(%) =

Slope = # Animals/Level = Age(Days) =

Sex =

14-Day Dose Level mg/kg/(% Mortality)

() , () , () , () , () , ()

Comments:

8-Day Dietary LC₅₀

LC₅₀ = ppm (95% C.L.) Contr. Mort.(%) =

Slope = # Animals/Level = Age(Days) =

Sex =

8-Day Dose Level ppm/(% Mortality)

() , () , () , () , () , ()

Comments:

8-Day Dietary LC₅₀

LC₅₀ = ppm (95% C.L.) Contr. Mort.(%) =

Slope = # Animals/Level = Age(Days) =

Sex =

8-Day Dose Level ppm/(% Mortality)

() , () , () , () , () , ()

Comments:

3-Hour LC₅₀

LC₅₀ = / PP (95% C.L.) Contr. Mort.(%) =

Sol. Contr. Mort.(%) =

Slope = # Animals/Level =

Temperature =

48-Hour Dose Level pp/(% Mortality)

() , () , () , () , () , ()

Comments:

96-Hour LC₅₀

LC₅₀ = 14.5 ppm (95% C.L.) Contr. Mort.(%) = 0

Sol. Contr. Mort.(%) = N/A

Slope = 9.3 # Animals/Level = 10

Temp. = 18°C

96-Hour Dose Level ppm/(% Mortality)

7.5 (0) , 10.5 (20) , 14.7 (30) , 20.6 (100) , 28.9 (100)

Comments: nominal concentrations

Species *Catalurus punctatus* 93%

ab Chemagro Agricult. Div.
Moberly Chemical Corp.

300
IRIP No. 250-70704

96-Hour LC₅₀

LC₅₀ = PP (95% C.L.) Contr. Mort.(%) =

Sol. Contr. Mort.(%) =

Slope = # Animals/Level =

Temp. =

96-Hour Dose Level pp/(% Mortality)

() , () , () , () , () , ()

Comments:

Investigation No. 109901 Chemical Name Bayleton Chemical Class _____ Page 3 of 3
(Technical)
Study/Species/Lab/ Chemical Reviewer/ Validation
Accession # a.i. Date Status
1-Day Single Dose Oral LD50 Results
LD50 = mg/kg (95% C.L.) Contr. Mort.(X)=
Slope= # Animals/Level= Age(Days)=
Sex =
14-Day Dose Level mg/kg/(X Mortality)
() , () , () , () , ()
Comments:
2-Day Single Dose Oral LD50
LD50 = mg/kg. (95% C.L.) Contr. Mort.(X)=
Slope= # Animals/Level= Age(Days)=
Sex =
14-Day Dose Level mg/kg/(X Mortality)
() , () , () , () , ()
Comments:
3-Day Dietary LC50
LC50 = ppm (95% C.L.) Contr. Mort.(X)=
Slope= # Animals/Level= Age(Days)=
Sex =
8-Day Dose Level ppm/(X Mortality)
() , () , () , () , ()
Comments:
4-Day Dietary LC50
LC50 = ppm (95% C.L.) Contr. Mort.(X)=
Slope= # Animals/Level= Age(Days)=
Sex =
8-Day Dose Level ppm/(X Mortality)
() , () , () , () , ()
Comments:
48-Hour LC50
LC50 = pp (95% C.L.) Contr. Mort.(X)=
Sol. Contr. Mort.(X)=
Slope= # Animals/Level= Temperature =
48-Hour Dose Level pp/(X Mortality)
() , () , () , () , ()
Comments:
96-Hour LC50
LC50 = 15.5 * 95% C.L. binomial
ppm (10.1 - 21.8) Con. Mort.(X)=0
Slope= N/A # Animals/Level=10 Sol. Con. Mort.(X)=N/A
Temp.= 12°C LR 1/15/91 INVALED
96-Hour Dose Level ppm/(X Mortality)
3.2 (0), 4.7 (0), 6.9 (10), 10.1 (0), 14.9 (40), 21.8 (100)
Comments: nominal concentrations
96-Hour LC50
LC50 = pp (95% C.L.) Con. Mort.(X)=
Sol. Con. Mort.(X)=
Slope= # Animals/Level= Temp.=
96-Hour Dose Level pp/(X Mortality)
() , () , () , () , ()
Comments:

Species Salmo gairdneri
Chemagro Agricult. Div. 93%
Mobay Chemical Corp.
RID No. 250-0070704