



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

OFFICE OF
 CHEMICAL SAFETY AND
 POLLUTION PREVENTION

PC Code: 028201
 DP Barcode: D387605
 Date: October 20, 2011

MEMORANDUM

SUBJECT: Transmittal of a Data Evaluation Record for an Avian Reproduction Test of Propanil on Mallard Duck (*Anas platyrhynchos*)

TO: Joel Wolf, Chemical Review Manager
 Cathryn Britton, Risk Manager
 Risk Management and Implementation Branch II
 Pesticide Re-Evaluation Division (7508P)
 Office of Pesticide Programs

FROM: Meghan Radtke, Ph.D., Biologist
 Environmental Risk Branch I
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 Office of Pesticide Programs

Meghan Radtke 10/20/11

APPROVED BY: Sujatha Sankula, Ph.D., Lead Biologist
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 Office of Pesticide Programs

Sujatha Sankula 10/24/11
Nancy Andrews 10/24/11

The Environmental Fate and Effects Division (EFED) has completed the review of MRID 48327201, a study of the reproductive effects of propanil on the mallard duck (*Anas platyrhynchos*). Details of the study's findings are provided in Table 1.



TABLE 1. Details for the Propanil Study

Study Type	Organism	MRID	Study Citation	Study Classification	Summary
Avian Reproduction Test 850.2300 Propanil (98.5%)	<i>Anas platyrhynchos</i>	48327201	Stafford, J. M. 2005. Propanil: reproductive toxicity test with the mallard duck (<i>Anas platyrhynchos</i>). Unpublished study performed by Springborn Smithers Laboratories, Snow Camp, NC and ENCAS Analytical Laboratories, Winston-Salem, NC. Laboratory Study Number 12177.4100. Study sponsored by Propanil Task Force II, c/o Edward M. Ruckert, McDermott, Will & Emery, Washington, DC. Study completed May 4, 2005.	Supplemental	NOAEC = 46 mg ai/kg-diet LOAEC = 116 mg ai/kg-diet Most sensitive endpoint: adult male and female weight gain No other effects were observed, including effects to offspring. Rationale: Birds were fed an antibiotic supplement in their feed during the application period and basal diets were switched mid-experiment for all adult birds. These deviations add uncertainty to the study's results.

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

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EPA MRID Number 48327201

Data Requirement:	PMRA Data Code	{.....}
	EPA DP Barcode	387605
	OECD Data Point	{.....}
	EPA MRID	48327201
	EPA Guideline	OPPTS 850.2300

Test material:	Propanil Technical	Purity: 98.5%
Common name	Propanil	
Chemical name:	IUPAC:	
	CAS:	
	CAS No.:	
	Synonyms:	

Primary Reviewer: Moncie Wright
Staff Scientist, Dynamac Corporation

Moncie V Wright
Signature:
Date: 6/8/11

Secondary Reviewer: Teri S. Myers
Senior Scientist, Cambridge Environmental Inc.

Teri S Myers
Signature:
Date: 9/30/11

Primary Reviewer: Meghan Radtke
EPA

Meghan Radtke
Date: 10/19/11

Secondary Reviewer(s): {.....}
{EPA/OECD/PMRA}

Date: {.....}

Reference/Submission No.: {.....}

Company Code	{.....}	[For PMRA]
Active Code	{.....}	[For PMRA]
Use Site Category	{.....}	[For PMRA]
EPA PC Code	028201	

Date Evaluation Completed: 19-10-2011

CITATION: Stafford, J.M. 2005. Propanil: Reproductive Toxicity Test with the Mallard Duck (*Anas platyrhynchos*). Unpublished study performed by Springborn Smithers Laboratories, Snow Camp, NC and ENCAS Analytical Laboratories, Winston-Salem, NC. Laboratory Study No. 12177.4100. Study sponsored by Propanil Task Force II, c/o Edward M. Ruckert, McDermott, Will & Emery, Washington, DC. Study completed May 4, 2005.

DISCLAIMER: This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the reproductive effects of a pesticide on avian species. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

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EXECUTIVE SUMMARY

The one-generation reproductive toxicity of **Propanil technical** to 17 pairs per level of *ca.* 20-week old mallard duck (*Anas platyrhynchos*) was assessed over 23 weeks. Propanil was administered to the birds in the diet at nominal concentrations of 0 (negative control), 20, 50, and 125 mg ai/kg diet. Mean-measured concentrations were <10 (<LOQ, control), 17, 46, and 116 mg ai/kg diet, respectively.

There were no mortalities in the control or any of the treatment groups, and gross necropsies revealed scattered effects that were likely not treatment-related.

Statistically significant reductions were observed in male weight gain at the 116 mg ai/kg diet level compared to the control (84% lower than control; $p=0.003$). Additionally, statistically significant reductions were observed in female weight gain at the 116 mg ai/kg diet level compared to the control (39% lower than control; $p=0.002$). There were no further significant reductions in any other adult parameter.

No statistically-significant differences were indicated for any reproductive or offspring parameter at any of the diet levels tested.

This study is scientifically sound and is classified as supplemental. Bird diets were supplemented with tylosin phosphate, a preventative antibiotic, prior to the start of the experiment. During the experiment, adult birds were initially fed Purina Game Bird Flight Conditioner, but then they were switched to Purina Layena Game Bird Ration beginning one week before photo-stimulation until the end of the experiment. The change in feeds during the experiment combined with the exposure to antibiotics during the acclimation period introduces additional unnecessary variation into the study. Endpoints should be used with caution.

Results Synopsis

Test Organism Size/Age (mean Weight): 20 weeks old; 929 to 1294 g (combined sexes)

NOAEC: 46 mg ai/kg diet (mean-measured)

LOAEC: 116 mg ai/kg diet (mean-measured)

Endpoint(s) Affected: adult male and female weight gain

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I. MATERIALS AND METHODS

GUIDELINE(S) FOLLOWED: This study was conducted according to methods based on both U.S. EPA and OECD, and are reported as fulfilling the data requirements for U.S. EPA 40 CFR 158.145, Series 71-4, "Avian Reproduction Test" (1982); U.S. EPA OPPTS 850.2300, "Avian Reproduction Test" (1996); and OECD Test Guideline 206, "Avian Reproduction Test" (1984). The study methods and results were evaluated according to both U.S. EPA OPPTS and OECD guidelines, and differences and/or similarities were described. The following deviations from OPPTS 850.2300 and OECD 206 were noted:

1. The area of the adult bird cages was 6308 cm² and there were 2 birds (1 female and 1 male) per pen, allowing only 3154 cm² per bird; OPPTS guidelines suggest allocating 5000 cm² of pen space per bird and also recommend providing documentation that this is appropriate if allocating less space. However, OECD guidelines only suggest 100 cm² of floor space per pair.
2. The physico-chemical properties of the test material were not reported; both OPPTS and OECD guidelines suggest this information be provided.
3. The mallards were younger than recommended at 20 weeks old (*ca.* 5 months old) at test initiation; OECD guidelines suggest that birds be 9-12 months old at test initiation, and OPPTS guidelines suggest that birds be at least 7 months old.
4. Birds were fed feed mixed with antibiotics during acclimation and bird diet was changed mid-experiment from Purina Game Bird Flight Conditioner to Purina Layena Game Bird Ration.

Deviations 1 – 3 do not affect the scientific soundness of this study; however, deviation 4 does.

COMPLIANCE: Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided. This study was conducted in compliance with all pertinent U.S. EPA (40 CFR, Part 160) and OECD (1997) Good Laboratory Practice Regulations with the following exceptions: routine water and food contaminant screening analyses were conducted using standard U.S. EPA procedures.

A. MATERIALS:

1. Test Material	Propanil Technical
Description:	Not reported
Lot No./Batch No. :	02 (batch no.)
Purity:	98.5% (estimated prior to study initiation by the sponsor; was actually 98.7%)
Stability of compound under test conditions:	Stability in the treated feed was verified under frozen storage conditions for up to 7 days and under ambient test conditions for up to 14 days (see

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Reviewer's Comments section).

Storage conditions of test chemicals:

The test material was stored in the original container at room temperature in a dark cabinet.

Physicochemical properties of propanil.

Parameter	Values	Comments
Water solubility at 20°C	Not reported	
Vapor pressure	Not reported	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

(OECD recommends water solubility, stability in water and light, pKa, Pow, and vapor pressure of test compound)

2. Test organism:

Table 1: Test organism.

