EEE BRANCH REVIEW

DATE: IN 1/16/78 OUT 1/20/78 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 2724 ETU

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED _____

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCTS(S): I, D, H, F, N, R, S Bait + insecticide

DATA ACCESSION NO(S). _____

PRODUCT MGR. NO. 12 Sanders

PRODUCT NAME(S) Golden Malrin RF128 Fly Killer

COMPANY NAME Zoecon Corp

SUBMISSION PURPOSE Data Submission

CHEMICAL & FORMULATION MUSCAMONE (Z-9-Tricosene); 0.025%
Methomyl: 1%

100.0 Pesticidal USE

Combination Fly Bait (Z-9-Tricosene) and Fly Killer (Methomyl) for use around the outside of feed lots, broiler houses, livestock barns, kennels, food processing plants and restaurants

101.0 Chemical and Physical Properties

101.1 Chemical Name

(1) Methomyl: (S-methyl N-[methylcarbomoyl] oxy) Thioacetimdate.

(2) Muscamone: Z-9-Tricosene

103.0 Toxicological Properties

103.4.0 Chronic Toxicity

103.4.2 Bird

DATA REVIEW NUMBER: ES VI

TEST: AVIAN REPRODUCTION STUDY

SPECIES: BOBWHITE QUAIL (Colinus virginianus)

R Bobwhite quail receiving technical Muscamone at dietary concentrations of 2 ppm and 20 ppm showed no symptoms of toxicity or behavioral abnormalities for the duration of the study. All test and control birds appeared normal throughout the study; and there was no mortality.

Based on the results of this study, environmental levels of up to 20 ppm of technical Muscamone do not present a reproductive hazard to bobwhite quail.

CHEMICAL: Z-9-TRICOSENE (Technical

TITLE: ONE GENERATION REPRODUCTION STUDY - BOBWHITE ~~QUAIL TECHNICAL MUSCAMONE~~

ACCESSION NO.

STUDY DATE: APRIL 10 1974

RESEARCHER: Robert FINK TRUSLOW FARMS INC.

REGISTRANT: ZOECON IND.

VALIDATION CATEGORY: CORE

CATEGORY REPATRABILITY: NA. THIS STUDY was given additional Review after a response by the registrant to a request that all data pertinent to a statistical analysis of reported Results be submitted. This analysis has been done using one way ANOVA and DUNCAN'S MULTIPLE Range test. ALL other procedures for avian reproduction followed standard procedures. The statistical analysis done by this section confirmed the result Reported by the test Lab. Calculated F values for all perameters were Less than tabular F values indicating no significant differences between control birds and birds at the two test Levels. Control Bird reproductive performance was Normal

Validator: Tom O'BRIEN 1/20/78

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DATA REVIEW NUMBER: ESW1

TEST: AVIAN REPRODUCTION STUDY

SPECIES: MALLARD DUCK (ANAS PLATYCHYNCHOS)

RESULTS: This study looked at the following levels
Control
0.1ppm (94.7% A.I.)
0.1ppm (63.1% A.I.)

Investigator concluded that neither the 63.1% tricosene or the 94.7% tricosene present a reproductive hazard when present in diet at 0.1 ppm. No effects were noted on the reproductive success of the birds and no effects were noted on body weight gain or food consumption.

CHEMICAL: Z-9-TRICOSENE (Technical)

TITLE: ONE GENERATION REPRODUCTION STUDY - MALLARD DUCK Z-9-TRICOSENE FINAL Report

ACCESSION NO. 229393

STUDY DATE: AUGUST 28, 1975

RESEARCHER: Robert FINK
WILDLIFE RES DIV., TRUSLOW FARM

REGISTRANT: ZOECON IND.

VALIDATION CATEGORY: CORE

CATEGORY REPATRABILITY: NA. THIS STUDY was given additional review after a RESPONSE by the Registrant to a request that all data pertinent to a statistical analysis of Reported results be submitted. This analysis has been done using ONE WAY ANOVA and Duncans MULTIple range test if applicable. ALL Other procedures for AVIAN Reproduction followed Standard protocols. The statistical analysis done by this section confirmed the results reported by the test Lab. Calculated F for all parameters was Less than Tabular F indicating that there are no significant differences at the P=0.05 Level.

VALIDATOR: Tom O'BRIEN 1/19/78

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ADDITIONAL INFORMATION: MALLARD DUCK

Eggs Laid						$\bar{x}$	F
Control	184	173	217	186	149	181.8	.153 < 3.8
0.1 (94.7%)	142	175	194	208	213	186.4	
0.1 (63.1%)	174	170	181	198	232	191	

Eggs Set							
CONTROL	176	159	204	176	139	170.8	.185 < 3.89
0.1 (94.7%)	133	163	186	195	204	176.2	
0.1 (63.1%)	162	162	170	188	222	180.8	

VIABLE Embryos							
CONTROL	171	136	201	170	133	162.2	.127 < 3.89
0.1 (94.7%)	127	152	174	187	192	166.4	
0.1 (63.1%)	158	155	161	184	192	170.0	

LIVE THREE week EMBRYOS							
CONTROL	169	135	198	166	131	159.8	.163 < 3.89
0.1 (94.7%)	127	151	172	185	183	163.6	
0.1 (63.1%)	157	153	159	183	189	168.2	

NORMAL HATCHLINGS							
CONTROL	117	88	142	120	88	111	.395 < 3.89
0.1 (94.7%)	89	79	111	135	114	105.6	
0.1 (63.1%)	112	93	119	113	154	118.2	

