

file

DP Barcode : D200692
PC Code No : 083301
EEB Out : DEC 27 1994

To: Kathryn Davis
Product Manager 52
Special Review and Reregistration Division (7508W)

From: Anthony F. Maciorowski, Chief
Ecological Effects Branch/EFED (7507C)

Attached, please find the EEB review of...

Reg./File # : 083301
Chemical Name : Triazine
Type Product : herbicide
Product Name : GROTAN
Company Name : Triazine Joint Venture
Purpose : Review avian studies

Action Code : 627 Date Due : 2/15/95
Reviewer : Dana Lateulere

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)	431543-01	Y	72-2 (A)			72-7 (A)		
71-1 (B)			72-2 (B)			72-7 (B)		
71-2 (A)	431543-02	Y	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)
N=Unacceptable (Study was rejected)/Nonconcur



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

DEC 27 1994

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Subject: GROGAN Avian studies, DP# D200692
Shaugnessy #083301

To: Kathryn Davis
PM 52
Special Review and Reregistration Division, 7508W

From: Anthony F. Maciorowski, Chief *A. F. Maciorowski*
Ecological Effects Branch
Environmental Fate and Effects Division, 7507C

EEB has reviewed the avian studies submitted by the Triazine Joint Venture as part of the reregistration requirements for GROGAN (triazine). The following is a summary of those reviews:

1) Campbell, S. M. and Joann B. Beavers, 1994. "TRIAZINE: An Acute Oral Toxicity Study with the Northern Bobwhite Quail", Wildlife International, LTD. 8598 Commerce Drive, Easton MD 21601. Submitted by the Triazine Joint Venture, c/o Buckman Laboratories International, Inc. 1256 N. McLean Boulevard, Memphis TN 38108. USEPA MRID No. 431543-01.

This study is scientifically sound and fulfills the guideline requirement 71-1(a). The acute oral LD50 for Triazine to bobwhite quail was determined to be 1520.1 mg a.i./kg. The corresponding 95% confidence interval was determined to be 1154 to 2043 mg a.i./kg. The NOEC was determined to be 250 mg/kg based on signs of toxicity at the 500 mg/kg dosage level.

2) Campbell, S. M. and Joann B. Beavers, 1994. "Triazine: A Dietary LC50 Study with the Northern Bobwhite Quail", Wildlife International, LTD. 8598 Commerce Drive, Easton MD 21601. Submitted by the Triazine Joint Venture, c/o Buckman Laboratories International, Inc. 1256 N. McLean Boulevard, Memphis TN 38108. USEPA MRID No. 431543-02.

This study is scientifically sound and fulfills the guideline requirement 71-2(a). The dietary LC50 for bobwhite quail exposed to Triazine was determined to be greater than 5620 ppm a.i., the highest concentration tested. The no mortality and no observed effect dosage was determined to be 5620 ppm a.i.

Questions regarding this review, please contact Dana Lateulere of my staff at 703-308-2856.



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DATA EVALUATION RECORD

1. **CHEMICAL:** Triazine
Shaughnessy No. 083301
2. **TEST MATERIAL:** Triazine, 83.8%.
3. **STUDY TYPE:** Avian Acute LD50 Test, Bobwhite Quail (Colinus virginianus).
4. **CITATION:** Campbell, S. M. and Joann B. Beavers, 1994.
"TRIAZINE: An Acute Oral Toxicity Study with the Northern Bobwhite Quail", Wildlife International, LTD. 8598 Commerce Drive, Easton MD 21601. Submitted by the Triazine Joint Venture, c/o Buckman Laboratories International, Inc. 1256 N. McLean Boulevard, Memphis TN 38108. USEPA MRID No. 431543-01.
5. **REVIEWED BY:**
Dana Lateulere, Biologist
Ecological Effects Branch
Environmental Fate and
Effects Division

Signature: *Dana Lateulere*
Date: 6/28/94
6. **APPROVED BY:**
for Ann Stavola, Section Head, 5
Ecological Effects Branch
Environmental Fate and
Effects Division