Parameter	Details	Remarks
		Criteria
Species (common and scientific names):	Mallard duck (<i>Anas platyrhynchos</i>)	The population was assigned SSL Colony No. 056. <i>Recommended species include a wild waterfowl species, preferably the mallard (<i>Anas platyrhynchos</i>) or an upland game species, preferably the northern bobwhite (<i>Colinus virginianus</i>)</i>
Age at Study Initiation:	20 weeks + 3 days old	<i>Birds approaching their first breeding season should be used.</i>

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Parameter	Details	Remarks
		<i>Criteria</i>
Body Weight: (mean and range)	Overall (combined sexes) range of 929 to 1294 g at study initiation, with group means of 1148.8 to 1185.7 g for males and 1026 to 1072.8 g for females.	<p>Body weights were recorded at Weeks 0 (study initiation), 2, 4, 6, 8, 10 (at photo-stimulation), and 25 (study termination).</p> <p>Following randomization, body weights were tested for normality and homogeneity followed by ANOVA to assure similar weights among treatment groups, by gender.</p> <p><i>Body weights should be recorded at test initiation and at biweekly intervals up to week eight or up to the onset of egg laying and at termination.</i></p>
Source:	Whistling Wings, Inc. Hanover, Illinois	<p>Birds were from the same source and were phenotypically indistinguishable from wild stock.</p> <p><i>All birds should be from the same source.</i></p>

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: A range-finding study was conducted with 5 male:female pairs per level of 30-week old mallard duck (Whistling Wings, Inc., Hanover, Illinois) at nominal dietary concentrations of 0 (control), 62.5, 625, 1250, and 2500 mg ai/kg diet. Birds were acclimated to test conditions for 19 days, and then offered treated diet for *ca.* 5 weeks prior to egg collection (last week with photo-stimulation), and for an additional *ca.* 4 weeks during egg collection. Endpoints included adult mortality, clinical signs of toxicity, body weight (weeks 0, 2, 5, and final), food consumption, and gross necropsy; egg production; embryo fertility and viability; eggshell thickness and egg weights; and hatchling and survivor weights. Results obtained were visually assessed and used to select exposure levels for the definitive study.

Two mortalities occurred during the range-finding study: females in the 2500 mg ai/kg diet group. The male cage mates of the two birds were also euthanized on the same day. Both birds had dry skin with feathers that came out easily, were emaciated with brittle bones, and all internal organs were small. Additionally, their hearts were round and flaccid. One female had a firm tissue-like substance in its ceca. One male cage mate showed evidence of dry skin and a flaccid right ventricle. The other male cage mate was normal. One control bird had porous kidneys.

From Weeks 0 to 5, the proportional change in male body weight was notably less than the control level (81.2 g) at the 1250 (17.2g), and 2500 (-17.8 g) mg ai/kg diet levels, and comparable to the control at the

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62.5 and 625 mg ai/kg diet levels (54 and 64g, respectively). In females from weeks 0 to 5, the proportional change in body weight was notably less than the control level (156 g) at the 62.5 (54.2 g), 625 (48.2 g), 1250, (24.9 g), and 2500 (-16.1 g) mg ai/kg diet levels.

Adult feed consumption increased across all treatment groups similarly to the control group.

Average hatchling and survivor weights in the treatment groups were similar to those measured in the negative control. The sum of eggs set, sum of viable embryos, and the sum of fertile eggs were reduced in all test levels as compared to the control; the most significant reductions were observed in the 1250 and 2500 mg ai/kg diet levels. Average egg weights were only noticeably reduced at the 2500 mg ai/kg diet level. Average egg shell thickness was only slightly reduced in the 625 and 1250 mg ai/kg diet levels.

b. Definitive Study

Table 2: Experimental Parameters.

Parameter	Details	Remarks
		Criteria
Acclimation period:	14 days	The photoperiod during acclimation was 7 hrs light: 17 hrs dark. Temperatures ranged from 15 to 24°C, and relative humidity ranged from 67 to 94%.
Conditions (same as test or not):	Same as test	
Feeding:	All birds were fed Purina Game Bird Flight Conditioner mixed with Tylan 10 (Tylosin phosphate, Type B medicated feed) during acclimation, Purina Game Bird Flight Conditioner from the beginning of the experiment until one week before photo-stimulation, and then Purina Layena Game Bird Ration beginning one week before photo-stimulation until the end of the experiment. Birds were provided with well water <i>ad libitum</i>	<i>Recommended observation period includes a 2-3 week health observation period prior to selection of birds for treatment. Generally, birds should be healthy without excess mortality. Feeding should be <u>ad libitum</u>, and sickness, injuries or mortality should be noted.</i>
Health (any mortality observed):	No signs of illness, disease, or mortality were observed during the 72 hours immediately preceding the study.	
<u>Test duration</u>		

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Parameter	Details	Remarks
		Criteria
pre-laying exposure: egg-laying exposure: withdrawal period, if used:	Ca. 14 weeks 11 weeks N/A	<u>Recommended pre-laying exposure duration:</u> <i>At least 10 weeks prior to the onset of egg-laying.</i> <u>Recommended exposure duration with egg-laying:</u> <i>At least 10 weeks.</i> <u>Recommended withdrawal period:</u> <i>If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.</i>
<u>Pen (for parental and offspring) size:</u> construction materials: number:	Parents (one pair) were housed in cages measuring 76 cm deep x 83 cm wide x 44 cm high, with slanted floors for egg collection. Offspring cages measured 61 cm x 91 cm x 61 cm. Parental pens and brooding batteries were constructed of polycarbonate-coated galvanized welded-wire mesh. 17 parental pens/treatment level. Hatchlings were group-housed according to the appropriate parental pen of origin.	<u>Pens</u> <i>Pens should have adequate room and be arranged to prevent cross-contamination.</i> <u>Materials</u> <i>Recommended materials include nontoxic material and nonbinding material, such as galvanized steel.</i> <u>Number</u> <i>At least 5 replicate pens should be used for mallards housed in groups of 7. For other arrangements, at least 12 pens should be used, but considerably more may be used if birds are kept in pairs. Chicks should be housed according to parental grouping.</i>
Number of birds per pen (male:female)	2 birds/pen (1 male:1 female)	<i>One male and one female per pen should be used. For quail, one male and two females should be used. For ducks, two males and five females should be used.</i>
<u>Number of pens per group/treatment</u> negative control: solvent control: treated:	N/A 17 pens 17 pens/treatment	<i>At least 12-16 pens should be used, but considerably more if birds are kept in pairs.</i>

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Parameter	Details	Remarks
		<i>Criteria</i>
<p><u>Test concentrations (mg ai/kg diet)</u> nominal:</p> <p>measured:</p>	<p>0 (control), 20, 50, and 125 mg ai/kg diet</p> <p><10 (<LOQ, control), 17, 46, and 116 mg ai/kg diet</p>	<p>Mean-measured concentrations were reviewer-calculated (see Reviewer's Comments section).</p> <p><i>Recommended test concentrations include at least two concentrations other than the control; three or more will provide a better statistical analysis. The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level.</i></p>
<p>Maximum labeled field residue anticipated and source of information:</p>	<p>Not specified</p>	<p><i>The highest test concentrations should show a significant effect or be at or above the actual or expected field residue level. The source (i.e., maximum label rate in lb ai/A and ppm), label registration no., label date, and site should be cited]</i></p>
<p>Solvent/vehicle, if used type: amount:</p>	<p>Acetone 20 mL acetone per 22 kg feed</p>	<p>It was reported that the acetone was allowed to completely evaporate during the preparation procedure.</p> <p><i>Recommended solvents include corn oil or other appropriate vehicle not more than 2% of diet by weight</i></p>
<p>Was detailed description and nutrient analysis of the basal diet provided? (Yes/No)</p>	<p>Yes. The basal diet provided during acclimation and until 1 week prior to photostimulation contained a minimum of 19.0% crude protein and 2.0% crude fat, a maximum of 12.0% crude fiber, and a maximum of 1.35% calcium. The basal diet provided 1 week prior to photostimulation contained a minimum of 20.0% crude protein and 2.5% crude fat, a maximum of 7.0% crude fiber, and a maximum of 3.5% calcium.</p>	<p>Offspring were fed Purina Gamebird Startena® without the addition of test substance.</p> <p><i>A commercial breeder feed or an equivalent that is appropriate for the test species is recommended.</i></p>

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Parameter	Details	Remarks
		<i>Criteria</i>
Preparation of test diet	For each level, the appropriate quantity of test substance was ground by mortar and pestle, then ground in a mechanical grinder. A 20 mL volume of acetone was added to the test substance in a beaker and mixed to dissolve. Corn oil (30 mL) was added and stirred for 5 minutes. The mixture was sprinkled onto a feed aliquot. The rinsate from the beaker was added to the feed. Each 22 kg aliquot for each treatment level was mixed for 20 minutes with a Hobart mixer and then stored in a labeled feed bag. When all three 22 kg aliquots were complete, they were combined and mixed for 5 minutes. Acetone was evaporated during the mixing process.	Food was measured and replaced at least weekly throughout the study. <i>A premixed diet containing the test substance should be mechanically mixed with basal diet. If an evaporative vehicle is used, it should be completely evaporated prior to feeding.</i>
Indicate whether stability and homogeneity of test material in diet determined (Yes/No)	Yes	
Were concentrations in diet verified by chemical analysis?	Yes	See Reviewer's Comments section.
Did chemical analysis confirm that diet was stable?	Yes	See Reviewer's Comments section.
and homogeneous?	Yes	
Feeding and husbandry	Feeding and husbandry conditions appeared to be adequate, given guideline recommendations.	

