(4-5-90) 121011

MRID No. 410302-05

DATA EVALUATION RECORD

1. **CHEMICAL**: Clethodim. Shaughnessey Number: Not available.

2. **TEST MATERIAL**: RE-45601 Technical (Select); (E,E)-(±)-2-[1-[((3-chloro-2-propenyl)oxy)imino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one; Lot No. SX-1688; 83.3% purity; an amber liquid.

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

4. **CITATION**: Beavers, J.B. 1988. RE-45601 Technical: A One-Generation Reproduction Study with the Mallard (Anas platyrhynchos). Prepared by Wildlife International Ltd., Easton, Maryland. Laboratory Project No. 162-184. Submitted by Chevron Chemical Company, Richmond, California. Chevron Project No. S-2837. MRID Number: 410302-05.

5. **REVIEWED BY**:

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

Signature:

Date:

6. **APPROVED BY**:

Prapimpan Kosalwat, Ph.D.
Staff Toxicologist
KBN Engineering and
Applied Sciences, Inc.

Signature:

Date:

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

Signature: A.C. 4/05/90

Date: Henry T. Craven 4/05/90

7. **CONCLUSIONS**: Mean measured dietary concentrations of RE-45601 technical at 100, 250, and 833 ppm as test material had no effects upon reproduction, mortality, behavior, food consumption or body weight in adult mallards during the 19-week exposure period. The NOEC was 833 ppm (measured). The study is scientifically sound and fulfills the requirements for an avian reproductive test.

8. **RECOMMENDATIONS**: N/A

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5. **REVIEWED BY:**

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

Signature: Michael L. Whitten
Date: 2-14-90

6. **APPROVED BY:**

Prapimpan Kosalwat, Ph.D.
Staff Toxicologist
KBN Engineering and
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Signature: P. Kosalwat
Date: 2-15-90

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

Signature:
Date:

7. **CONCLUSIONS:** Nominal dietary concentrations of RE-45601 Technical at 120, 300, and 1000 ppm as test material had no effects upon reproduction, mortality, behavior, food consumption or body weight in adult mallards during the 19-week exposure period. The NOEC was 1000 ppm. The study is scientifically sound and fulfills the requirements for an avian reproductive test.

8. **RECOMMENDATIONS:** N/A

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9. **BACKGROUND:**

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

11. **MATERIALS AND METHODS:**

A. **Test Animals:** The birds used in the test were unmated mallards purchased from Whistling Wings, Hanover, Illinois. All birds were acclimated to the facilities for 11 weeks prior to initiation of the test. The birds were 25 weeks of age at test initiation. Birds that did not appear healthy at test initiation were discarded.

B. **Dose/Diet Preparation/Food Consumption:** Test diets were prepared by mixing RE-45601 Technical into a pre-mix which was used for weekly preparation of the final diet. Control diet and three test concentrations (120, 300, and 1000 ppm) were prepared weekly. Portions of the freshly prepared diet were presented to the birds on Friday of each week, and the remainder was stored frozen. On Monday of each week, diets in all treatment groups were replaced with fresh frozen diet. On Wednesday of each week, diets in the 120-ppm group were again replaced with fresh frozen diet. When necessary, additional feed was prepared. Dietary concentrations were not adjusted for purity of the test substance. The control diet contained an amount of the carrier (corn oil) and solvent (acetone) equal to that in the treated diets. Adults were fed a game bird ration formulated for breeding birds. All offspring received a game bird ration formulated for young growing birds. 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, except in some pens water was withheld for approximately 24 hours in an attempt to discourage egg laying prior to photostimulation. Samples of the control diet and each of the test diets were taken weekly after mixing, and immediately after removal from the freezer, and used for analysis of the active ingredient.

Because of information provided by Chevron, feed consumption was measured twice each week for the control, 300-ppm, and 1000-ppm groups, and three times each week for the 120-ppm group. The results are presented as the mean amount of feed utilized per bird per day for each week throughout the study.

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

RE-45601 Technical

Nominal Concentration	Number Of Pens	Birds Per Pen	
		Males	Females
Control (0 ppm)	16	1	1
120 ppm	16	1	1
300 ppm	16	1	1
1000 ppm	16	1	1

"Treatment levels were based upon known toxicity data." Adult birds were identified by individual leg bands. The primary phases of the study and their approximate durations were as follows:

1. Acclimation - 11 weeks.
2. Pre-photostimulation - 9 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 75 cm x 90 cm x 45 cm high. The average temperature in the adult study room was 20.0°C ± 2.6°C (SD) with an average relative humidity of 46%.

