12-10-92

MRID No. 419317-42

DATA EVALUATION RECORD

1. **CHEMICAL:** XRD-498. Shaughnessey No. 129016.

2. **TEST MATERIAL:** XRD-498; N-(2,6-difluorophenyl)-5-methyl-(1,2,4) triazolo (1,5-a)pyrimidine-2-sulfonamide; AGR 240043; CAS No. 098967-40-9; 99.6% purity; a white powder.

3. **STUDY TYPE:** Avian Reproduction Study. Species Tested: Mallard (*Anas platyrhynchos*).

4. **CITATION:** Beavers, J.B., A. Corbitt, and M.J. Jaber. 1989. XRD-498 Herbicide, N-(2,6-difluorophenyl)-5-methyl-(1,2,4) triazolo (1,5-a)pyrimidine-2-sulfonamide: A One-Generation Reproduction Study with the Mallard (*Anas platyrhynchos*). Laboratory Project No. 103-298. Prepared by Wildlife International Ltd., Easton, MD. Submitted by DowElanco. MRID No. 419317-42.

5. **REVIEWED BY:**

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

Signature: Michael L. Whitten
Date: 12/4/91

6. **APPROVED BY:**

Pim Kosalwat, Ph.D.
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Signature: P. Kosalwat
Date: 12/4/91

Henry T. Craven, M.S.
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Signature: Daniel Rieder 11-3-92 Henry T. Craven
Date: 12/10/92

7. **CONCLUSIONS:** Nominal dietary concentrations of XRD-498 at 100, 300, and 600 ppm a.i. had no effects upon behavior, food consumption, or reproduction in adult mallards during the 18-week exposure period. The NOEC was 600 ppm a.i. The study is scientifically sound and fulfills the guideline requirements for an avian reproduction study. This study is being accepted as core even though a LOEL was not obtained and test concentrations were not measured in the diet. The lack of an LOEL is acceptable since this is a sulfonyl urea and will always be used at very low levels. Exposure Residues will not approach the 600 ppm level. The failure to measure concentrations in the diet is accepted because the diet was mixed fresh each week.

8. **RECOMMENDATIONS:** N/A.

DRC 12-10-92

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The birds used in the test were pen-reared, unmated mallards (*Anas platyrhynchos*) purchased from Whistling Wings, Hanover, Illinois. The birds were acclimated to the facilities for 5 weeks. At test initiation all birds were examined for physical injuries and general health. Birds that did not appear healthy were discarded. The birds were 22 weeks of age at test initiation. Adult birds were identified by individual leg bands.

B. **Dose/Diet Preparation/Food Consumption:** Test diets were prepared by mixing XRD-498 into a pre-mix which was used for weekly preparation of the final diet. The control diet and three test concentrations (100, 300, and 600 ppm) were prepared weekly and presented to the birds on Monday of each week. When necessary, additional feed was prepared. Each of the four groups of adult birds was fed the appropriate diet from test initiation until terminal sacrifice. Dietary concentrations were adjusted for purity of the test substance, and are presented as ppm of the active ingredient (a.i.). The control diet contained an amount of the solvent (acetone) and carrier (corn oil) equal to that in the treated diets.

Basal diet for adult birds and their offspring was formulated by Agway, Inc. The composition of the diet was presented in the report. The test substance was not mixed into the diet of the offspring. Food and water were supplied *ad libitum* during acclimation and during the test. Six composite samples from the control and each treatment concentration were collected on day 0 of week 1 to determine the homogeneity of the test material in the diet. These samples, along with verification samples collected on day 0 of weeks 9 and 18, were used to calculate mean measured concentrations. Samples were collected on day 7 of weeks 1, 9, and 18 to evaluate the stability of the test material in the diet. All samples were frozen immediately after collection, and remained frozen until analyzed by Dow Chemical Co.

Food consumption in each pen was determined once each week throughout the study.

C. **Design**: The birds were randomly distributed into four groups as follows:

XRD-498 Herbicide Nominal Concentration	Number of Pens	Birds Per Pen	
		Males	Females
Control (0 ppm)	16	1	1
100 ppm	16	1	1
300 ppm	16	1	1
600 ppm	16	1	1

Treatment levels were based upon known toxicity data, a pilot reproduction study conducted by Wildlife International Ltd., and consultation with the sponsor. The primary phases of the study and their approximate durations were as follows:

1. Acclimation - 5 weeks.
2. Pre-photostimulation - 8 weeks.
3. Egg laying - 10 weeks.
4. Post-adult sacrifice (final incubation, hatching, 14-day offspring rearing period) - 5 weeks.