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Parameter	Details	Remarks <i>Criteria</i>
<u>Test conditions (pre-laying)</u> temperature: relative humidity: photoperiod:	12 to 27°C 34 to 98% 7 hr light/day through Week 10; 17 hr light/day starting at the beginning of Week 11	Temperature and humidity were for the adult room during the entire study. Prior to photo-stimulation, light intensity averaged 8 foot-candles at pen level. At the beginning of Week 11, the average light intensity was increased to 12 foot candles. <i>Recommended temperature: about 21°C (70°F)</i> <i>Recommended relative humidity: about 55%</i> <i>Recommended lighting</i> <i>First 8 weeks: 7 h per day.</i> <i>Thereafter: 16-17 h per day.</i> <i>At least 6 foot-candles are recommended at bird level.</i>
Egg Collection and Incubation		
<u>Egg collection and storage</u> collection interval: storage temperature: storage humidity:	Daily 16°C 65%	<i>Eggs should be collected daily; recommended egg storage temperature is approximately 16°C (61°F); recommended humidity is approximately 65%. Recommended collection interval: daily</i>
Were eggs candled for cracks prior to setting for incubation?	Yes	<i>Eggs should be candled on day 0</i>
Were eggs set weekly?	Yes	
When candling was done for fertility?	Eggs were candled again on days 14 (embryo viability) and 23 (embryo survival).	<i>Quail: approx. day 11</i> <i>Ducks: approx. day 14</i>
When the eggs were transferred to the hatcher?	Day 23	<i>Bobwhite: usually day 21</i> <i>Mallard: usually day 23</i>

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Parameter	Details	Remarks
		<i>Criteria</i>
<u>Hatching conditions</u> temperature: humidity: photoperiod:	36.8-37.1°C 64 to 76% 14-hr light/day (hatchlings)	Brooders: 19 to 37°C away from heat and from 26.8 to 39.7°C under the heaters <hr/> <i>Recommended temperature is 39°C (102°F) Recommended humidity is 70%</i>
Day the hatched eggs were removed and counted	Day 27	<hr/> <i>Eggs for bobwhite should be removed on day 24; for mallard on day 27</i>
Were egg shells washed and dried for at least 48 hrs before measuring?	Could not be determined how long the eggs were dried	
<u>Egg shell thickness</u> no. of eggs used: intervals: mode of measurement:	All eggs laid on one day Once every 2 weeks Five points around the girth of the shell using a digital micrometer graduated to 0.001 mm.	<hr/> <i>Newly hatched eggs should be collected at least once every two weeks. Thickness of the shell plus membrane should be measured to the nearest 0.01 mm with 3 - 4 measurements per shell.</i>
Reference chemical, if used	None used	

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2. Observations:

Table 3: Observations.

Parameter	Details	Remarks
Parameters measured		
<u>Parental</u> (mortality, body weight, mean feed consumption) <u>Egg collection and subsequent development</u> (no. of eggs laid, no. of eggs cracked, shell thickness, no. of eggs set, no. of viable embryos, no. of live 3 week embryos, no. hatched, no. of 14-day survivors, average weight of 14-d old survivors, mortality, gross pathology, others)	- mortality - body weight - food consumption - signs of toxicity - necropsy - eggs laid - eggs cracked - egg shell thickness - eggs set - viable embryos - live 3-week embryos - hatchlings - hatchling body weight - 14-day-old survivors - 14-day-old survivor body weight - signs of toxicity of hatchlings	<hr/> <i>Recommended endpoints measured include:</i> <ul style="list-style-type: none"> • Eggs laid/pen • Eggs cracked/pen • Eggs set/pen • Viable embryos/pen • Live 3-week embryos/pen • Normal hatchlings/pen • 14-day-old survivors/pen • 14-day-old survivors/pen • Weights of 14-day-old survivors (mean per pen) • Egg shell thickness • Food consumption (mean per pen) • Initial and final body weight (mean per pen)
Indicate if the test material was regurgitated	No indications of dietary regurgitation.	
Observation intervals (for various parameters)	Parental and hatchling mortality and signs of toxicity were recorded daily. Parental body weights were recorded at Weeks 0, 2, 4, 6, 8, 10, and 23. Offspring were weighed at hatch and at 14 days. Parental food consumption was measured weekly.	<hr/> <i>Body weights and food consumption should be measured at least biweekly</i>
Were raw data included?	Yes	

II. RESULTS AND DISCUSSION:

A. MORTALITY:

No mortalities occurred in the control or treatment groups during the study.

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Table 4: Effect of Propanil on Mortality of Mallard Duck.

Treatment Mean-Measured (and Nominal) Concentrations	Observation Period					
	Week 8		Week 16		Week 23	
	No. Dead Male	No. Dead Female	No. Dead Male	No. Dead Female	No. Dead Male	No. Dead Female
Control	0	0	0	0	0	0
17 (20)	0	0	0	0	0	0
46 (50)	0	0	0	0	0	0
116 (125)	0	0	0	0	0	0

B. REPRODUCTIVE AND OTHER ENDPOINTS:

Abnormal Effects/Behavior: The study author did not report clinical signs of toxicity or abnormal behaviors for the adults or hatchlings.

Food Consumption: There were no statistically-significant reductions in adult feed consumption when weekly average feed consumption was compared among groups. The calculated average daily doses for females averaged 0, 1.89, 4.71, and 11.8 mg ai/kg bw/day for the control, 20, 50, and 125 mg ai/kg diet levels, respectively. The calculated average daily doses for males averaged 0, 1.78, 4.34, and 10.8 mg ai/kg bw/day for the control, 20, 50, and 125 mg ai/kg diet levels, respectively.

Body Weight: No treatment-related effects on adult body weight were observed during the study, with no statistically-significant differences indicated for any observation interval.

Necropsy: Gross necropsies revealed scattered incidences of follicular, oviduct, testicular atresia across the control and treatment groups, as well as oral lesions, liver, gall bladder, and heart enlargement, kidney abnormalities, and abdominal airsacculitis. None of these findings appeared treatment-related.

Reproductive Effects: No statistically-significant differences were indicated for any reproductive or offspring parameter at any of the diet levels.

Table 5: Reproductive and Other Parameters (nominal concentrations; study author-reported).

Parameter	Control	20 mg/kg	50 mg/kg	125 mg/kg	NOAEC/ LOAEC
No. laying pairs	17	17	17	17	N/A
Eggs laid	1077	1064	1133	977	125 mg/kg >125 mg/kg
Eggs laid/hen/day	0.82	0.81	0.87	0.75	125 mg/kg >125 mg/kg
Eggs cracked	26	17	20	12	Not determined

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Parameter	Control	20 mg/kg	50 mg/kg	125 mg/kg	NOAEC/ LOAEC
Eggs cracked/eggs laid	NR	NR	NR	NR	N/A
Eggs set	958	967	1017	883	125 mg/kg >125 mg/kg
Eggs set/hen	NR	NR	NR	NR	Not determined
Eggs set/eggs laid	0.96	0.95	0.95	0.97	Not determined
Eggs viable/eggs fertile	NR	NR	NR	NR	NA
Shell thickness (mm ± SD) ^(a)	0.352±0.04	0.364±0.02	0.357±0.02	0.362±0.02	NA
Fertile eggs (viable embryos)	917	914	966	853	Not determined
Viable 3-week embryos	818	807	882	779	Not determined
Fertile eggs/eggs incubated	0.96	0.95	0.95	0.97	NA
Viable 3-week embryos/fertile eggs	0.89	0.88	0.91	0.91	NA
Hatchlings	686	658	776	702	Not determined
Hatchlings/viable embryos	0.84	0.82	0.88	0.90	NA
14-day old survivors	680	653	768	689	NA
14-day old survivors/hatchlings	0.99	0.99	0.99	0.98	NA
Hatchling weight	32.9	35.1	34.5	33.4	125 mg/kg >125 mg/kg
14-day old survivors weight (g ± SD) ^(a)	289.4 ±35.8	293.7±35.7	292.0±35.7	293.2±33.1	NA
Mean food consumption (g/bird/day)	100.9	103.2	103.5	102.1	125 mg/kg >125 mg/kg
Weight (g) of parent females at test initiation: at Week 10: at test termination:	1026 1024 1286.9	1037.7 1074.6 1300.7	1045.7 1069.6 1266.8	1072.8 1032.8 1231.5	125 mg/kg >125 mg/kg
Weight (g) of parent males at test initiation: at Week 10: at test termination:	1151.2 1164.9 1246.4	1148.8 1143.9 1222.2	1161.7 1187.6 1211.4	1185.7 1164.5 1200.7	125 mg/kg >125 mg/kg
Gross pathology					Not reported

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Parameter	Control	20 mg/kg	50 mg/kg	125 mg/kg	NOAEC/ LOAEC
Count of follicular atresia	2	3		3	
Count of oviduct atresia	1	3		5	
Count of testicular atresia		1		2	
Oral lesions/mucosal plaques		1	2	2	
Count of liver enlargement		1	1		
Kidney abnormalities			1	2	
Gall bladder enlargement		1			
Heart enlargement		1			
Abdominal airsacculitis				1	

NA – the reviewer could not determine what this abbreviation stood for; statistical tests were conducted for these parameters

C. REPORTED STATISTICS:

The following variables were statistically analyzed: adult body weight (male and female separately; Weeks 0, 2, 4, 6, 8, 10, and 25), weekly and overall adult feed consumption, eggs laid per hen per day, eggs cracked of eggs laid per hen, total eggs set per hen, viable embryos of eggs set per hen, surviving embryos of viable embryos per hen, hatchlings of surviving embryos per hen, 14-day old survivors of hatchlings per hen, hatchling body weight, 14-day old survivor weight, and egg shell thickness.

Datasets were first tested for normality using a Chi-Square Test and for homogeneity of variance using Levene's Test. Proportional data were arcsine transformed if data were >0 and <1, and the transformation resulted in a normal distribution. Data that passed both assumptions were analyzed using ANOVA with an appropriate pair-wise mean comparison. Dunnett's Test and Williams' Test were used for data sets of equal replicates, and Bonferroni's t-Test was used for data set of unequal replicates. Data that failed the assumptions were analyzed using Steel's Many One-Rank (equal replicates) or Kruskal-Wallis' (unequal replicates) nonparametric tests. The unit of analysis was defined as the individual for adult body weights, and as the cage (adult pair) for all remaining endpoints. In cases where an adult pair did not produce values for a measurement interval, they were included in analysis for the last parameter that could be measured, but not subsequent analyses. All analyses were conducted at the $p \leq 0.05$ level of significance using TOXSTAT® statistical software (v. 3.5) and nominal concentrations.

