

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD

1. **CHEMICAL:** BAS 514 H Quinchlorac.
Shaughnessy Number: Not available.
2. **TEST MATERIAL:** BAS 514 H; Lot No. 150-732N; 96.5% Active Ingredient (A.I.); a gray powder.
3. **STUDY TYPE:** Estuarine fish toxicity test.
Species Tested: Sheepshead minnow (Cyprinodon variegatus).
4. **CITATION:** Surprenant, D.C. 1986. Acute Toxicity of BAS 514 H to Sheepshead minnow (Cyprinodon variegatus). Prepared by Springborn Bionomics, Inc., Wareham, Massachusetts. Report No. BW-85-12-1893. Study No. 986-0385-6102-500. Submitted by BASF Corporation Chemicals Division, Parsippany, New Jersey. MRID No. 410635-49 and 410635-50.

5. **REVIEWED BY:**

Kimberly D. Rhodes
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature:

Date:

6. **APPROVED BY:**

Michael L. Whitten, M.S.
Staff Toxicologist
KBN Engineering and
Applied Sciences, Inc.

Signature:

Date:

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

Signature:

Date:

Henry T. Craven
7/12/90
David Balthoff 7-12-90

7. **CONCLUSIONS:** This study appears scientifically sound and fulfills the Guideline requirements for a 96-hour static acute toxicity study for estuarine fish. The 96-hour LC50, based upon nominal concentration, of BAS 514 H to sheepshead minnows (Cyprinodon variegatus) was determined to be greater than 94.4 mg/L measured concentration. Therefore, BAS 514 H is considered practically non-toxic to sheepshead minnows. The NOEC was determined to be 94.4 mg/L measured concentration.

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No. 410635-49 and 410635-50.

5. REVIEWED BY:

Kimberly D. Rhodes
Associate Scientist
KBN Engineering and
Applied Sciences, Inc.

Signature: *Kimberly D. Rhodes*
Date: *August 30, 1989*

6. APPROVED BY:

Michael L. Whitten, M.S.
Staff Toxicologist
KBN Engineering and
Applied Sciences, Inc.

Signature: *Michael L. Whitten*
Date: *8-30-89*

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

Signature: *Henry T. Craven*
Date: *7/12/90*

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fulfills the Guideline requirements for a 96-hour static acute
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nominal concentration, of BAS 514 H to sheepshead minnows
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mg/L. Therefore, BAS 514 H is considered practically non-toxic
to sheepshead minnows. The NOEC was determined to be 100 mg/L
nominal concentration.

5.5 HRS

2

8. RECOMMENDATIONS: N/A.

9. BACKGROUND:

10. DISCUSSION OF INDIVIDUAL TESTS: N/A

11. MATERIALS AND METHODS:

- A. Test Animals: Sheepshead minnow (Cyprinodon variegatus) used in this test were obtained from a commercial fish supplier in Massachusetts and held in a 500-L fiberglass tank containing seawater for a minimum of 14 days. The temperature in the holding tank was 20°C during this 14-day period. The fish were fed a dry commercial pelleted food, ad libitum, daily except during the 48 hours prior to testing. Fish were not fed during the exposure period. There was no mortality of the test fish population during this 48-hour period. The sheepshead minnow used for this experiment had a mean wet weight of 0.71 gram (g) with a range of 0.26 to 1.08 g and a mean total length of 33 millimeters (mm) with a range of 25 to 38 mm. The resulting test organism loading concentration was 0.47 gram of biomass per liter of test solution.
- B. Test System: The toxicity test was conducted in 19.6-L glass jars which contained 15 L of test solution. The test solution depth was 27.5 cm with a surface area of 545 cm². The dilution water used was natural seawater collected from the Cape Cod Canal, Bourne, Massachusetts. The dilution water had a salinity of 32 ‰, a pH of 7.6 and a specific conductivity of 34,000 umhos/cm. All test solution temperatures were controlled by a system designed to maintain temperatures at 22 ± 1°C. Test solutions were not aerated. A photoperiod of 16-hour light and 8-hour darkness was provided each day.
- C. Dosage: 96-hour static acute test.
- D. Design: The test was initiated when 10 sheepshead minnows were impartially distributed to the control and one treatment concentration (100 mg/L) within 15 minutes after mixing for 24 hours. The control and the BAS 514 H treatment concentration were maintained in triplicate. All concentrations were observed at 0, 24, 48, 72, and 96 hours for mortality and abnormal effects. Analytical determination of BAS 514 H was determined at 0, 48 and 96 hours of exposure. Dissolved oxygen concentrations and pH were measured in each replicate vessel of the control and

the BAS 514 H treatment level, and temperature was measured in one control jar.

E. Statistics: Due to the lack of mortality, the concentration of test substance lethal to 50 percent of the test population (LC50) was empirically estimated to be greater than the highest concentration tested.

12. REPORTED RESULTS: The mean measured concentration of BAS 514 H was 94.4 mg/L. The mean measured concentration was 94% of the nominal test concentration. The nominal test concentration, the corresponding cumulative mortalities and the observations made during the 96-hour test are presented in Table 1 (attached). During this test, no mortalities or apparent adverse effects were observed among the sheepshead minnows exposed to 100 mg/L of BAS 514 H. The 96-hour LC50 for sheepshead minnow exposed to BAS 514 H was empirically estimated to be > 100 mg/L. Based on criteria established by the U.S. EPA (1985), BAS 514 is considered practically non-toxic. The no observed effect concentration (NOEC), defined as the highest concentration tested at and below which there were no toxicant related mortalities or physical and behavioral abnormalities (e.g. lethargy), was determined to be 100 mg/L. During the 96-hour test, the temperature in all test vessels remained at 22°C, the pH ranged from 7.5 to 7.6 and the dissolved oxygen concentration ranged from 4.8 to 9.8 (67% to 136% of saturation at 22°C). The water quality parameters remained acceptable for survival of the sheepshead minnows throughout the 96-hour exposure.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:
No conclusions were made by the author.

