Data Evaluation Record

1. Chemical: Triforine Technical

2. Citation: F. E. Reno. Acute oral LD_{50} of triforine technical to bobwhite quail. Hazleton America, Inc.
Submission date: January 8, 1979
Registration No. 21137-4

3. Reviewed by: Curtis E. Laird
Aquatic Biologist
EEB/HED

4. Date Reviewed: September 10, 1979

5. Test

A. Test species:

Bobwhite Quail (16 weeks-of-age)

B. Test Material

Triforine Technical 99.2% a.i.

C. Report Results:

The acute oral LD_{50} was greater than 5,000 mg/kg of triforine technical.

6. Reviewers' Conclusion:

The study showed the acute oral LD_{50} of triforine technical to be greater than 5,000 mg/kg which is ~~partially~~ practically non-toxic to bobwhite quail.
This study can be validated as Core, if the food consumption data are submitted and meet requirement.

101901

Data Evaluation Record

1. Chemical: Triforine

2. Formulation: Technical

3. Citation: LeBlanc, Gerald (1978) Acute toxicity of Triforine technical to the water flea (Daphnia magna). Received 6/8/78 under 21137-4 (unpublished report prepared by EG & G Bionomics. Report #BW-78-5-153 for EM Laboratories, Inc.

4. Reveiwed by: H.T. Craven
Aquatic Biologist
ES/EEB/RD

5. Date Reviewed: November 7, 1978

6. Test Type: Aquatic Invertebrate Acute (LC_{50})
   A. Test ID: ES.H.1
   B. Test Species: Daphnia magna
   C. Test Material: Tech Triforine
   D. Report Results: The estimated LC_{50} values after 24 and 48-hours of exposure were .28 mg/l.

Materials and Methods

A. Test Conditions

Protocol followed that recommended by U.S. EPA (1975) except where stated otherwise such as:
total hardness (170 mg/l); pH 8; temperature 22 ± 1°C. Five concentrations of triforine technical (3 replicates of 5 daphnia each) were tested - 3.6, 6.0, 10, 17 and 28 ppm. In addition a negative control and a solvent control (DSMO) were also conducted.

B. Statistical analysis: No method of analysis was conducted.

C. Discussion/Results

The triforine technical was soluble in the diluent water at concentrations as high as 17 mg/l. At the triforine technical concentration of 28mg/l, a white powder was visible on the bottom of the test solutions and an oil-like film was detected on the surface of the solutions. Organisms exposed to 28 mg/l triforine technical tended to collect the powder on their antennae and anterior portion of their bodies. Four of 15 organisms died and 3 were lethargic at the termination of the exposure. Although slight mortalities (2/15 at 6 ppm and 1/15 at 10 ppm) occurred among daphnids exposed to the soluble concentrations of triforine technical, these mortalities did not appear to be related to toxic properties of this material. The estimated LC_{50} values after 24 and 48-hours of exposure were >28 mg/l

Reviewer's Evaluation

A. Test Procedure

The test complies with the recommended EPA protocol (1975). The variation in temperature and water hardness complies with recently recommended ASTM protocols (Personal communication J. McCann)

B. Statistical Analysis

The Ecological Effects Branch did not perform a method of statistical analysis.

C. Discussion

Personal communication with Gerald A. LeBlanc of Bionomics presented some information not included in the written report. Mortality at dosage levels below 28 ppm was apparently due to entrappment by surface tension in the treated beakers. No entrappment occurred in the control beakers.

D. Validation

1. Category: Core
2. Rationale: no toxicity at levels of solubility preclude the need for determining the LC_{50}.

E. Conclusions

Triforine is no more than slightly toxic to aquatic invertebrate. The study is scientifically sound and is acceptable to meet the requirement for an aquatic invertebrate LC_{50}.