D. VERIFICATION OF STATISTICAL RESULTS:

Statistical Method: Analysis was conducted using "chicks.sas" (Ver. 3; March 2002), a SAS program provided by EFED/OPP/USEPA. Data for all endpoints were examined graphically using box plots to determine if they exhibited a dose-dependent response, which was ultimately used to select the multiple comparison test to detect LOAEC and NOAEC. Data for each endpoint were tested to determine if their distributions were normal and if their variances were homogeneous using Shapiro-Wilk's and Levene's tests, respectively. Data that satisfied these assumptions were subjected to Dunnett's and William's tests and data that did not satisfy these assumptions were subjected to the non-parametric MannWhitney-U (with a Bonferroni adjustment) and Jonckheere's tests. Data for dead birds were excluded from the analyses. See Appendix I for output of reviewer's statistical verification and graphs for affected endpoints to support any reviewer-generated conclusions that may differ from those reported in the study.

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NOAEC: 46 mg ai/kg

LOAEC: 116 mg ai/kg

Most Sensitive Endpoint(s): Male and female body weight gain

Table 6: Reproductive and Other Parameters (mean-measured concentrations; reviewer-reported).

Parameter	Control	17 mg ai/kg	46 mg ai/kg	116 mg ai/kg	NOAEC/ LOAEC
Eggs laid/pen	63.4	62.6	66.7	57.5	116 mg ai/kg >116 mg ai/kg
Eggs cracked/pen	1.5	1.0	1.2	0.71	116 mg ai/kg >116 mg ai/kg
Eggs not cracked/eggs laid (%)	97.6	98.4	98.2	98.8	116 mg ai/kg >116 mg ai/kg
Eggs set/pen	56.4	56.9	59.8	51.9	116 mg ai/kg >116 mg ai/kg
Shell thickness	0.36	0.36	0.36	0.36	116 mg ai/kg >116 mg ai/kg
Eggs set/eggs laid (%)	89.2	90.9	89.8	90.5	116 mg ai/kg >116 mg ai/kg
Viable embryos/pen	53.9	53.8	56.8	50.2	116 mg ai/kg >116 mg ai/kg
Viable embryos/eggs set (%)	95.5	94.5	95.1	96.4	116 mg ai/kg >116 mg ai/kg
Live embryos/pen	48.1	47.5	51.9	45.8	116 mg ai/kg >116 mg ai/kg
Live embryos/viable embryos (%)	88	87.2	91	91.8	116 mg ai/kg >116 mg ai/kg
No. of hatchlings/pen	40.4	38.7	45.7	41.3	116 mg ai/kg >116 mg ai/kg
No. of hatchlings/eggs laid (%)	63.3	61.7	68.1	72.3	116 mg ai/kg >116 mg ai/kg
No. of hatchlings/eggs set (%)	71.5	67.5	75.7	79.9	116 mg ai/kg >116 mg ai/kg
No. of hatchlings/live embryos (%)	83.2	78.7	87.2	90.1	116 mg ai/kg >116 mg ai/kg
Hatchling survival/pen	40.0	38.4	44.0	40.5	116 mg ai/kg >116 mg ai/kg

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Hatchling survival/eggs set (%)	70.9	67.1	73.3	78.6	116 mg ai/kg >116 mg ai/kg
Hatchling survival/no. of hatchlings (%)	99.2	99.4	97.1	98.1	116 mg ai/kg >116 mg ai/kg
Hatchling weight (g)	33.5	35.3	34.6	33.4	116 mg ai/kg >116 mg ai/kg
Survivor weight (g)	291.8	292.9	291.9	292.2	116 mg ai/kg >116 mg ai/kg
Mean food consumption (g/bird/day)	100.4	103.2	103.5	102.1	116 mg ai/kg >116 mg ai/kg
Male weight gain (g)	95.2	73.4	49.6	15.0*	46 mg ai/kg 116 mg ai/kg
Female weight gain (g)	260.9	262.9	221.1	158.7*	46 mg ai/kg 116 mg ai/kg

* Statistically different from the control at p<0.01.

E. STUDY DEFICIENCIES:

Food was supplemented with antibiotics during the acclimation period; basal food was switched during the course of the experiment.

F. REVIEWER'S COMMENTS:

Results of the reviewer's statistical verification were not similar to the study author's. The reviewer's analysis detected statistically significant reductions at the highest test level for both male and female weight gain, whereas the study author's analysis indicated no statistically significant reductions for any adult parameter. The reviewer's results, based on mean-measured concentrations, are reported in the Executive Summary and Conclusions sections of the DER.

All validity requirements were met. Specifically, controls produced an average of forty (40) 14-day old survivors per hen, the egg shell thickness of control eggs was 0.352 mm (minimum of 0.19 mm for mallard duck), and adult control mortality was 0% (no more than 10% acceptable in controls).

All homogeneity, stability, and concentration verification samples were analyzed for propanil concentrations by EN-CAS Analytical Laboratories (Winston-Salem, NC). A comprehensive analytical report was provided as an appendix (Appendix 4, p. 86 of the study document). For both studies, analyses were performed using HPLC equipped with a UV detector (254 nm). The limit of quantification (LOQ) was 10 mg ai/kg diet.

Mean-measured concentrations in the treated feed were reviewer-calculated using data provided for homogeneity samples prepared at 20 and 125 mg ai/kg diet and for concentration verification samples prepared at 50 mg ai/kg diet level (see copy of associated Excel worksheet in Appendix II).

For homogeneity assessments, one sample was collected from the top left, top right, middle left, middle right, bottom left, and bottom right of the mixing tub for the diet mix. The samples were collected at four diet mix events (July 6, July 13, September 13, and November 11, 2004).

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Mean overall food consumption was reviewer-calculated (see copy of associated Excel worksheet in Appendix III).

The study author referred to viable embryos as “fertile eggs”, and referred to living 3-week embryos as viable embryos.

Experimental test dates were July 15, 2004 to January 31, 2005.

G. CONCLUSIONS:

This study is scientifically sound and classified as supplemental because of the antibiotic supplement added to the food during the acclimation period and the change in basal diets mid-course in the experiment. These deviations add additional variation to the study and toxicity values should be used with caution. No notable treatment-related effects were observed upon any offspring parameter at any of the diet levels tested. At the 116 mg ai/kg diet level, treatment-related effects on adults were restricted to male and female weight gain.

NOAEC: 46 mg ai/kg diet (mean-measured)

LOAEC: 116 mg ai/kg diet (mean-measured)

Endpoint(s) Affected: adult male and female weight gain

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

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III. REFERENCES:

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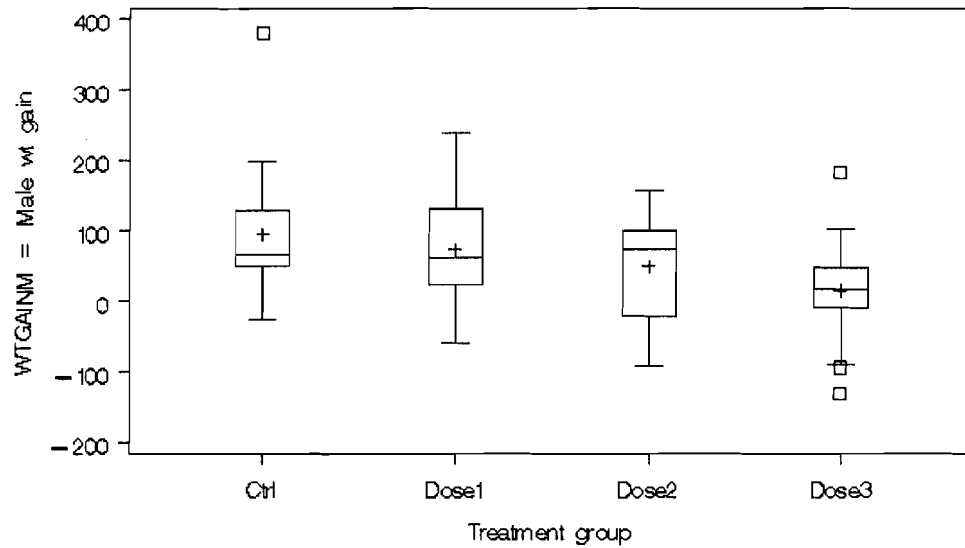
Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