Signature: *Allie U. Vaughan*
Date: 12.19.94
7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirement 71-1(a). The acute oral LD50 for Triazine to bobwhite quail was determined to be 1520.1 mg a.i./kg. The corresponding 95% confidence interval was determined to be 1154 to 2043 mg a.i./kg. The NOEC was determined to be 250 mg/kg based on signs of toxicity at the 500 mg/kg dosage level.
8. **MATERIALS AND METHODS:**
 - A. **Test Animals** were 21 week old adult northern bobwhites (Colinus virginianus) from the same hatch, pen-reared and phenotypically indistinguishable from wild birds.
 - B. **Test System:**
 - Acclimation: 6 weeks (no mortality noted)
 - Fasting: At least 15 hours prior to dosing
 - Dosing
 - Post Dosing observation: twice daily for 14 days

Average temperature - 19.6°C
Relative humidity - 50%

Photoperiod - 8 hours light per day
Diet - ad libitum game bird ration

- C. Dosage: Nominal dosage concentrations were 31.3, 62.5, 125, 250, 500, 1000, 2000 mg ai triazine per kg of body weight. Adjustments were made to 100% purity.
- D. Design: There were five females and five males per treatment group and control group. The birds were given an oral dose of the test substance by gelatin capsule. The control birds received empty capsules. Body weights were measured individually one day prior to initiation of the test and by group for days 3, 7 and 14. Average feed consumption was determined for each dosage group and the control group for days 0-3, 4-7 and 8-14. The accuracy of feed consumption values may have been affected by the unavoidable wastage of feed by the birds.
- E. Statistics: The probit method was used to determine the LD50 and the 95% confidence intervals.

12. REPORTED RESULTS: There were no mortalities in the control group. Additionally, there were no mortalities at eh 31.3, 62.5, 125, 250 or 500 mg a.i./kg dosage levels. There was 10% mortality at eh 1000 mg a.i./kg level and 80% mortality at eh 2000 mg a.i./kg level.

There were signs of toxicity noted at the 500, 1000 and 2000 mg a.i./kg dosage levels.

Compared to the controls, there was a marked dose responsive loss in body weight among males and females at the 500 and 1000 mg a.i./kg test dosages and surviving females at the 2000 mg a.i./kg dose during the period from day 0 to day 3. Due to total mortality, an effect upon bodyweight on males from the 2000 mg a.i./kg dosage could not be assessed. A reduction in feed consumption was noted at the 2000 mg a.i./kg test dosage during the period from day 0 to day 7.

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

The acute oral LD50 for Triazine to bobwhite quail was determined to be 1520 mg a.i./kg with 95% confidence intervals of 1155 mg and 2043 mg. The no mortality test dosage was 500 mg a.i./kg. The no observed effect dosage was determined to be 250 mg/kg - based on reduction in body weight and signs of toxicity at the 500 mg/kg test dosage.

A Quality Assurance Inspection statement was included with the report.

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

A. Test Procedure: The test procedures were in accordance with Subdivision E, and SEP guidelines.

B. Statistical Analysis: The probit method was used to determine the LD50 and the corresponding 95% confidence interval.

C. Discussion/Results: The acute oral LD50 for triazine was determined to be 1520.1 mg a.i./kg. The corresponding 95% confidence interval was determined to be 1154 to 2043 mg a.i./kg. The NOEC was determined to be 250 mg/kg based on signs of toxicity at the 500 mg/kg dosage level.

D. Adequacy of the Study:

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

 LATEULER TRIAZINE LD50 BWQ

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB.(PERCENT)
2000	10	8	80	5.46875
1000	10	1	10	1.074219
500	10	0	0	9.765625E-02
250	10	0	0	9.765625E-02
125	10	0	0	9.765625E-02
62.5	10	0	0	9.765625E-02
31.3	10	0	0	9.765625E-02

THE BINOMIAL TEST SHOWS THAT 1000 AND +INFINITY 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 1501.656

RESULTS CALCULATED USING THE MOVING AVERAGE METHOD

SPAN	G	LC50	95 PERCENT CONFIDENCE LIMITS	
1	.3707726	1501.656	1184.854	2042.595

RESULTS CALCULATED USING THE PROBIT METHOD

ITERATIONS	G	H
22	.4001347	1

GOODNESS OF FIT PROBABILITY

1

SLOPE = 7.083722
 95 PERCENT CONFIDENCE LIMITS = 2.602829 AND 11.56462

LC50 = 1520.123
 95 PERCENT CONFIDENCE LIMITS = 1154.461 AND 2043.178

LC10 = 1005.992
 95 PERCENT CONFIDENCE LIMITS = 464.9167 AND 1281.037

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Page _____ is not included in this copy.