	Chevron	EM Lab
Avian Acute Oral LD_{50}	~~Core~~	
not validated	O Fredericks (4/14/76) Bobwhite Q	O Hitch (8/23/77) Jap Q
	O Invalid (3/14/78) Jap Q	
Mallard Dietary LC_{50} not validated	O Fredericks (3/20/76)	✓ Hitch (8/23/77)
Bobwhite Dietary LC_{50} not validated	O Fredericks (3/20/76)	✓ Hitch (8/23/77)
Aq Invert 48-hr LC_{50}	O Invalid Urban (3/14/78) Biodynamics	O Suppl and Butoni (8/23/77) Hitch
		✓ Biodynamics 2 (11/20/78) Craven
Bluegill 96-hr LC_{50} not validated	O Fredericks (3/20/76)	~~Core~~ Suppl (8/23/77) Hitch
Rainbow trout 96-hr LC_{50} not validated	O Fredericks (3/20/76)	~~Core~~ Suppl (8/23/77) Hitch

EPA Hq Form 8510-14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: February 12, 1979

SUBJECT: Toxicity Data on Triforine

FROM: John A. McGann JAM
Laboratory Supervisor

TO: Jim Akerman, Head, Section #1
Ecological Effects Branch

Thru: Warren Bonnyman, Acting Branch Chief
Chemical and Biological Investigations Branch

The attached tests indicate 18.2% triforine was toxic to bluegill at a concentration of 24.3 ppm (96 hr LC50). Earlier tests indicated this same chemical was toxic to rainbow trout. (96 hr LC50 - 21.4 ppm)

Technical triforine was not toxic to bluegill or rainbow trout. Exposure of trout to 180 and 100 ppm technical triforine and bluegill to 100 ppm produced no known mortality in each group of fish studies.

At these concentrations technical triforine is not toxic to fish. A large percent of the toxicant appeared to be either floating on the surface or on the bottom of the jar.

Acetone was used to make the stock solution of triforine. Triforine solubility limits were obviously exceeded when the higher levels of triforine was placed in the test jars containing water.

If any further testing on this chemical is needed, please let us know so a larger sample of toxicant can be obtained.

EPA FORM 1320-6 (REV. 3-76)

5

107901

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

BIOLOGICAL REPORT OF ANALYSIS

1. SAMPLE NO. MB 521
2. DATE COLLECTED N/A
3. REGION N/A

SAMPLE IDENTIFICATION

4. LOT OR CODE NO(S). N/A
5. EPA REGISTRATION NO. N/A
6. ESTABLISHMENT NO. N/A
7. PRODUCT NAME Triforine EC
8. PRODUCER NAME AND ADDRESS *(Include ZIP code)*
Chevron Chemical Company
San Francisco, California
9. DEALER NAME AND ADDRESS *(Include ZIP code)*
N/A

10. PHYSICAL FORM		EMULS. CONC.		PRESS. SPRAY		DUST		GRANULAR
		WET. POWDER		AEROSOL		BAIT	x	OTHER liquid

11. INGREDIENTS

Triforine (N,N' (1,4-piperazinediylbus 2,2,2-trichloroethylidene bus) 18.2%

TEST

12. TYPE OF TEST
Static jar
Test #2378

13. TEST ORGANISM(S)
Rainbow trout (Salmo gairdneri)
Average weight: 1.4 grams
Source: Wytheville National Fish Hatchery

14. METHOD NO. TSD 1.206
15. DURATION 96 hr
16. CONCENTRATION 5.4 - 500 ppm
17. DILUENT

18. SUMMARY

All results based on total formulation.
24 hour LC10 32.3 ppm (95% confidence interval 27.9 to 37.3 ppm)
24 hour LC50 38.9 ppm (95% confidence interval 34.2 to 44.2 ppm)
48 hour LC50 30.6 ppm (95% confidence interval 26.6 to 35.2 ppm)
96 hour LC10 14.2 ppm (95% confidence interval 11.7 to 17.3 ppm)
96 hour LC50 21.4 ppm (95% confidence interval 18.2 to 25.2 ppm)

19. RESULTS

Time	Slope	Chi^2	Concentrations in ppm (Percent mortality given below) 500	300	180	108	65	40	24	15	9	5.4	C
24 hr	1.159	0.106	100	100	100	100	100	40	0	0	0	0	0
48 hr	1.253	0.321	100	100	100	100	100	70	20	0	0	0	0
96 hr	1.380	0.513	100	100	100	100	100	90	70	30	0	0	0

It took the concentrations above 180 ppm less than 1 hour to cause 100% mortality, 108 ppm caused total mortality in 5 hours.

20. TESTER'S INITS.	21. SIGNATURE OF LAB SUPERVISOR	22. LABORATORY	23. DATE
	John A. McLaren	Animal Biology	1/25/79

EPA Hq Form 8510-14 (10-76)

REGIONAL OFFICE COPY

6

Triforine

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.