The photoperiod during the first 4 weeks of the study was 8 hours of light per day. The photoperiod was reduced to 7 hours of light per day during week 5 to discourage egg production. The photoperiod was increased to 17 hours of light per day during week 9 and was maintained at that length until sacrifice of adult birds. The birds received approximately 130 lux of illumination throughout the study.

E. Adult Observations/Gross Pathology: All adult birds were observed at least once daily throughout the study for signs of toxicity or abnormal behavior. At study termination, all 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, marked according to pen of origin, and washed to prevent pathogen contamination. The eggs were then stored at 11.0°C ± 1.3°C (SD) and 75% 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 37.4°C ± 0.1°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, and placed in a hatcher on incubation day 24. Temperature in the hatcher was 37.1°C ± 0.2°C (SD) with a relative humidity of 73%.

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. Brooder temperatures were maintained at approximately 38°C until the birds were 5-7 days of age, and 26°C thereafter. Ambient room temperature was 21.1°C ± 2.4°C (SD). The photoperiod was maintained at 16 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's 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 test material was analyzed by Chevron's Analytical Services Laboratory. The results of the analysis were presented as an addendum report (MRID # 410302-05, Vol. 2 of 2). The mean measured concentrations for freshly prepared diets were 87.5%, 90.4%, and 94.5% of the nominal concentrations (adjusted for active ingredient) of 100, 250, and 833 ppm, respectively.

B. **Mortality and Behavioral Reactions**: There were no mortalities during the study in any group.

No overt signs of toxicity were observed at any concentration.

Necropsy of all adult mallards was conducted at study termination. All lesions observed were considered to be incidental to treatment.

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 (Table 1, attached).

"Due to excessive wastage by some birds, feed consumption was variable between pens. There was no apparent treatment related effect upon feed consumption among birds at any concentration tested." When compared to the control group, at 120 ppm there were significant decreases in food consumption during weeks 1-3, 6-10, and 13. Significant decreases from the control were noted at 300 ppm during week 1, and at 1000 ppm during weeks 1, 8, 10, and 11. These differences were

considered to be incidental to treatment. Mean feed consumption and levels of significance are shown in Table 2 (attached).

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 weights of offspring at hatching or at 14 days of age.

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

"Dietary concentrations of RE-45601 Technical at 120, 300, or 1000 ppm did not result in treatment-related mortality, overt signs of toxicity, or effects upon body weight or feed consumption among adult mallards during the 19 week exposure period. No treatment-related effects upon reproductive performance were noted. The no-observed-effect concentration for RE-45601 Technical in this study was 1000 ppm."

The report contained statements attesting that study was conducted in conformance with Good Laboratory Practice regulations. The data were inspected and the final report signed by Quality Assurance representatives of Chevron Chemical Company and Wildlife International, Ltd.

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

A. Test Procedures: The test procedures were in accordance with the SEP and Subdivision E guidelines except for the following deviations:

Eggs were stored at a temperature of approximately 11°C and a relative humidity of approximately 75%; 16°C and 65% are recommended.

Observations on food palatability were not reported.

Behavioral observations of offspring were not reported.

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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.

Analyses of reproductive parameters were verified (attached) and found to match those reported by the author, except in the ratio of hatchlings/3-week embryos. The analysis of this parameter indicated that the 300-ppm group was significantly ($p = 0.022$) lower than the control group, contrary to the author's conclusion of no significant difference.

C. **Discussion/Results**: The reduced food consumption does not appear to be related to treatment. The reduced consumption in the 120-ppm group during 9 of 19 weeks is perplexing, however. Perhaps, as the author suggests, this may have been due to the additional feed change at this concentration. The control, 300-ppm and 1000-ppm groups were presented with fresh food once each week, and frozen food once each week, while the 120-ppm group was presented with fresh food once each week, and frozen food twice each week. The author did not report observations on reduced food palatability nor provisions for minimizing food spillage. A discussion of these items should have been included, and might clarify the reason for the observed differences in food consumption. Since the differences indicate no dose-dependent trends, and the body weights do not appear to have been affected, the author's conclusion of no treatment-related differences in food consumption is accepted.

The reduced proportion of hatchlings/3-week embryos in the 300-ppm group does not appear to be related to treatment.

Mean measured dietary concentrations of RE-45601 technical at 100, 250, and 833 ppm did not result in treatment-related effects upon reproduction, mortality, behavior, food consumption or body weight in adult mallards during the 19-week exposure period. The NOEC was 833 ppm (measured).