Pages 7 through 8 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.

DATA EVALUATION RECORD

1. **CHEMICAL:** Triazine
Shaughnessy No. 083301
2. **TEST MATERIAL:** Triazine, 93.85%.
3. **STUDY TYPE:** Avian Dietary LC50 Test, Bobwhite Quail
(Colinus virginianus).
4. **CITATION:** Campbell, S. M. and Joann B. Beavers, 1994.
"Triazine: A Dietary LC50 Study with the Northern Bobwhite Quail", Wildlife International, LTD. 8598 Commerce Drive, Easton MD 21601. Submitted by the Triazine Joint Venture, c/o Buckman Laboratories International, Inc. 1256 N. McLean Boulevard, Memphis TN 38108. USEPA MRID No. 431543-02.
5. **REVIEWED BY:**
Dana Lateulère, Biologist
Ecological Effects Branch
Environmental Fate and
Effects Division
Signature: *Dana Lateulère*
Date: 6/28/94
6. **APPROVED BY:**
for Ann Stavola, Section Head, 5
Ecological Effects Branch
Environmental Fate and
Effects Division
Signature: *Allen W. Vaughan*
Date: 12.19.94
7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirement 71-2(a). The dietary LC50 for bobwhite quail exposed to Triazine was determined to be greater than 5620 ppm a.i., the highest concentration tested. The no mortality and no observed effect dosage was determined to be 5620 ppm a.i.
8. **MATERIALS AND METHODS:**
 - A. **Test Animals** were 10 day old northern bobwhites (Colinus virginianus) from the same hatch, pen-reared and phenotypically indistinguishable from wild birds.
 - B. **Test System:**
 - Acclimation: 10 days
 - Exposure - 5 days
 - Post exposure observation: twice daily for 3 days.

Average temperature - 38°C
Relative humidity - 20%

Test diet- mixed in acetone and blended with corn oil. All dietary test concentrations were adjusted to 100% active ingredient.

- C. **Dosage:** Nominal dosage concentrations were 562, 1000, 1780, 3160 and 5620 ppm. The LC50 values are reported as parts per million of the active ingredient.
- D. **Design:** Ten bobwhite chicks were assigned to each of the treatment and control groups by indiscriminate draw. The dietary concentrations were established based upon known toxicity data. Each group was fed the appropriate test or control diet for five days. During the exposure period the control groups received an amount of the carrier in their diet equivalent to the greatest amount used in the treated diets. Following the five day exposure period all groups were given untreated feed for three days.
- E. **Statistics:** The author reported that the pattern of mortality in this study did not facilitate the calculation of an LC50 value, therefore, an estimation of the LC50 value was made by a visual inspection of the data.
12. **REPORTED RESULTS:** There were no mortalities in the control group. Additionally, there were no mortalities at any of the test concentrations. There were no signs of toxicity at any concentration and there were no effects to bird weight or feed consumption.
13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**
The dietary LC50 for Triazine to bobwhite quail is greater than 5620 ppm, the highest dosage tested. The no mortality and no observed effect dosage was determined to be 5620 ppm a.i.
- A Quality Assurance Inspection statement was included with the report.
14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**
- A. **Test Procedure:** The test procedures were in accordance with Subdivision E, and SEP guidelines.
- B. **Statistical Analysis:** The data was not conducive to statistical review based on a lack of mortality.
- C. **Discussion/Results:** The dietary LC50 for Triazine was determined by visual inspection of the data to be greater than 5620 ppm a.i.- based on a lack of mortality

at this level. A NOEC of 5620 ppm a.i. was observed. Based on the LC50, Triazine is classified as practically non-toxic to bobwhite quail on a dietary basis.

- D. Adequacy of the Study:
- (1) Classification: Core.
 - (2) Rationale:
 - (3) Repairability:

Page _____ is not included in this copy.

Pages 12 through 13 are not included.

The material not included contains the following type of information:

- Identity of product inert ingredients.
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