A GLP compliance statement was included in the report and the study was audited by a QA unit. A statement of quality assurance was included in the report, indicating that the study was conducted in accordance with U.S. EPA Good Laboratory Practice Standards: Pesticide Programs (40 CFR 160).

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:

o The SEP states that individual fish should weigh between 0.5 and 5 grams. The fish used in this study weighed between 0.26 and 1.08 grams.

- o In the analysis of BAS 514 H concentrations used for Estuarian Species Acute Toxicity Studies for Sheepshead Minnow (report M-864), an error was made under sample history. On page 4 of the report, the date given for when the concentrations of BAS 514 H in water samples used in the acute toxicity study were received for analysis was November, 1985. Since the acute study was not conducted until January, 1986 the concentrations of BAS 514 H in water samples could not have been taken from test vessels from the definitive test. However, this discrepancy was addressed through correspondence with BASF (letter dated February 2, 1990) and Springborn Laboratories, Inc. (letter dated March 6, 1990).
 - o In the letter from Springborn indicated above, the analytical results of BAS 514 H concentrations in the definitive test varied from 1.17 to 113.0 ppm at the 100 ppm nominal concentration level for the 96-hour sample interval. No explanation was provided for this variance.
 - o The SEP states that individual fish should weigh between 0.5 and 5 grams. The fish used in this study weighed between 0.26 and 1.08 grams.
 - o The SEP states that natural or reconstituted seawater of 10 to 17 ‰ salinity should be used when testing euryhaline fish species. The natural seawater used during the toxicity study had a salinity of 32 ‰.
 - o The SEP states that temperature should be measured continuously (hourly) in at least one test vessel during the entire study period. If the temperature is controlled by a water bath, measurements can be recorded every six hours. The report did not mention how the temperature was regulated and the temperature was only measured every 24 hours.
 - o The SEP recommends a 16-hour light and an 8-hour dark photoperiod with a 15- to 30-minute transition period between light and dark. The report did not state whether a 15- to 30-minute transition period between light and dark was maintained.
- B. **Statistical Analysis:** Due to the lack of mortality, the concentration of test substance lethal to 50 percent of the test population (LC50) was estimated to be greater than the highest nominal concentration.
- C. **Discussion/Results:** This study appears to be scientifically valid. The 96-hour LC50 value based upon nominal

concentration was determined to be greater than 100 mg/L. Therefore, BAS 514 H is considered practically non-toxic to sheepshead minnow (Cyprinodon variegatus). The NOEC was determined to be 100 mg/L nominal concentration.

D. Adequacy of the Study:

(1) Classification: Core.

(2) Rationale: N/A

(3) Repairability: N/A

15. COMPLETION OF ONE-LINER: Yes, 08-25-89.

Page 7 is not included in this copy.

Pages _____ through _____ are not included.

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.
 - A draft product label.
 - The product confidential statement of formula.
 - Information about a pending registration action.
 - FIFRA registration data.
 - The document is a duplicate of page(s) _____.
 - The document is not responsive to the request.
-

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

February 2, 1990

Agricultural Chemicals

Mr. Dan Balluff
 U.S. Environmental Protection Agency
 Environmental Fate and Effects Division
 H 7507 C
 401 M Street, S.W.
 Washington, D.C. 20460

Dear Mr. Balluff:

In response to our phone conversation of 2/1/90, I have provided you with the following information which you requested:

Report No.

- M8801 Water Solubility (25°C): 890 ppm (pH 5), 6,500 ppm (pH 7), 20,000 ppm (pH 9)
- M8806 Aqueous Photolysis half-life (25°C): 100 days (nonsensitized), 45 day (sensitized, 0.5% acetone)
- M8707 Hydrolysis half life (25°C): no degradation (pH 5, 7 or 9; dark, 30 days)

In report M-864, page 4, an error was made under sample history. Samples were received from the crab study on February 17, 1986 and from the minnow study on January 20, 1986 (see Attachments I and II).

In report A8924, the sample history is as follows:

<u>Species Tested</u>	<u>Inlife Project #</u>	<u>Dates of Inlife Study</u>	<u>Page Inlife Report</u>	<u>Analysis Completion Date*</u>
Rainbow Trout	BAS 020	Mar. 17-21, 1989	9	Mar. 29, 1989
Bluegill Sunfish	BAS 010	Mar. 7-11, 1989	9	Mar. 29, 1989
<u>Daphnia magna</u>	BAS 030	Mar. 7-9, 1989	9	Mar. 29, 1989

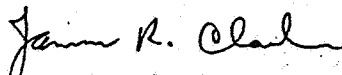
* Sign off date for report. Analysis started 3/15/89; ended 3/29/89; see raw data in report.

9
 41063549.5

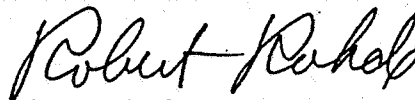
Mr. Dan Balluff
February 2, 1990
Page 2

If I can be of further assistance, please do not hesitate to call me
at (919) 248-6665.

Sincerely,



James R. Clark, Ph.D.
Environmental Studies Coordinator



Robert Rhode
Senior Registration Specialist

JRC/les
3.20

cc: N. Cargile

Page _____ is not included in this copy.

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