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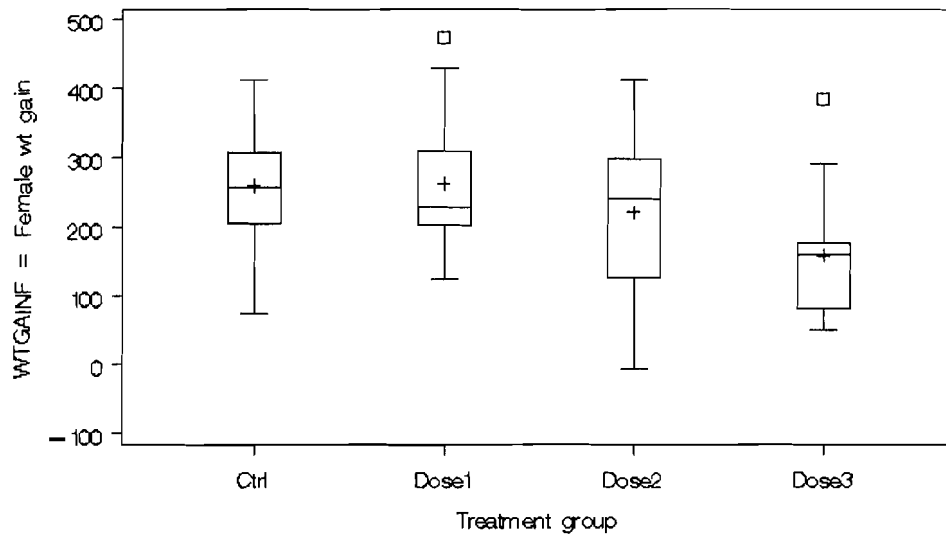
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APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

Mallard repro, Propanil, MRID 48327201



Mallard repro, Propanil, MRID 48327201



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PRINTOUT OF RAW DATA

Obs	TRT	EL	EC	ENC_EL	ES	ES_EL	VE	VE_ES	LE	LE_VE	NH	NH_EL	NH_ES
1	Ctrl	71	10	85.92	45	63.38	45	100.00	42	93.33	42	59.15	93.33
2	Ctrl	72	1	98.61	65	90.28	65	100.00	59	90.77	53	73.61	81.54
3	Ctrl	52	3	94.23	45	86.54	45	100.00	44	97.78	44	84.62	97.78
4	Ctrl	69	1	98.55	62	89.86	62	100.00	55	88.71	48	69.57	77.42
5	Ctrl	72	0	100.00	65	90.28	62	95.38	51	82.26	42	58.33	64.62
6	Ctrl	76	0	100.00	71	93.42	70	98.59	63	90.00	47	61.84	66.20
7	Ctrl	60	0	100.00	55	91.67	54	98.18	48	88.89	44	73.33	80.00
8	Ctrl	69	0	100.00	64	92.75	64	100.00	55	85.94	51	73.91	79.69
9	Ctrl	34	0	100.00	32	94.12	32	100.00	19	59.38	18	52.94	56.25
10	Ctrl	58	1	98.28	53	91.38	24	45.28	17	70.83	7	12.07	13.21
11	Ctrl	60	0	100.00	57	95.00	57	100.00	55	96.49	38	63.33	66.67
12	Ctrl	61	0	100.00	56	91.80	54	96.43	52	96.30	45	73.77	80.36
13	Ctrl	57	2	96.49	51	89.47	48	94.12	42	87.50	40	70.18	78.43
14	Ctrl	58	3	94.83	51	87.93	50	98.04	45	90.00	38	65.52	74.51
15	Ctrl	76	0	100.00	70	92.11	70	100.00	68	97.14	56	73.68	80.00
16	Ctrl	69	2	97.10	62	89.86	62	100.00	53	85.48	39	56.52	62.90
17	Ctrl	63	3	95.24	54	85.71	53	98.15	50	94.34	34	53.97	62.96
18	Dose1	68	3	95.59	60	88.24	60	100.00	56	93.33	51	75.00	85.00
19	Dose1	60	1	98.33	56	93.33	55	98.21	49	89.09	44	73.33	78.57
20	Dose1	71	3	95.77	62	87.32	49	79.03	39	79.59	11	15.49	17.74
21	Dose1	59	0	100.00	55	93.22	54	98.18	47	87.04	43	72.88	78.18
22	Dose1	60	0	100.00	55	91.67	54	98.18	26	48.15	9	15.00	16.36
23	Dose1	63	1	98.41	57	90.48	57	100.00	55	96.49	36	57.14	63.16
24	Dose1	55	0	100.00	47	85.45	31	65.96	16	51.61	11	20.00	23.40
25	Dose1	66	0	100.00	61	92.42	59	96.72	56	94.92	51	77.27	83.61
26	Dose1	57	2	96.49	52	91.23	49	94.23	43	87.76	36	63.16	69.23
27	Dose1	51	0	100.00	47	92.16	47	100.00	45	95.74	38	74.51	80.85
28	Dose1	77	0	100.00	71	92.21	60	84.51	58	96.67	56	72.73	78.87
29	Dose1	65	0	100.00	59	90.77	59	100.00	56	94.92	49	75.38	83.05
30	Dose1	69	0	100.00	64	92.75	64	100.00	58	90.63	51	73.91	79.69
31	Dose1	60	5	91.67	53	88.33	49	92.45	46	93.88	39	65.00	73.58
32	Dose1	65	1	98.46	59	90.77	58	98.31	52	89.66	47	72.31	79.66
33	Dose1	61	0	100.00	57	93.44	57	100.00	56	98.25	51	83.61	89.47
34	Dose1	57	1	98.25	52	91.23	52	100.00	49	94.23	35	61.40	67.31
35	Dose2	52	1	98.08	45	86.54	43	95.56	37	86.05	33	63.46	73.33
36	Dose2	66	0	100.00	61	92.42	60	98.36	45	75.00	21	31.82	34.43
37	Dose2	70	4	94.29	60	85.71	59	98.33	50	84.75	41	58.57	68.33
38	Dose2	66	8	87.88	53	80.30	53	100.00	46	86.79	29	43.94	54.72
39	Dose2	75	1	98.67	68	90.67	67	98.53	65	97.01	65	86.67	95.59
40	Dose2	68	2	97.06	60	88.24	60	100.00	53	88.33	50	73.53	83.33
41	Dose2	55	0	100.00	51	92.73	50	98.04	45	90.00	39	70.91	76.47
42	Dose2	72	0	100.00	66	91.67	64	96.97	64	100.00	60	83.33	90.91
43	Dose2	69	0	100.00	64	92.75	62	96.88	60	96.77	56	81.16	87.50
44	Dose2	61	2	96.72	55	90.16	53	96.36	48	90.57	44	72.13	80.00
45	Dose2	61	0	100.00	57	93.44	51	89.47	45	88.24	42	68.85	73.68
46	Dose2	64	0	100.00	58	90.63	58	100.00	51	87.93	44	68.75	75.86
47	Dose2	69	1	98.55	61	88.41	57	93.44	54	94.74	42	60.87	68.85
48	Dose2	65	0	100.00	60	92.31	58	96.67	58	100.00	54	83.08	90.00
49	Dose2	74	1	98.65	66	89.19	64	96.97	63	98.44	61	82.43	92.42
50	Dose2	70	0	100.00	62	88.57	40	64.52	36	90.00	35	50.00	56.45
51	Dose2	76	0	100.00	70	92.11	67	95.71	62	92.54	60	78.95	85.71

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52	Dose3	48	1	97.92	44	91.67	33	75.00	32	96.97	27	56.25	61.36
53	Dose3	59	1	98.31	54	91.53	54	100.00	54	100.00	52	88.14	96.30
54	Dose3	47	0	100.00	44	93.62	44	100.00	43	97.73	41	87.23	93.18
55	Dose3	65	0	100.00	57	87.69	55	96.49	51	92.73	44	67.69	77.19
56	Dose3	51	0	100.00	46	90.20	46	100.00	42	91.30	40	78.43	86.96
57	Dose3	47	1	97.87	43	91.49	42	97.67	38	90.48	38	80.85	88.37
58	Dose3	58	0	100.00	54	93.10	49	90.74	44	89.80	40	68.97	74.07
59	Dose3	64	0	100.00	59	92.19	59	100.00	54	91.53	49	76.56	83.05
60	Dose3	69	6	91.30	55	79.71	54	98.18	46	85.19	45	65.22	81.82
61	Dose3	38	0	100.00	34	89.47	33	97.06	31	93.94	29	76.32	85.29
62	Dose3	53	1	98.11	48	90.57	46	95.83	40	86.96	27	50.94	56.25
63	Dose3	60	2	96.67	52	86.67	49	94.23	48	97.96	44	73.33	84.62
64	Dose3	59	0	100.00	53	89.83	52	98.11	47	90.38	46	77.97	86.79
65	Dose3	75	0	100.00	69	92.00	67	97.10	50	74.63	39	52.00	56.52
66	Dose3	75	0	100.00	69	92.00	69	100.00	65	94.20	58	77.33	84.06
67	Dose3	60	0	100.00	56	93.33	55	98.21	50	90.91	46	76.67	82.14
68	Dose3	49	0	100.00	46	93.88	46	100.00	44	95.65	37	75.51	80.43

Mallard repro, Propanil, MRID 48327201

PRINTOUT OF RAW DATA (continued)