SHELL THICKNESS							
control	.350	.353	.338	.357	.351	.3498	.565 < 3.89
0.1 ppm (94.7%)	.342	.361	.352	.357	.356	.3406	
0.1 ppm (63.1%)	.334	.341	.336	.374	.346	.3462	

14 Day Survivors									$\bar{x}$	
CONTROL	40	79	93	94	79	53	68	47	69.125	
0.1 ppm (94.7%)	29	68	72	87	70	72	75	51	65.5	.334 < 4.32
0.1 ppm (63.1%)	53	103	67	91	79	75	57	60	73.125	

DERA REVIEW NUMBER: ES W 2

TEST: AVIAN Reproduction Study

~~Species~~ MALLARD DUCK (ANAS platychynchos)

SPECIES:

Result: At a dietary concentration of 2 ppm, technical Muscamone had an adverse but statistically insignificant effect on eggs laid, viable embryos, live three-week embryos, and normal hatchlings. The effects on normal hatchlings were approaching significance ($p < 0.1$); and the effects on 14-day-old survivors were significant ($p < 0.05$).

At a dietary concentration of 20 ppm, technical Muscamone had an adverse but statistically insignificant effect on eggs laid, viable embryos, and live three-week embryos. The effects on viable embryos and live three-week embryos were approaching significance ($p < 0.1$). Significant impairment was observed among normal hatchlings and 14-day-old survivors ($p < 0.05$).

The two phases of embryonic development most affected by technical Muscamone were early embryo mortality (Viable Embryos of Eggs Set, Table 2b) and late embryo mortality (Normal Hatchlings of Live Three-Week Embryos, Table 2b).

CHEMICAL: Z-9-Tricosene (Technical)

TITLE: ONE GENERATION REPRODUCTION STUDY - Mallard Ducks Technical MUSCAMONE

ACCESSION NO. 232017

STUDY DATE: APRIL 10, 1974

RESEARCHER: Robert Fink, Troslow Farms

REGISTRANT: ZOECON IND.

VALIDATION CATEGORY: CORE

CATEGORY REPARABILITY: NA. This study was given additional review after a response by the registrant to a request that all data pertinent to a statistical analysis of reported results be submitted. This analysis has been done using one way ANOVA and Duncans multiple range test. ALL other procedures for avian Reproduction followed standard protocols. The statistical analysis done by this section confirmed the results reported by the test lab. Calculated F for Viable embryo, Live three week embryo, Normal hatchlings and 14 day survivors indicate reproductive impairment.

Validator: Tom O'Brien 1/19/78

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ADDITIONAL INFORMATION: MALLARD DUCK

Eggs Laid	$\bar{X}$	F Test	Duncans Multiple Range
Control	148.8	.975 < 3.87	NA
2.0 ppm	127.2	No significant Diff.	
20 ppm	123.2		

Egg Set	$\bar{X}$	F Test	Duncans M. R.
Control	134.6	.713 < 3.87	NA
2.0 ppm	116.6	Not Sign.	
20 ppm	113.		

Eggs Cracked	$\bar{X}$	F Test	Duncans M. R.
Control	1.2	1.22 < 3.87	NA
2.0 ppm	2.8	Not Sign	
20 ppm	2.0		

Shell Thickness	$\bar{X}$	F. Test	Duncans M. R.
Control	.3464	1.3 < 3.87	NA
2.0 ppm	.3382	Not Sign	
20 ppm	.3436		

Viable Embryos	$\bar{X}$	F Test	Duncans M. R.
Control	115.8	3.17 > 2.81	
2.0 ppm	90.6	Sign at 90%	20 ppm sign at (P.0.05)
20 ppm	73.0		

Live Three Week Embryos	$\bar{X}$	F Test	Duncans M. R.
Control	114.4	3.95 > 3.87	
2.0 ppm	84.6	Sign (P=0.05)	20 ppm sign at (P=0.05)
20 ppm	71.2		

Normal Hatchlings	$\bar{X}$	F Test	Duncans M. R.
Control	77.6	9.326 > 3.87	2.0 ppm sign at (P=0.05)
2.0 ppm	40.6	Sign at (P.0.05)	20 ppm sign at (P=0.05)
20 ppm	36.6		

14 Day Survivors	$\bar{X}$	F Test	Duncans M. R
Control	47.5	5.72 > 5.72	2.0 ppm sign at (P=0.05)
2.0 ppm	24.125	Sign at P(0.05)	20 ppm sign at (P=0.05)
20 ppm	21.		

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104.0 Hazard Assessment

104.1.3 Adequacy of Toxicity Data

1. The two mallard Avian Reproduction studies have be reviewed and determined to be scientifically ~~[illegible]~~ acceptable. Statistical Analysis of raw data for all test perimeters confirms the test lab conclusions
2. The avian Reproduction Study for Bobwhite quail has been statistically analyzed and determined to be scientifically acceptable

~~[illegible]~~. 107.0 Conclusions

107.4 Data Adequacy.

The raw Data Submitted for the Two Mallard Duck Reproduction Studies and The Bobwhite Quail Study ~~[illegible]~~ have been analyzed by ANOVA and the statistical analysis confirms the test lab conclusions

These avian reproduction studies are now considered as acceptable and can be used by the Environmental Safety Section when making a hazard assessment.

THOMAS F O'BRIEN 1/20/78
ENVIRONMENTAL SAFETY Section
EEEB - RD WH 567