D. **Pen Facilities**: Adult birds were housed indoors in pens constructed of wire grid and sheeting. Pens measured approximately 75 x 90 x 45 cm high. The average temperature in the adult study room was 20.7°C ± 1.6°C (SD) with an average relative humidity of 36% ± 12% (SD).

The photoperiod during acclimation and during the first 8 weeks of the study was 8 hours of light per day. The photoperiod was increased to 17 hours of light per day at the beginning of week 9 and was maintained at that level until sacrifice of adult birds. The birds were exposed to approximately 130 lux of illumination throughout the study.

E. **Adult Observations/Gross Pathology**: Adult birds were observed at least once daily throughout the study for signs of toxicity or abnormal behavior. All birds that died during the study were necropsied. As soon as practical after the death of the bird, the penmate was sacrificed and necropsied. At study termination, all surviving birds were sacrificed and necropsied. Adult birds were weighed at test initiation, at the end of weeks 2, 4, 6, 8, and at study termination.

F. **Eggs/Eggshell Thickness**: Eggs were collected daily from all pens, marked according to pen of origin, and washed to prevent pathogen contamination. The eggs were then stored at 10.4°C ± 0.8°C (SD) and 67% relative humidity until incubated. Eggs were removed from the storage room weekly and candled. Cracked or abnormal eggs were discarded. All eggs that were not cracked, abnormal or used for egg shell thickness measurements were placed in an incubator at 37.5°C ± 0.04°C (SD) and 56% relative humidity. Eggs were candled again on day 14 of incubation to determine embryo viability and on day 21 to determine embryo survival. All eggs were turned automatically while in the incubator. The eggs were placed in a hatcher on incubation day 24. The average temperature in the hatcher was 37.0°C ± 0.6°C (SD) with an average relative humidity of 76%.

Weekly throughout the egg laying period, one egg was collected, when available, from each of the odd numbered pens during the odd numbered weeks, and from each of the even numbered pens during the even numbered weeks. These eggs were used for egg shell thickness measurements. The average thickness of the dried shell plus membrane was determined by measuring (to the nearest 0.005 mm) five points around the waist of the egg using a micrometer.

G. **Hatchlings**: All hatchlings and unhatched eggs were removed from the hatcher on day 26 or 27 of incubation. The average body weight of the hatchlings by pen was then determined. Hatchlings were toe and web clipped for identification by pen of origin and then placed in brooding pens until 14 days of age. Each brooding pen measured 72 cm x 90 cm x 24 cm high, and was constructed of galvanized wire mesh and sheeting. Temperatures in the brooding compartment were approximately 38°C until the birds were 5 to 7 days of age, and 26°C thereafter. The photoperiod was maintained at 17 hours of light per day. Hatchlings were fed untreated diet. At 14 days of age, the average body weight by parental pen of all survivors was determined.

H. **Statistics**: Upon completion of the study, Dunnett's method was used to determine statistically significant differences between the control group and each of the treatment groups. Sample units were the individual pens within each experimental group. Percentage data were examined using Dunnett's method following arcsine transformation. The pens in which mortality occurred were not used in statistical comparisons of the data.

Each of the following parameters was analyzed statistically:

Adult Body Weight
Adult Feed Consumption
Eggs Laid of Maximum Laid
Eggs Cracked of Eggs Laid
Viable Embryos of Eggs Set
Live 3-Week Embryos of Viable Embryos
Hatchlings of 3-Week Embryos
Hatchlings of Eggs Set
Offspring Body Weight
Hatchlings of Maximum Set
14-Day Old Survivors of Maximum Set
14-Day Old Survivors of Eggs Set
14-Day Old Survivors of of Hatchlings
Egg Shell Thickness

12. REPORTED RESULTS

A. Diet Analysis: The results of the diet analyses showed that homogeneity and stability were within acceptable limits. Mean measured concentrations of samples collected on the first day of weeks 1, 9, and 18 were 95 ppm, 285 ppm, and 584 ppm (Table 6 attached). These values correspond to 95%, 95%, and 97% of the nominal concentrations of 100, 300, and 600 ppm, respectively. Detailed results of diet analyses were presented in Appendix XII of the report.

B. Mortality and Behavioral Reactions: There were no treatment-related mortalities at any concentration tested. One incidental mortality occurred in the 100-ppm group, and one incidental mortality occurred in the 300-ppm group.

The single mortality in the 100-ppm group was a female found dead during week 17. Necropsy revealed an emaciated bird with a regressing ovary, extensive egg yolk peritonitis, and a large abscess with caceous necrosis at the midsection of the reproductive tract. The single mortality in the 300-ppm group was a female found dead at the end of week 11. Necropsy revealed petechial hemorrhages, enlarged heart and spleen, and egg yolk peritonitis.

Necropsy results of all mortalities and sacrificed birds were included in the report. Due to the nature of the lesions observed at necropsy, both mortalities were considered to be incidental to treatment. Similarly, all lesions observed in sacrificed birds were considered to be unrelated to treatment.

No overt signs of toxicity were observed at any concentration.

C. **Adult Body Weight and Food Consumption**: No significant differences in body weights between the control and any treatment group were noted at any body weight interval.

There were no apparent treatment related effects upon feed consumption among birds at any concentration tested. There were some reductions in feed consumption between the control and the treatment groups within the first 5 weeks. The differences were statistically significant during weeks 2 and 3 at all test concentrations and at the 300 and 600 ppm concentrations during week 5 (Table 2, attached). The differences were not dose responsive and were considered to be incidental to treatment.

D. **Reproduction**: When compared to the control group, there were no significant differences in reproductive parameters at any concentration tested (Tables 3 & 3A, attached).

E. **Egg Shell Thickness**: When compared to the control group, there were no significant differences in egg shell thickness at any concentration.

F. **Offspring Body Weight**: There were no significant differences between the control and any treatment group in body weight of offspring at hatching or at 14 days of age.

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES**:
"Dietary concentrations of XRD-498 herbicide at 100 ppm, 300 ppm or 600 ppm did not result in treatment related mortality, overt signs of toxicity, or effects upon adult body weight or feed consumption during the 18 week exposure period. There were no apparent treatment related effects upon reproductive parameters at any of the concentrations tested. The no-observed-effect concentration for XRD-498 herbicide in this study was 600 ppm, the highest concentration tested."

The report stated that study was conducted in conformance with Good Laboratory Practice regulations (40 CFR Part 160). Quality assurance audits were conducted during the study and the final report was signed by the Quality Assurance Auditor of Wildlife International Ltd.

14. **Reviewer's Discussion and Interpretation of the Study**:

A. **Test Procedure:** The test procedures were in accordance with Subdivision E - Hazard Evaluation: Wildlife and Aquatic Organisms, ASTM, and SEP guidelines except for the following deviations:

Eggs were stored at a temperature of approximately 10°C; 16°C is recommended.

Behavioral observations of offspring were not reported.

Observations on food palatability were not reported.

B. **Statistical Analysis:** Statistical procedures differed from recommended methods. Specifically, there is no basis for transforming the number of eggs laid and the number of hatchlings to percentile values of the maximum number of eggs laid or set in any test group.

Statistical analyses of reproductive parameters were performed by the reviewer using analysis of variance (ANOVA) following square-root transformation of the count data and arcsine square-root transformation of the ratio data. The comparison between control data and data from each treatment level was made using multiple comparison tests. The computer program used is based on the EEB Bigbird program, with an exception that the count data were square-root transformed before the ANOVA. The significance level was $p \leq 0.05$.

Analyses of reproductive parameters were verified (attached) and generally matched those reported by the authors. Exceptions are discussed below.

C. **Discussion/Results:** Three parameters analyzed by the reviewer showed significant differences from the control for at least one treatment concentration: cracked eggs, food consumption, and male body weight.

Fewer eggs were cracked at 300 ppm than in the control group; this was not a treatment effect.

When analyzed over the entire study period, the 300-ppm group consumed significantly less food than the control group. Food consumption in all treatment groups was generally less than in the control group, with the 300-ppm group usually showing the lowest values (Figure 3, attached). Because values at 600 ppm more closely approximated the control values, lower values at 300 ppm suggest the absence of a treatment-effect. These data, however, do show the importance of observing and

describing food palatability. Unfortunately, these observations were not reported.

Male body weight change from initiation to termination at 100 and 300 ppm was significantly greater than control values. Because males in these treatment groups gained weight while the males in the control group lost weight (Table 1, attached), the differences are not attributed to treatment.

There were no apparent treatment related effects upon reproductive parameters at any of the concentrations tested. The NOEC for XRD-498 was 600 ppm, the highest concentration tested.

This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** Deviations from protocols were minor and probably did not affect the validity of the study.

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER:** Yes; November 25, 1991.

RIN 1948-94

FLUMETSULAM REVIENS (129016)

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XRD-498 MALLARD

TREATMENT LEVEL: 0 ppm (Control)

		EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	1	33	1	28	27	27	22	22
CASE	2	36	2	29	27	26	21	21
CASE	3	39	1	35	33	33	11	10
CASE	4	37	2	30	24	24	17	16
CASE	5	43	0	34	34	34	30	30
CASE	6	50	0	46	45	43	30	30
CASE	7	0	0	0	0	0	0	0
CASE	8	52	1	46	45	43	23	23
CASE	9	49	2	43	43	43	32	32
CASE	10	37	2	32	29	29	26	26
CASE	11	47	0	43	37	37	27	27
CASE	12	48	1	43	25	18	0	0
CASE	13	44	1	38	34	33	26	26
CASE	14	42	1	37	37	35	22	22
CASE	15	31	0	29	28	26	16	16
CASE	16	35	2	29	29	27	18	18
	Totals	623	16	542	497	478	321	319

TREATMENT LEVEL: 100 ppm

		EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	17	1	0	0	0	0	0	0
CASE	18	46	1	41	38	38	8	7
CASE	19	49	2	42	40	40	38	38
CASE	20	43	0	39	39	39	21	21
CASE	21	.	.	.	.	.	.	.
CASE	22	49	0	45	44	41	38	37
CASE	23	45	2	39	39	38	33	33
CASE	24	48	2	41	39	36	23	22
CASE	25	55	1	49	47	47	14	13
CASE	26	37	1	30	29	28	4	4
CASE	27	30	1	27	25	25	14	14
CASE	28	45	1	40	35	33	12	10
CASE	29	0	0	0	0	0	0	0
CASE	30	51	3	44	21	20	16	16
CASE	31	39	0	36	34	31	7	6
CASE	32	46	0	42	41	41	25	25
	Totals	584	14	515	471	457	253	246

XRD-498 MALLARD

TREATMENT LEVEL: 300 ppm

		EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	33	43	0	39	38	35	23	23
CASE	34	0	0	0	0	0	0	0
CASE	35	43	0	39	38	38	35	34
CASE	36	41	1	35	35	35	32	32
CASE	37	38	0	34	34	34	16	15
CASE	38	50	2	44	39	39	35	34
CASE	39	.	.	.	.	.	.	.
CASE	40	7	1	1	1	0	0	0
CASE	41	30	0	27	27	27	11	11
CASE	42	49	1	44	43	41	30	30
CASE	43	50	0	46	45	44	34	30
CASE	44	21	0	18	16	15	3	3
CASE	45	47	0	42	42	41	6	6
CASE	46	46	0	42	41	41	17	17
CASE	47	26	0	23	22	21	12	12
CASE	48	43	0	39	39	38	33	29
	Totals	534	5	473	460	449	287	276

TREATMENT LEVEL: 600 ppm

		EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	49	43	3	36	25	25	21	21
CASE	50	41	2	35	34	34	21	20
CASE	51	47	4	39	35	33	23	23
CASE	52	35	0	31	28	26	8	8
CASE	53	40	3	33	33	33	26	24
CASE	54	47	0	42	39	39	32	31
CASE	55	37	1	33	30	30	27	26
CASE	56	39	4	30	29	28	14	14
CASE	57	27	2	23	21	21	15	14
CASE	58	39	1	34	32	31	19	18
CASE	59	40	1	35	33	33	20	17
CASE	60	0	0	0	0	0	0	0
CASE	61	42	2	36	33	33	28	27
CASE	62	47	0	42	42	42	20	20
CASE	63	50	0	46	14	14	9	9
CASE	64	38	0	35	34	34	26	26
	Totals	612	23	530	462	456	309	298

MALLARD
ANOVA on SQR(Eggs Laid)

DEP VAR: SEL N: 62 MULTIPLE R: 0.077 SQUARED MULTIPLE R: 0.006

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	1.239	3	0.413	0.115	0.951
ERROR	207.583	58	3.579		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.219	1	0.219	0.061	0.805
ERROR	207.583	58	3.579		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.052	1	1.052	0.294	0.590
ERROR	207.583	58	3.579		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.020	1	0.020	0.006	0.941
ERROR	207.583	58	3.579		

ANOVA on SQR(Eggs Cracked)

DEP VAR: SEC N: 62 MULTIPLE R: 0.352 SQUARED MULTIPLE R: 0.124

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	3.471	3	1.157	2.742	0.051
ERROR	24.475	58	0.422		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.056	1	0.056	0.133	0.716
ERROR	24.475	58	0.422		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	2.115	1	2.115	5.012	0.029
ERROR	24.475	58	0.422		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.084	1	0.084	0.198	0.658
ERROR	24.475	58	0.422		

ANOVA on SQR(Eggs Set)

DEP VAR: SES N: 62 MULTIPLE R: 0.076 SQUARED MULTIPLE R: 0.006

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	1.197	3	0.399	0.113	0.952
ERROR	204.864	58	3.532		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.233	1	0.233	0.066	0.798
ERROR	204.864	58	3.532		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.030	1	1.030	0.292	0.591
ERROR	204.864	58	3.532		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.026	1	0.026	0.007	0.932
ERROR	204.864	58	3.532		

ANOVA on SQR(Viable Embryos)

DEP VAR: SVE N: 62 MULTIPLE R: 0.047 SQUARED MULTIPLE R: 0.002

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.444	3	0.148	0.044	0.988
ERROR	196.353	58	3.385		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.251	1	0.251	0.074	0.786
ERROR	196.353	58	3.385		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.295	1	0.295	0.087	0.769
ERROR	196.353	58	3.385		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.325	1	0.325	0.096	0.758
ERROR	196.353	58	3.385		

ANOVA on SQR(21-day Live Embryos)

DEP VAR: SLE21 N: 62 MULTIPLE R: 0.042 SQUARED MULTIPLE R: 0.002

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.358	3	0.119	0.034	0.991
ERROR	202.433	58	3.490		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.169	1	0.169	0.048	0.827
ERROR	202.433	58	3.490		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.335	1	0.335	0.096	0.758
ERROR	202.433	58	3.490		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.123	1	0.123	0.035	0.852
ERROR	202.433	58	3.490		

ANOVA on SQR(Hatched)

DEP VAR: SHAT N: 62 MULTIPLE R: 0.123 SQUARED MULTIPLE R: 0.015

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	2.850	3	0.950	0.298	0.827
ERROR	184.781	58	3.186		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.895	1	1.895	0.595	0.444
ERROR	184.781	58	3.186		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.516	1	0.516	0.162	0.689
ERROR	184.781	58	3.186		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.011	1	0.011	0.004	0.953
ERROR	184.781	58	3.186		

ANOVA on SQR(Two week Survivors)

DEP VAR: STWOWK N: 62 MULTIPLE R: 0.130 SQUARED MULTIPLE R: 0.017

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	3.108	3	1.036	0.332	0.802
ERROR	181.035	58	3.121		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	2.294	1	2.294	0.735	0.395
ERROR	181.035	58	3.121		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.735	1	0.735	0.235	0.629
ERROR	181.035	58	3.121		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.003	1	0.003	0.001	0.975
ERROR	181.035	58	3.121		

ANOVA on EC/EL

DEP VAR: RESP1 N: 58 MULTIPLE R: 0.317 SQUARED MULTIPLE R: 0.101

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	234.668	3	78.223	2.011	0.123
ERROR	2100.079	54	38.890		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	10.298	1	10.298	0.265	0.609
ERROR	2100.079	54	38.890		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	133.711	1	133.711	3.438	0.069
ERROR	2100.079	54	38.890		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	9.308	1	9.308	0.239	0.627
ERROR	2100.079	54	38.890		

ANOVA on VE/ES

DEP VAR: RESP2 N: 57 MULTIPLE R: 0.318 SQUARED MULTIPLE R: 0.101

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	741.969	3	247.323	1.987	0.127
ERROR	6597.159	53	124.475		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	3.867	1	3.867	0.031	0.861
ERROR	6597.159	53	124.475		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	264.489	1	264.489	2.125	0.151
ERROR	6597.159	53	124.475		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	114.070	1	114.070	0.916	0.343
ERROR	6597.159	53	124.475		

ANOVA on LE21/VE

DEP VAR: RESP3 N: 57 MULTIPLE R: 0.243 SQUARED MULTIPLE R: 0.059

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	584.581	3	194.860	1.107	0.354
ERROR	9326.840	53	175.978		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	4.428	1	4.428	0.025	0.875
ERROR	9326.840	53	175.978		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	128.025	1	128.025	0.728	0.398
ERROR	9326.840	53	175.978		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	168.915	1	168.915	0.960	0.332
ERROR	9326.840	53	175.978		

ANOVA on HAT/LE21

DEP VAR: RESP4 N: 56 MULTIPLE R: 0.167 SQUARED MULTIPLE R: 0.028

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	384.442	3	128.147	0.500	0.684
ERROR	13340.497	52	256.548		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	182.347	1	182.347	0.711	0.403
ERROR	13340.497	52	256.548		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	10.257	1	10.257	0.040	0.842
ERROR	13340.497	52	256.548		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	34.776	1	34.776	0.136	0.714
ERROR	13340.497	52	256.548		

ANOVA on TWOWK/HAT

DEP VAR: RESP5 N: 55 MULTIPLE R: 0.283 SQUARED MULTIPLE R: 0.080

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	279.249	3	93.083	1.477	0.232
ERROR	3214.772	51	63.035		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	221.504	1	221.504	3.514	0.067
ERROR	3214.772	51	63.035		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	80.869	1	80.869	1.283	0.263
ERROR	3214.772	51	63.035		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	195.898	1	195.898	3.108	0.084
ERROR	3214.772	51	63.035		

ANOVA on HAT/ES

DEP VAR: RESP6 N: 57 MULTIPLE R: 0.159 SQUARED MULTIPLE R: 0.025

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	375.143	3	125.048	0.457	0.713
ERROR	14500.770	53	273.599		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	263.611	1	263.611	0.963	0.331
ERROR	14500.770	53	273.599		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	93.210	1	93.210	0.341	0.562
ERROR	14500.770	53	273.599		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.000	1	0.000	0.000	0.999
ERROR	14500.770	53	273.599		

ANOVA on TWOWK/ES

DEP VAR: RESP7 N: 57 MULTIPLE R: 0.169 SQUARED MULTIPLE R: 0.029

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	412.993	3	137.664	0.520	0.670
ERROR	14018.255	53	264.495		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	321.133	1	321.133	1.214	0.275
ERROR	14018.255	53	264.495		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	156.556	1	156.556	0.592	0.445
ERROR	14018.255	53	264.495		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	9.377	1	9.377	0.035	0.851
ERROR	14018.255	53	264.495		

MALLARD

TREATMENT LEVEL: 0 PPM

		THICK*	HATWT	SURVWT	FOOD
CASE	1	0	32	300	2443
CASE	2	0	34	292	2638
CASE	3	0	31	286	2530
CASE	4	0	33	279	2067
CASE	5	0	36	287	2367
CASE	6	0	38	337	2337
CASE	7	.	.	.	2938
CASE	8	0	36	270	2399
CASE	9	0	32	301	2458
CASE	10	0	31	263	2147
CASE	11	0	31	239	2058
CASE	12	0	.	.	2335
CASE	13	0	39	310	2841
CASE	14	0	36	307	2400
CASE	15	0	36	288	2320
CASE	16	0	33	290	2524

TREATMENT LEVEL: 100 PPM

CASE	17	0	.	.	2294
CASE	18	0	38	289	2515
CASE	19	0	34	307	1862
CASE	20	0	31	259	2101
CASE	21	.	.	.	2027
CASE	22	0	32	298	2447
CASE	23	0	31	254	2079
CASE	24	0	34	255	2188
CASE	25	0	34	287	2565
CASE	26	0	36	331	2248
CASE	27	0	33	240	2147
CASE	28	0	36	290	2439
CASE	29	.	.	.	2537
CASE	30	0	38	278	2275
CASE	31	0	37	315	2216
CASE	32	0	34	273	2326

* See following page for eggshell thickness values

TREATMENT LEVEL: 300 PPM

		THICK *	HATWT	SURVWT	FOOD
CASE	33	0	39	292	2398
CASE	34	.	.	.	2190
CASE	35	0	35	260	2382
CASE	36	0	32	287	1965
CASE	37	0	33	291	2011
CASE	38	0	34	273	1948
CASE	39	.	.	.	1203
CASE	40	0	.	.	2440
CASE	41	0	29.	275	2115
CASE	42	0	36	274	2011
CASE	43	0	27	279	2033
CASE	44	0	33	261	1602
CASE	45	0	37	240	2185
CASE	46	0	32	247	2571
CASE	47	0	33	274	2357
CASE	48	0	37	299	2403

TREATMENT LEVEL: 600 PPM

CASE	49	0	36	289	2682
CASE	50	0	32	292	2175
CASE	51	0	32	295	2465
CASE	52	0	33	266	2826
CASE	53	0	34	284	2738
CASE	54	0	33	274	1933
CASE	55	0	34	304	1870
CASE	56	0	32	268	2297
CASE	57	0	37	304	2285
CASE	58	0	34	294	2392
CASE	59	0	35	303	2055
CASE	60	.	.	.	2378
CASE	61	0	34	263	2320
CASE	62	0	29	270	2369
CASE	63	0	37	277	2009
CASE	64	0	31	285	2399