Obs	TRT	NH_LE	HS	HS_ES	HS_NH	THICK	HATWT	SURVWT	FOOD	WTGAINM	WTGAINF
1	Ctrl	100.00	41	91.11	97.62	0.29	31	298	113	64	73
2	Ctrl	89.83	52	80.00	98.11	0.35	30	272	95	55	221
3	Ctrl	100.00	44	97.78	100.00	0.36	36	311	91	80	309
4	Ctrl	87.27	47	75.81	97.92	0.37	32	289	109	51	221
5	Ctrl	82.35	42	64.62	100.00	0.34	32	306	93	94	286
6	Ctrl	74.60	47	66.20	100.00	0.36	31	256	96	381	196
7	Ctrl	91.67	43	78.18	97.73	0.35	32	288	98	149	407
8	Ctrl	92.73	51	79.69	100.00	0.36	32	287	101	-19	186
9	Ctrl	94.74	18	56.25	100.00	0.36	34	266	90	25	204
10	Ctrl	41.18	7	13.21	100.00	0.36	40	328	93	101	321
11	Ctrl	69.09	38	66.67	100.00	0.40	35	294	100	67	373
12	Ctrl	86.54	45	80.36	100.00	0.35	36	281	96	-26	253
13	Ctrl	95.24	40	78.43	100.00	0.37	36	296	104	25	289
14	Ctrl	84.44	38	74.51	100.00	0.38	33	306	94	62	162
15	Ctrl	82.35	55	78.57	98.21	0.35	29	270	124	128	413
16	Ctrl	73.58	38	61.29	97.44	0.35	37	309	106	184	264
17	Ctrl	68.00	34	62.96	100.00	0.36	34	303	104	198	257
18	Dose1	91.07	50	83.33	98.04	0.36	34	302	113	136	183
19	Dose1	89.80	44	78.57	100.00	0.35	35	288	97	98	224
20	Dose1	28.21	11	17.74	100.00	0.35	36	288	116	-14	330
21	Dose1	91.49	43	78.18	100.00	0.37	37	286	103	-28	275
22	Dose1	34.62	9	16.36	100.00	0.37	36	300	94	131	324
23	Dose1	65.45	36	63.16	100.00	0.35	35	281	98	240	282
24	Dose1	68.75	11	23.40	100.00	0.39	37	290	102	-60	207
25	Dose1	91.07	51	83.61	100.00	0.41	35	276	112	21	276
26	Dose1	83.72	36	69.23	100.00	0.36	37	312	111	165	429
27	Dose1	84.44	38	80.85	100.00	0.38	36	296	126	79	198
28	Dose1	96.55	54	76.06	96.43	0.35	34	303	97	24	124
29	Dose1	87.50	49	83.05	100.00	0.36	34	293	95	74	229
30	Dose1	87.93	49	76.56	96.08	0.37	36	311	117	51	474
31	Dose1	84.78	39	73.58	100.00	0.32	33	297	93	182	228
32	Dose1	90.38	47	79.66	100.00	0.36	36	290	103	46	310
33	Dose1	91.07	51	89.47	100.00	0.36	36	309	93	62	202
34	Dose1	71.43	35	67.31	100.00	0.39	34	257	87	41	175

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35	Dose2	89.19	33	73.33	100.00	0.37	37	305	93	51	298
36	Dose2	46.67	21	34.43	100.00	0.37	35	278	115	85	77
37	Dose2	82.00	40	66.67	97.56	0.34	34	286	117	-93	117
38	Dcse2	63.04	29	54.72	100.00	0.36	35	288	93	120	163
39	Dcse2	100.00	64	94.12	98.46	0.32	39	314	112	91	92
40	Dose2	94.34	50	83.33	100.00	0.34	35	291	125	-21	-7
41	Dcse2	86.67	39	76.47	100.00	0.36	40	301	88	112	218
42	Dcse2	93.75	60	90.91	100.00	0.36	32	285	108	75	261
43	Dcse2	93.33	56	87.50	100.00	0.38	33	278	101	85	245
44	Dcse2	91.67	44	80.00	100.00	0.35	34	283	97	-33	242
45	Dose2	93.33	42	73.68	100.00	0.38	37	300	109	26	353
46	Dcse2	86.27	41	70.69	93.18	0.39	32	281	117	63	278
47	Dcse2	77.78	42	68.85	100.00	0.35	34	303	100	-41	232
48	Dcse2	93.10	54	90.00	100.00	0.36	34	316	94	-62	412
49	Dcse2	96.83	59	89.39	96.72	0.35	32	275	91	101	126
50	Dcse2	97.22	35	56.45	100.00	0.35	32	301	95	127	297
51	Dose2	96.77	39	55.71	65.00	0.36	35	280	105	159	355
52	Dcse3	84.38	27	61.36	100.00	0.38	34	282	92	11	118
53	Dcse3	96.30	52	96.30	100.00	0.33	38	311	88	-90	146
54	Dcse3	95.35	41	93.18	100.00	0.41	36	282	97	9	240
55	Dcse3	86.27	44	77.19	100.00	0.37	30	297	97	-32	291
56	Dcse3	95.24	40	86.96	100.00	0.37	35	302	88	-132	163
57	Dcse3	100.00	38	88.37	100.00	0.35	33	305	114	93	386
58	Dcse3	90.91	32	59.26	80.00	0.35	33	269	100	63	250
59	Dcse3	90.74	49	83.05	100.00	0.38	37	304	98	-8	159
60	Dcse3	97.83	44	80.00	97.78	0.35	31	274	113	33	125
61	Dcse3	93.55	29	85.29	100.00	0.37	33	295	76	102	70
62	Dcse3	67.50	27	56.25	100.00	0.35	33	289	118	18	173
63	Dcse3	91.67	44	84.62	100.00	0.37	34	307	103	8	56
64	Dcse3	97.87	46	86.79	100.00	0.37	29	275	110	26	50
65	Dcse3	78.00	36	52.17	92.31	0.36	33	293	104	-95	178
66	Dcse3	89.23	58	84.06	100.00	0.35	33	298	116	183	161
67	Dcse3	92.00	45	80.36	97.83	0.37	32	298	111	18	80
68	Dcse3	84.09	37	80.43	100.00	0.37	35	288	111	49	52

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE EL (Eggs Laid)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.977	0.228	1.834	0.150	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	63.35	10.43	2.53	16.46	57.99,	68.71
Dose1	17	62.59	6.43	1.56	10.28	59.28,	65.90
Dose2	17	66.65	6.61	1.60	9.92	63.25,	70.05
Dose3	17	57.47	10.27	2.49	17.86	52.19,	62.75

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	63.00	34.00	76.00	.	.
Dose1	61.00	51.00	77.00	98.79	1.21
Dose2	68.00	52.00	76.00	105.20	-5.20
Dose3	59.00	38.00	75.00	90.71	9.29

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	3.27	0.027

Dunnett - testing each trt mean signif. less than control
 Williams - test assumes dose-response relationship, testing negative trend
 Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	63.35	.	64.20	.	0.994	0.685	0.205	.	.
Dose1	62.59	0.648	64.20	0.699	.	0.524	0.319	.	.
Dose2	66.65	0.974	64.20	0.734	.	.	0.015	.	.
Dose3	57.47	0.064	57.47	0.032	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose2	Dose3

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE NEG_EC (Eggs Cracked)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.702	<.001	0.839	0.477	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	1.53	2.48	0.60	162.01	0.26,	2.80
Dose1	17	1.00	1.46	0.35	145.77	0.25,	1.75
Dose2	17	1.18	2.07	0.50	175.84	0.11,	2.24
Dose3	17	0.71	1.49	0.36	211.11	0.00,	1.47

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	1.00	0.00	10.00	.	.
Dose1	0.00	0.00	5.00	65.38	34.62
Dose2	0.00	0.00	8.00	76.92	23.08
Dose3	0.00	0.00	6.00	46.15	53.85

 NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.78	0.620

MannWhit(Bon) - testing each trt median signif. greater than control
 Jonckheere - test assumes dose-response relationship, testing positive trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	1.00	.	.
Dose1	0.00	1.000	0.692
Dose2	0.00	1.000	0.700
Dose3	0.00	1.000	0.895

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE ENC_EL ((EL-EC)/EL (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.731	<.001	0.888	0.452	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	97.60	3.63	0.88	3.72	95.73, 99.47
Dose1	17	98.41	2.33	0.57	2.37	97.21, 99.61
Dose2	17	98.23	3.11	0.75	3.17	96.63, 99.83
Dose3	17	98.83	2.22	0.54	2.25	97.69, 99.98

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	98.61	85.92	100.00	.	.
Dose1	100.00	91.67	100.00	100.83	-0.83
Dose2	100.00	87.88	100.00	100.64	-0.64
Dose3	100.00	91.30	100.00	101.26	-1.26

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.25	0.742

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	98.61	.	.
Dose1	100.00	1.000	0.684
Dose2	100.00	1.000	0.742
Dose3	100.00	1.000	0.866

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE ES (Eggs Set)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.985	0.563	1.704	0.175	USE PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	56.35	10.00	2.43	17.74	51.21,	61.49
Dose1	17	56.88	6.01	1.46	10.56	53.79,	59.97
Dose2	17	59.82	6.38	1.55	10.66	56.55,	63.10
Dose3	17	51.94	9.04	2.19	17.40	47.29,	56.59

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	56.00	32.00	71.00	.	.
Dose1	57.00	47.00	71.00	100.94	-0.94
Dose2	60.00	45.00	70.00	106.16	-6.16
Dose3	53.00	34.00	69.00	92.17	7.83

 PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	2.78	0.048

Dunnett - testing each trt mean signif. less than control
 Williams - test assumes dose-response relationship, testing negative trend
 Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	56.35	.	57.69	.	0.997	0.592	0.386	.	.
Dose1	56.88	0.814	57.69	0.771	.	0.711	0.287	.	.
Dose2	59.82	0.982	57.69	0.804	.	.	0.029	.	.
Dose3	51.94	0.133	51.94	0.073	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE ES_EL (EggsSet/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.693	<.001	1.204	0.316	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	89.15	7.09	1.72	7.96	85.50, 92.80
Dose1	17	90.88	2.29	0.56	2.52	89.71, 92.06
Dose2	17	89.76	3.33	0.81	3.71	88.04, 91.47
Dose3	17	90.53	3.42	0.83	3.78	88.77, 92.28