The study is scientifically sound and fulfills the requirements for an avian reproductive test.

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D. Adequacy of the Study:

(1) Classification: Core.

(2) Rationale: N/A

(3) Repairability: N/A

15. COMPLETION OF ONE-LINER: Yes; February 14, 1990.

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CLETHODIM

Page _____ is not included in this copy.

Pages 10 through 12 are not included in this copy.

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.

X 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.

Clethodim/Mad Data Set
Sorted by Treatment Levels

TREATMENT LEVEL 0 PPM

		PENNO	EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	1	1	53	2	47	44	44	38	38
CASE	2	2	35	0	31	29	29	26	26
CASE	3	3	57	2	50	44	44	40	40
CASE	4	4	65	0	59	56	54	43	43
CASE	5	5	36	1	32	29	29	26	26
CASE	6	6	49	2	43	26	25	25	25
CASE	7	7	35	0	31	18	17	9	9
CASE	8	8	18	1	15	15	15	15	15
CASE	9	9	66	5	53	36	35	35	34
CASE	10	10	48	0	44	43	42	37	37
CASE	11	11	50	0	46	36	36	34	33
CASE	12	12	53	1	48	45	45	37	37
CASE	13	13	56	3	49	42	41	37	36
CASE	14	14	46	1	40	39	39	36	35
CASE	15	15	54	0	48	37	37	36	35
CASE	16	16	48	1	43	38	38	34	33
			769	19	679	577	570	508	502

TREATMENT LEVEL 120 PPM

		PENNO	EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	17	1	51	2	45	45	45	44	43
CASE	18	2	69	2	55	48	48	45	45
CASE	19	3	51	1	45	42	42	39	39
CASE	20	4	51	1	46	0	0	0	0
CASE	21	5	34	1	30	26	26	23	23
CASE	22	6	51	2	45	0	0	0	0
CASE	23	7	43	0	38	37	37	35	34
CASE	24	8	14	8	1	1	1	1	1
CASE	25	9	46	0	41	34	33	25	25
CASE	26	10	42	2	36	33	33	29	29
CASE	27	11	38	1	34	34	34	30	30
CASE	28	12	50	1	45	43	43	43	42
CASE	29	13	47	3	41	38	38	34	34
CASE	30	14	38	1	35	25	24	24	24
CASE	31	15	62	2	54	49	48	45	44
CASE	32	16	63	0	55	53	53	48	48
			750	27	646	508	505	465	461

TREATMENT LEVEL 300 PPM

		PENNO	EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	33	1	53	0	49	46	45	41	41
CASE	34	2	49	1	44	43	40	22	22
CASE	35	3	46	1	41	0	0	0	0
CASE	36	4	13	2	3	3	3	3	3
CASE	37	5	54	2	48	47	47	30	30
CASE	38	6	48	1	41	39	38	27	27
CASE	39	7	45	1	40	39	39	30	30
CASE	40	8	54	4	44	41	41	28	28
CASE	41	9	68	0	61	57	57	53	51
CASE	42	10	32	2	27	25	25	15	15
CASE	43	11	63	1	56	53	53	31	31
CASE	44	12	28	3	21	21	21	19	19
CASE	45	13	53	0	49	48	48	38	38
CASE	46	14	55	1	49	47	47	44	43
CASE	47	15	56	0	52	51	51	49	49
CASE	48	16	51	2	44	43	43	32	32
			768	21	669	603	598	462	459

TREATMENT LEVEL 1000 PPM

		PENNO	EL	EC	ES	VE	LE21	HAT	TWOWK
CASE	49	1	62	1	57	54	54	51	51
CASE	50	2	49	3	41	39	39	32	32
CASE	51	3	46	2	40	34	34	33	33
CASE	52	4	42	1	35	32	32	32	32
CASE	53	5	50	2	43	34	34	31	31
CASE	54	6	38	1	32	30	30	30	30
CASE	55	7	45	0	39	39	38	24	24
CASE	56	8	36	1	31	31	31	31	31
CASE	57	9	47	0	43	39	39	36	36
CASE	58	10	35	2	29	29	29	28	27
CASE	59	11	54	3	47	46	45	43	43
CASE	60	12	42	0	38	38	37	32	31
CASE	61	13	38	0	32	24	24	22	22
CASE	62	14	19	0	16	16	16	13	13
CASE	63	15	44	1	40	39	39	33	33
CASE	64	16	52	0	48	46	45	39	39
			699	17	611	570	566	510	508

ANOVA on SQR(Eggs Cracked)