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* Eggshell Thickness (mm)

CONTROL TRT	THICK	100 ppm TRT	THICK	300 ppm TRT	THICK	600 ppm TRT	THICK
0	0.377	1	0.245	2	0.406	3	0.393
0	0.377	1	0.391	2	.	3	0.41
0	0.407	1	0.375	2	0.388	3	0.381
0	0.4	1	0.355	2	0.395	3	0.404
0	0.347	1	.	2	0.399	3	0.375
0	0.408	1	0.362	2	0.37	3	0.375
0	.	1	0.356	2	.	3	0.397
0	0.41	1	0.368	2	0.305	3	0.377
0	0.395	1	0.382	2	0.353	3	0.392
0	0.389	1	0.422	2	0.382	3	0.4
0	0.413	1	0.392	2	0.368	3	0.397
0	0.364	1	0.375	2	0.424	3	.
0	0.399	1	.	2	0.409	3	0.397
0	0.406	1	0.362	2	0.386	3	0.429
0	0.388	1	0.441	2	0.405	3	0.398
0	0.367	1	0.397	2	0.423	3	0.388

Eggshell Thickness

MALLARD

ANOVA on thick

DEP VAR: THICK N: 58 MULTIPLE R: 0.267 SQUARED MULTIPLE R: 0.071

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.004	3	0.001	1.381	0.258
ERROR	0.047	54	0.001		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.002	1	0.002	2.352	0.131
ERROR	0.047	54	0.001		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.000	1	0.000	0.084	0.773
ERROR	0.047	54	0.001		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.000	1	0.000	0.169	0.683
ERROR	0.047	54	0.001		

ANOVA on hatwt

DEP VAR: HATWT N: 55 MULTIPLE R: 0.147 SQUARED MULTIPLE R: 0.022

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	7.954	3	2.651	0.374	0.772
ERROR	361.755	51	7.093		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.685	1	0.685	0.097	0.757
ERROR	361.755	51	7.093		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.875	1	1.875	0.264	0.609
ERROR	361.755	51	7.093		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	2.690	1	2.690	0.379	0.541
ERROR	361.755	51	7.093		

ANOVA on survwt

DEP VAR: SURVWT N: 55 MULTIPLE R: 0.276 SQUARED MULTIPLE R: 0.076

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	1810.021	3	603.340	1.404	0.252
ERROR	21908.706	51	429.582		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	280.002	1	280.002	0.652	0.423
ERROR	21908.706	51	429.582		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1722.076	1	1722.076	4.009	0.051
ERROR	21908.706	51	429.582		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	158.668	1	158.668	0.369	0.546
ERROR	21908.706	51	429.582		

ANOVA on food

DEP VAR: FOOD N: 64 MULTIPLE R: 0.395 SQUARED MULTIPLE R: 0.156

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	815462.422	3	271820.807	3.702	0.016
ERROR	4405363.188	60	73422.720		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	200978.000	1	200978.000	2.737	0.103
ERROR	4405363.188	60	73422.720		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	777504.500	1	777504.500	10.589	0.002
ERROR	4405363.188	60	73422.720		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT
TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	80902.531	1	80902.531	1.102	0.298
ERROR	4405363.188	60	73422.720		

MALLARD; FEMALE BODY WEIGHT

TREATMENT LEVEL: 0 ppm

		PREWT	POSTWT
CASE	1	839	893
CASE	2	962	1078
CASE	3	1000	1061
CASE	4	859	1129
CASE	5	909	1201
CASE	6	1036	1373
CASE	7	1053	1349
CASE	8	1004	1368
CASE	9	912	1158
CASE	10	1015	1299
CASE	11	884	1055
CASE	12	998	1231
CASE	13	1148	1426
CASE	14	960	1251
CASE	15	1184	1341
CASE	16	1043	1097

TREATMENT LEVEL: 100 ppm

		PREWT	POSTWT
CASE	17	1102	1375
CASE	18	989	1253
CASE	19	950	1290
CASE	20	828	998
CASE	21	876	.
CASE	22	1119	1164
CASE	23	829	1087
CASE	24	895	1230
CASE	25	1134	1469
CASE	26	916	1068
CASE	27	1089	1182
CASE	28	950	1226
CASE	29	1114	1352
CASE	30	938	1154
CASE	31	894	1260
CASE	32	943	1014

TREATMENT LEVEL: 300 ppm

		PREWT	POSTWT
CASE	33	1077	1259
CASE	34	1124	1397
CASE	35	993	1106
CASE	36	879	1002
CASE	37	1096	1177
CASE	38	1046	1153
CASE	39	883	.
CASE	40	836	1160
CASE	41	991	987
CASE	42	1078	1311
CASE	43	1049	1207
CASE	44	851	1057
CASE	45	1071	1269
CASE	46	1072	1278
CASE	47	949	1116
CASE	48	1081	1310

TREATMENT LEVEL: 600 ppm

		PREWT	POSTWT
CASE	49	1050	1199
CASE	50	989	1206
CASE	51	975	1126
CASE	52	1116	1035
CASE	53	956	1011
CASE	54	914	992
CASE	55	911	1254
CASE	56	806	924
CASE	57	1031	1285
CASE	58	945	1161
CASE	59	1096	1290
CASE	60	936	1009
CASE	61	921	986
CASE	62	1029	1177
CASE	63	1100	1431
CASE	64	947	1140

MALLARD; ADULT FEMALE BODY WEIGHT

ANOVA on postwt

DEP VAR: POSTWT N: 62 MULTIPLE R: 0.699 SQUARED MULTIPLE R: 0.488

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	56656.541	3	18885.514	1.880	0.143
PREWT	496636.430	1	496636.430	49.428	0.000
ERROR	572711.737	57	10047.574		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	712.216	1	712.216	0.071	0.791
ERROR	572711.737	57	10047.574		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	15767.617	1	15767.617	1.569	0.215
ERROR	572711.737	57	10047.574		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	31361.888	1	31361.888	3.121	0.083
ERROR	572711.737	57	10047.574		

MALLARD; MALE BODY WEIGHT

TREATMENT LEVEL: 0 PPM

		PREWT	POSTWT
CASE	1	1101	1209
CASE	2	1017	1034
CASE	3	1174	1073
CASE	4	1205	1159
CASE	5	1202	1196
CASE	6	1168	1113
CASE	7	1301	1271
CASE	8	1055	993
CASE	9	1073	1147
CASE	10	1194	1226
CASE	11	1092	1088
CASE	12	1199	1113
CASE	13	1212	1151
CASE	14	1244	1138
CASE	15	1271	938
CASE	16	1163	908

TREATMENT LEVEL: 100 PPM

		PREWT	POSTWT
CASE	17	1198	1146
CASE	18	1125	1070
CASE	19	1322	1238
CASE	20	1159	1160
CASE	21	1040	.
CASE	22	1290	1194
CASE	23	1131	1097
CASE	24	971	1129
CASE	25	1316	1339
CASE	26	1173	1104
CASE	27	1151	1139
CASE	28	1239	1327
CASE	29	1032	1146
CASE	30	1133	1203
CASE	31	1256	1257
CASE	32	967	1154

TREATMENT LEVEL: 300 PPM

		PREWT	POSTWT
CASE	33	1097	1213
CASE	34	1059	1056
CASE	35	1047	1042
CASE	36	1382	1318
CASE	37	1365	1375
CASE	38	990	1059
CASE	39	1134	.
CASE	40	1073	1057
CASE	41	1203	1280
CASE	42	1210	1174
CASE	43	1241	1248
CASE	44	1132	1104
CASE	45	1108	1225
CASE	46	1170	1181
CASE	47	1206	1276
CASE	48	1092	1062

TREATMENT LEVEL: 600 PPM

		PREWT	POSTWT
CASE	49	1123	1125
CASE	50	1049	1169
CASE	51	1284	1126
CASE	52	1115	1093
CASE	53	1172	1090
CASE	54	1120	1075
CASE	55	1012	1127
CASE	56	1143	1155
CASE	57	1076	991
CASE	58	1198	1192
CASE	59	1269	1459
CASE	60	1189	1174
CASE	61	1112	1085
CASE	62	1200	1044
CASE	63	1231	1157
CASE	64	1214	1270

MALLARD; MALE BODY WEIGHT

ANOVA on postwt

DEP VAR: POSTWT N: 62 MULTIPLE R: 0.618 SQUARED MULTIPLE R: 0.382

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	55419.792	3	18473.264	2.705	0.054
PREWT	189847.390	1	189847.390	27.802	0.000
ERROR	389230.447	57	6828.604		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	40149.411	1	40149.411	5.880	0.019
ERROR	389230.447	57	6828.604		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	41564.414	1	41564.414	6.087	0.017
ERROR	389230.447	57	6828.604		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	14117.327	1	14117.327	2.067	0.156
ERROR	389230.447	57	6828.604		

Body weight gains at 100 ppm and 300 ppm were significantly greater than in control group.