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	90.28	63.38	95.00	.	.
Dose1	91.23	85.45	93.44	101.94	-1.94
Dose2	90.63	80.30	93.44	100.68	-0.68
Dose3	91.53	79.71	93.88	101.54	-1.54

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.09	0.780

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	90.28	.	.
Dose1	91.23	1.000	0.738
Dose2	90.63	1.000	0.388
Dose3	91.53	1.000	0.572

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE VE (Viable Embryo(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.958	0.022	1.545	0.211	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	53.94	12.58	3.05	23.33	47.47, 60.41
Dose1	17	53.76	7.55	1.83	14.05	49.88, 57.65
Dose2	17	56.82	7.70	1.87	13.55	52.86, 60.78
Dose3	17	50.18	9.82	2.38	19.58	45.12, 55.23

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	54.00	24.00	70.00	.	.
Dose1	55.00	31.00	64.00	99.67	0.33
Dose2	58.00	40.00	67.00	105.34	-5.34
Dose3	49.00	33.00	69.00	93.02	6.98

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	1.36	0.264

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	53.94	.	54.84	.	1.000	0.819	0.667	.	.
Dose1	53.76	0.730	54.84	0.695	.	0.791	0.699	.	.
Dose2	56.82	0.952	54.84	0.730	.	.	0.194	.	.
Dose3	50.18	0.271	50.18	0.170	.	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE VE_ES (ViableEmbryo/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.536	<.001	0.575	0.634	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	95.54	13.08	3.17	13.69	88.82, 100.00
Dose1	17	94.46	9.45	2.29	10.01	89.60, 99.32
Dose2	17	95.05	8.28	2.01	8.72	90.79, 99.31
Dose3	17	96.39	6.05	1.47	6.27	93.28, 99.50

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	100.00	45.28	100.00	.	.
Dose1	98.21	65.96	100.00	98.87	1.13
Dose2	96.97	64.52	100.00	99.48	0.52
Dose3	98.11	75.00	100.00	100.89	-0.89

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	3.39	0.335

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	100.00	.	.
Dose1	98.21	0.724	0.233
Dose2	96.97	0.106	0.043
Dose3	98.11	0.494	0.127

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE LE (Live Embryo(d21))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.931	0.001	0.625	0.601	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	48.12	13.34	3.23	27.72	41.26, 54.97
Dose1	17	47.47	11.58	2.81	24.40	41.52, 53.43
Dose2	17	51.88	9.10	2.21	17.53	47.21, 56.56
Dose3	17	45.82	8.31	2.02	18.13	41.55, 50.10

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	51.00	17.00	68.00	.	.
Dose1	49.00	16.00	58.00	98.66	1.34
Dose2	51.00	36.00	65.00	107.82	-7.82
Dose3	46.00	31.00	65.00	95.23	4.77

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	4.10	0.250

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	51.00	.	.
Dose1	49.00	1.000	0.514
Dose2	51.00	1.000	0.772
Dose3	46.00	0.265	0.165

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE LE_VE (LiveEmbryo/ViableEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.779	<.001	2.023	0.119	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	87.95	9.89	2.40	11.24	82.87, 93.03
Dose1	17	87.17	14.77	3.58	16.95	79.58, 94.77
Dose2	17	91.01	6.46	1.57	7.09	87.69, 94.33
Dose3	17	91.78	5.94	1.44	6.47	88.73, 94.84

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	90.00	59.38	97.78	.	.
Dose1	93.33	48.15	98.25	99.12	0.88
Dose2	90.00	75.00	100.00	103.48	-3.48
Dose3	91.53	74.63	100.00	104.36	-4.36

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.68	0.641

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	90.00	.	.
Dose1	93.33	1.000	0.703
Dose2	90.00	1.000	0.763
Dose3	91.53	1.000	0.894

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE NH (Number Hatched)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.931	0.001	1.337	0.270	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	40.35	12.09	2.93	29.97	34.14, 46.57
Dose1	17	38.71	14.94	3.62	38.60	31.02, 46.39
Dose2	17	45.65	12.43	3.02	27.24	39.25, 52.04
Dose3	17	41.29	8.38	2.03	20.29	36.99, 45.60

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	42.00	7.00	56.00	.	.
Dose1	43.00	9.00	56.00	95.92	4.08
Dose2	44.00	21.00	65.00	113.12	-13.12
Dose3	41.00	27.00	58.00	102.33	-2.33

 NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.63	0.652

MannWhit(Bon) - testing each trt median signif. less than control
 Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	42.00	.	.
Dose1	43.00	1.000	0.459
Dose2	44.00	1.000	0.832
Dose3	41.00	1.000	0.595

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE NH_EL (NumberHatched/EggsLaid (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.851	<.001	1.589	0.201	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	63.31	15.80	3.83	24.95	55.19,	71.44
Dose1	17	61.65	22.34	5.42	36.23	50.17,	73.14
Dose2	17	68.14	15.29	3.71	22.44	60.28,	76.01
Dose3	17	72.32	10.94	2.65	15.13	66.69,	77.94

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	65.52	12.07	84.62	.	.
Dose1	72.73	15.00	83.61	97.38	2.62
Dose2	70.91	31.82	86.67	107.63	-7.63
Dose3	76.32	50.94	88.14	114.22	-14.22

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	4.81	0.186

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	65.52	.	.
Dose1	72.73	1.000	0.791
Dose2	70.91	1.000	0.868
Dose3	76.32	1.000	0.984

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE NH_ES (NumberHatched/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.852	<.001	1.579	0.203	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	71.52	18.58	4.51	25.99	61.97,	81.08
Dose1	17	67.51	24.01	5.82	35.57	55.17,	79.86
Dose2	17	75.74	15.92	3.86	21.01	67.56,	83.92
Dose3	17	79.91	11.71	2.84	14.65	73.89,	85.93

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	77.42	13.21	97.78	.	.
Dose1	78.57	16.36	89.47	94.40	5.60
Dose2	76.47	34.43	95.59	105.90	-5.90
Dose3	83.05	56.25	96.30	111.72	-11.72

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	4.91	0.178

MannWhit(Bon) - testing each trt median signif. less than control
Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	77.42	.	.
Dose1	78.57	1.000	0.595
Dose2	76.47	0.712	0.833
Dose3	83.05	1.000	0.983

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE NH_LE (NumberHatched/LiveEmbryo (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.813	<.001	2.341	0.082	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	83.15	14.67	3.56	17.64	75.61, 90.70
Dose1	17	78.72	19.81	4.80	25.17	68.54, 88.91
Dose2	17	87.17	13.74	3.33	15.76	80.11, 94.24
Dose3	17	90.05	8.18	1.98	9.08	85.85, 94.26

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	86.54	41.18	100.00	.	.
Dose1	87.50	28.21	96.55	94.67	5.33
Dose2	93.10	46.67	100.00	104.84	-4.84
Dose3	91.67	67.50	100.00	108.30	-8.30

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	6.50	0.089

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	86.54	.	.
Dose1	87.50	1.000	0.291
Dose2	93.10	1.000	0.904
Dose3	91.67	1.000	0.982

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE HS (Hatching Survival(d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS
 Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.937	0.002	0.908	0.442	USE NON-PARAMETRIC TESTS

 BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	40.00	11.90	2.89	29.74	33.88,	46.12
Dose1	17	38.41	14.65	3.55	38.15	30.88,	45.95
Dose2	17	44.00	11.73	2.84	26.65	37.97,	50.03
Dose3	17	40.53	8.68	2.11	21.42	36.07,	44.99

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	42.00	7.00	55.00	.	.
Dose1	43.00	9.00	54.00	96.03	3.97
Dose2	42.00	21.00	64.00	110.00	-10.00
Dose3	41.00	27.00	58.00	101.32	-1.32

 NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	0.84	0.840

MannWhit(Bon) - testing each trt median signif. less than control
 Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	42.00	.	.
Dose1	43.00	1.000	0.472
Dose2	42.00	1.000	0.736
Dose3	41.00	1.000	0.491

SUMMARY	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE HS_ES (HatchingSurvival/EggsSet (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.867	<.001	1.088	0.361	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	70.92	18.31	4.44	25.82	61.51,	80.33
Dose1	17	67.07	23.77	5.77	35.45	54.84,	79.29
Dose2	17	73.31	16.12	3.91	21.99	65.02,	81.60
Dose3	17	78.57	13.15	3.19	16.74	71.80,	85.33

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	75.81	13.21	97.78	.	.
Dose1	76.56	16.36	89.47	94.57	5.43
Dose2	73.68	34.43	94.12	103.37	-3.37
Dose3	83.05	52.17	96.30	110.78	-10.78

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	4.02	0.260

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	75.81	.	.
Dose1	76.56	1.000	0.628
Dose2	73.68	1.000	0.704
Dose3	83.05	1.000	0.966

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE HS_NH (HatchingSurvival/NumberHatched (%))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.449	<.001	2.572	0.062	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	99.24	1.08	0.26	1.09	98.68, 99.79
Dose1	17	99.44	1.29	0.31	1.30	98.78, 100.00
Dose2	17	97.11	8.47	2.06	8.73	92.76, 100.00
Dose3	17	98.11	5.05	1.23	5.15	95.52, 100.00

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	100.00	97.44	100.00	.	.
Dose1	100.00	96.08	100.00	100.21	-0.21
Dose2	100.00	65.00	100.00	97.86	2.14
Dose3	100.00	80.00	100.00	98.87	1.13

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	1.03	0.795

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	100.00	.	.
Dose1	100.00	1.000	0.818
Dose2	100.00	1.000	0.531
Dose3	100.00	1.000	0.570

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE THICK (Eggshell thickness)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.948	0.007	0.202	0.894	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	17	0.36	0.02	0.01	6.17	0.34,	0.37
Dose1	17	0.36	0.02	0.01	5.71	0.35,	0.37
Dose2	17	0.36	0.02	0.00	4.60	0.35,	0.37
Dose3	17	0.36	0.02	0.00	5.10	0.35,	0.37

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	0.36	0.29	0.40	.	.
Dose1	0.36	0.32	0.41	102.40	-2.40
Dose2	0.36	0.32	0.39	100.76	-0.76
Dose3	0.37	0.33	0.41	102.25	-2.25

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	2.29	0.514

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	0.36	.	.
Dose1	0.36	1.000	0.861
Dose2	0.36	1.000	0.586
Dose3	0.37	1.000	0.805

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE HATWT (Hatchling Weight)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.982	0.429	2.769	0.049	USE NON-PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	33.45	2.74	0.66	8.19	32.04, 34.86
Dose1	17	35.29	1.23	0.30	3.49	34.66, 35.93
Dose2	17	34.61	2.37	0.57	6.84	33.40, 35.83
Dose3	17	33.35	2.22	0.54	6.65	32.21, 34.49

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	32.50	29.20	39.60	.	.
Dose1	35.80	33.00	37.00	105.50	-5.50
Dose2	34.20	31.80	39.70	103.46	-3.46
Dose3	33.20	29.30	37.70	99.70	0.30

NON-PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Kruskal-Wallis test - equality among treatment groups

Degrees of Freedom	TestStat	P-value
3	9.96	0.019

MannWhit(Bon) - testing each trt median signif. less than control

Jonckheere - test assumes dose-response relationship, testing negative trend

Level	Median	MannWhit(Bon adjust)p-value	Jonckheere p-value
Ctrl	32.50	.	.
Dose1	35.80	1.000	0.990
Dose2	34.20	1.000	0.864
Dose3	33.20	1.000	0.270

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201
 ANALYSIS RESULTS FOR VARIABLE SURVWT (Survivor Wt (d14))

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01
 Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05
 Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.989	0.806	1.173	0.327	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	291.78	18.71	4.54	6.41	282.16, 301.40
Dose1	17	292.94	13.76	3.34	4.70	285.87, 300.01
Dose2	17	291.94	13.06	3.17	4.47	285.22, 298.65
Dose3	17	292.21	12.46	3.02	4.27	285.80, 298.62

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	293.90	256.40	328.10	.	.
Dose1	293.40	257.40	312.10	100.40	-0.40
Dose2	288.20	275.00	316.20	100.05	-0.05
Dose3	294.70	268.50	310.70	100.15	-0.15

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	0.02	0.996

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	291.78	.	292.36	.	0.996	1.000	1.000	.	.
Dose1	292.94	0.826	292.36	0.632	.	0.997	0.999	.	.
Dose2	291.94	0.761	292.07	0.643	.	.	1.000	.	.
Dose3	292.21	0.780	292.07	0.662	.	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE FOOD (Food Consumption)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.973	0.153	0.737	0.534	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	100.42	8.99	2.18	8.95	95.80, 105.04
Dose1	17	103.20	10.71	2.60	10.38	97.69, 108.71
Dose2	17	103.47	11.08	2.69	10.71	97.77, 109.17
Dose3	17	102.11	11.60	2.81	11.36	96.15, 108.07

Level	Median	Min	Max	%of Control(means)	%Reduction(means)
Ctrl	98.10	89.80	123.90	.	.
Dose1	101.90	86.50	125.90	102.77	-2.77
Dose2	100.60	87.80	125.30	103.04	-3.04
Dose3	103.40	76.40	117.80	101.69	-1.69

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	0.29	0.834

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	100.42	.	102.36	.	0.871	0.837	0.967	.	.
Dose1	103.20	0.939	102.36	0.787	.	1.000	0.991	.	.
Dose2	103.47	0.948	102.36	0.819	.	.	0.982	.	.
Dose3	102.11	0.886	102.11	0.815	.	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	Dose3	>highest dose
Williams	Dose3	>highest dose

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE WTGAINM (Male wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance(absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.969	0.087	0.204	0.893	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	95.19	96.11	23.31	100.97	45.78, 144.61
Dose1	17	73.43	78.65	19.08	107.11	32.99, 113.87
Dose2	17	49.64	73.97	17.94	149.03	11.60, 87.67
Dose3	17	15.01	76.34	18.51	508.71	-24.24, 54.25

Level	Median	Min	Max	%of Control (means)	%Reduction(means)
Ctrl	67.30	-26.00	380.50	.	.
Dose1	62.10	-59.60	240.00	77.14	22.86
Dose2	74.80	-92.60	158.60	52.14	47.86
Dose3	17.60	-131.90	182.60	15.76	84.24

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	3.00	0.037

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	95.19	.	95.19	.	0.865	0.372	0.028	.	.
Dose1	73.43	0.419	73.43	0.263	.	0.831	0.169	.	.
Dose2	49.64	0.127	49.64	0.067	.	.	0.607	.	.
Dose3	15.01	0.008	15.01	0.003	.	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 48327201

Mallard repro, Propanil, MRID 48327201

ANALYSIS RESULTS FOR VARIABLE WTGAINF (Female wt gain)

TESTS OF ASSUMPTIONS FOR PARAMETRIC ANALYSIS

Shapiro-Wilks test for Normality of Residuals -- alpha-level=0.01

Levenes test for homogeneity of variance (absolute residuals) -- alpha-level=0.05

Use parametric analyses if neither test rejected, otherwise non-parametric analyses.

Shapiro-Wilks Test Stat	Shapiro-Wilks P-value	Levenes Test Stat	Levenes P-value	Conclusion
0.987	0.725	0.568	0.638	USE PARAMETRIC TESTS

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	17	260.90	88.69	21.51	33.99	215.30, 306.50
Dose1	17	262.94	90.74	22.01	34.51	216.28, 309.59
Dose2	17	221.10	112.46	27.28	50.86	163.28, 278.92
Dose3	17	158.67	92.11	22.34	58.05	111.31, 206.03

Level	Median	Min	Max	%of Control (means)	%Reduction (means)
Ctrl	256.90	73.10	412.50	.	.
Dose1	228.70	124.40	474.30	100.78	-0.78
Dose2	241.60	-6.50	411.80	84.75	15.25
Dose3	158.80	49.90	386.30	60.82	39.18

PARAMETRIC ANALYSES - use alpha-level=0.05 for all tests

Analysis of Variance (ANOVA) - overall F-test

Numerator df	Denominator df	F-stat	P-value
3	64	4.35	0.008

Dunnett - testing each trt mean signif. less than control

Williams - test assumes dose-response relationship, testing negative trend

Tukey - two-sided tests, all possible comparisons, not used for NOEC or LOEC

Level	Mean	Dunnett p-value	Isotonic mean	Williams p-value	Tukey p-values				
					Dose1	Dose2	Dose3	Dose4	Dose5
Ctrl	260.90	.	261.92	.	1.000	0.627	0.015	.	.
Dose1	262.94	0.772	261.92	0.596	.	0.589	0.013	.	.
Dose2	221.10	0.249	221.10	0.148	.	.	0.244	.	.
Dose3	158.67	0.004	158.67	0.002	.	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

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APPENDIX II. COPY OF EXCEL WORKSHEET DETERMINING MEAN-MEASURED CONCENTRATIONS:

Calculated mean-measured concentrations of propazine in a mallard duck reproduction study.

Nominal Concentration mg ai/kg diet	Sample type		Mean Recovery		Overall Mean mg ai/kg diet
			%	mg ai/kg diet	
20	Homogeneity	1st analysis batch	90	17.9	17
		2nd analysis batch	84	16.7	
		3rd analysis batch	86	17.2	
50	Verification	1st analysis batch	91	45.6	46
		2nd analysis batch	87	43.3	
		3rd analysis batch	97	48.8	
125	Homogeneity	1st analysis batch	89	111.3	116
		2nd analysis batch	92	114.2	
		3rd analysis batch	98	121.8	

Data Evaluation Record on the Reproductive Effects of Propanil on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

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APPENDIX III. COPY OF EXCEL WORKSHEET DETERMINING MEAN OVERALL FOOD CONSUMPTION:

Mean feed consumption

Feed Week	Control	20	50	125
1	82.5	76	87	77.5
2	76.9	77.8	86.9	84.3
3	63.8	61.5	70.6	63.3
4	74.5	74.4	75.1	71.9
5	66	63.4	67	66.2
6	66.1	66.2	68.9	62.9
7	72.8	73.4	73.6	71.9
8	68.3	69.4	71.1	64
9	78.5	80.6	80.4	77.4
10	78.4	81.1	80.3	75.3
11	80.9	75.2	75.1	68.5
12	111	109	107	109
13	131	131	128	128
14	131	131	126	128
15	129	131	129	128
16	132	130	134	135
17	128	133	124	136
18	131	136	135	140
19	125	135	132	132
20	126	135	132	128
21	126	137	133	133
22	127	133	131	136
23	115	133	133	131
Overall	100.9	103.2	103.5	102.1