DEP VAR: SEC N: 64 MULTIPLE R: .179 SQUARED MULTIPLE R: .032

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.953	3	0.318	0.663	0.578
ERROR	28.770	60	0.480		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.611	1	0.611	1.274	0.264
ERROR	28.770	60	0.480		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.148	1	0.148	0.309	0.580
ERROR	28.770	60	0.480		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.008	1	0.008	0.017	0.898
ERROR	28.770	60	0.480		

ANOVA on SQR(Eggs Laid)

DEP VAR: SEL N: 64 MULTIPLE R: .123 SQUARED MULTIPLE R: .015

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.903	3	0.301	0.306	0.821
ERROR	58.982	60	0.983		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.078	1	0.078	0.079	0.779
ERROR	58.982	60	0.983		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.007	1	0.007	0.007	0.935
ERROR	58.982	60	0.983		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.739	1	0.739	0.752	0.389
ERROR	58.982	60	0.983		

ANOVA on SQR(Eggs Set)

DEP VAR: SES N: 64 MULTIPLE R: .106 SQUARED MULTIPLE R: .011

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	0.989	3	0.330	0.226	0.878
ERROR	87.448	60	1.457		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.571	1	0.571	0.392	0.534
ERROR	87.448	60	1.457		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.164	1	0.164	0.112	0.738
ERROR	87.448	60	1.457		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.836	1	0.836	0.574	0.452
ERROR	87.448	60	1.457		

ANOVA on SQR(Viable Embryos)

DEP VAR: SVE N: 64 MULTIPLE R: .199 SQUARED MULTIPLE R: .040

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	7.426	3	2.475	0.829	0.483
ERROR	179.164	60	2.986		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	5.500	1	5.500	1.842	0.180
ERROR	179.164	60	2.986		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.159	1	0.159	0.053	0.818
ERROR	179.164	60	2.986		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.002	1	0.002	0.001	0.978
ERROR	179.164	60	2.986		

ANOVA on SQR(21-day Live Embryos)

DEP VAR: SLE21 N: 64 MULTIPLE R: .197 SQUARED MULTIPLE R: .039

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	7.215	3	2.405	0.811	0.493
ERROR	177.961	60	2.966		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	5.227	1	5.227	1.762	0.189
ERROR	177.961	60	2.966		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.132	1	0.132	0.044	0.834
ERROR	177.961	60	2.966		

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	177.961	60	2.966		

ANOVA on SQR(Hatched)

DEP VAR: SHAT N: 64 MULTIPLE R: .193 SQUARED MULTIPLE R: .037

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	6.219	3	2.073	0.774	0.513
ERROR	160.758	60	2.679		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	3.685	1	3.685	1.375	0.246
ERROR	160.758	60	2.679		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	2.071	1	2.071	0.773	0.383
ERROR	160.758	60	2.679		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.010	1	0.010	0.004	0.952
ERROR	160.758	60	2.679		

ANOVA on SQR(Two week Survivors)

DEP VAR: STWOWK N: 64 MULTIPLE R: .193 SQUARED MULTIPLE R: .037

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	6.149	3	2.050	0.775	0.512
ERROR	158.665	60	2.644		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	3.553	1	3.553	1.344	0.251
ERROR	158.665	60	2.644		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	1.925	1	1.925	0.728	0.397
ERROR	158.665	60	2.644		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.024	1	0.024	0.009	0.924
ERROR	158.665	60	2.644		

ANOVA on EC/EL

DEP VAR: RESP1 N: 64 MULTIPLE R: .211 SQUARED MULTIPLE R: .045

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	168.299	3	56.100	0.933	0.430
ERROR	3605.821	60	60.097		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	116.956	1	116.956	1.946	0.168
ERROR	3605.821	60	60.097		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	33.240	1	33.240	0.553	0.460
ERROR	3605.821	60	60.097		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	0.099	1	0.099	0.002	0.968
ERROR	3605.821	60	60.097		

ANOVA on VE/ES

DEP VAR: RESP2 N: 64 MULTIPLE R: .249 SQUARED MULTIPLE R: .062

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	1385.083	3	461.694	1.319	0.277
ERROR	21008.665	60	350.144		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	83.169	1	83.169	0.238	0.628
ERROR	21008.665	60	350.144		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	232.355	1	232.355	0.664	0.419
ERROR	21008.665	60	350.144		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	616.555	1	616.555	1.761	0.190
ERROR	21008.665	60	350.144		

3 CASES DELETED DUE TO MISSING DATA.

DEP VAR: RESP3 N: 61 MULTIPLE R: .171 SQUARED MULTIPLE R: .029

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	36.682	3	12.227	0.570	0.637
ERROR	1221.700	57	21.433		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	24.885	1	24.885	1.161	0.286
ERROR	1221.700	57	21.433		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	23.470	1	23.470	1.095	0.300
ERROR	1221.700	57	21.433		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	23.736	1	23.736	1.107	0.297
ERROR	1221.700	57	21.433		

3 CASES DELETED DUE TO MISSING DATA.

DEP VAR: RESP4 N: 61 MULTIPLE R: .404 SQUARED MULTIPLE R: .164

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	1290.146	3	430.049	3.715	0.016
ERROR	6597.759	57	115.750		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	66.238	1	66.238	0.572	0.452
ERROR	6597.759	57	115.750		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	642.353	1	642.353	5.549	0.022
ERROR	6597.759	57	115.750		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	9.697	1	9.697	0.084	0.773
ERROR	6597.759	57	115.750		

3 CASES DELETED DUE TO MISSING DATA.

DEP VAR: RESP5 N: 61 MULTIPLE R: .241 SQUARED MULTIPLE R: .058

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	58.520	3	19.507	1.171	0.329
ERROR	949.342	57	16.655		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	8.700	1	8.700	0.522	0.473
ERROR	949.342	57	16.655		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	41.223	1	41.223	2.475	0.121
ERROR	949.342	57	16.655		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	42.877	1	42.877	2.574	0.114
ERROR	949.342	57	16.655		

ANOVA on HAT/ES

DEP VAR: RESP6 N: 64 MULTIPLE R: .209 SQUARED MULTIPLE R: .044

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	847.373	3	282.458	0.913	0.440
ERROR	18569.181	60	309.486		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	21.512	1	21.512	0.070	0.793
ERROR	18569.181	60	309.486		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	112.151	1	112.151	0.362	0.549
ERROR	18569.181	60	309.486		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	290.857	1	290.857	0.940	0.336
ERROR	18569.181	60	309.486		

DEP VAR: RESP7 N: 64 MULTIPLE R: .212 SQUARED MULTIPLE R: .045

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
TRT	847.667	3	282.556	0.939	0.428
ERROR	18061.222	60	301.020		

Post-hoc contrast of treatment 1 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	23.670	1	23.670	0.079	0.780
ERROR	18061.222	60	301.020		

Post-hoc contrast of treatment 2 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	95.575	1	95.575	0.318	0.575
ERROR	18061.222	60	301.020		

Post-hoc contrast of treatment 3 with control.

TEST FOR EFFECT CALLED: TRT

TEST OF HYPOTHESIS

SOURCE	SS	DF	MS	F	P
HYPOTHESIS	306.647	1	306.647	1.019	0.317
ERROR	18061.222	60	301.020		

Shaughnessey #: Not available

MRID No. 410302-05

Chemical Name Clethodim Chemical Class _____ Page 1 of 1

Study/Species/Lab/Succession _____ Chemical % Active _____

Avian Reproduction,

Species: Anas platyrhynchos

Mallard Duck 83.3%

Lab: Wildlife International

Results

Group	*Nominal Dose(ppm)	Effected/Parameters	Mort.(%)	↓Chl Inh.
Control	0	NONE	0	N/A
Treatment I	120	NONE	0	
Treatment II	300	NONE	0	
Treatment III	1000	NONE	0	

Reviewer/Date: M.L. WHITTEN CORE 2/14/90

Valid Stat:

Study Duration: 19 WEEKS

Comments: * ~~Nominal~~ Measured DOSES OF ACTIVE INGREDIENT: 0, 100, 250, 833 ppm

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Field Study (Simulated/Actual)

Species: _____

Lab: _____

Acc. _____

Group	Rate(ai/a)	Treatment Interval	Total # Treatments	Mor.(%)
Control				
Treatment I				
Treatment II				
Treatment III				

Crop/Site: Study Duration:

Comments:

Chronic fish,

Species _____

Lab: _____

Acc. _____

Concentrations Tested (pp__)= _____

MATC = >____ <____ pp__. Effected Parameter = _____

Contr. Mort.(%)= _____ Sol. Contr. Mort.(%)= _____

Comments:

Chronic invertebrate

Species _____

Lab _____

Acc. _____

Concentrations Tested (pp__)= _____

MATC =>____ <____ pp__. Effected Parameter(s) _____

Contr. Mort.(%)= _____ Sol. Contr. Mort.(%)= _____

Comments:
