

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

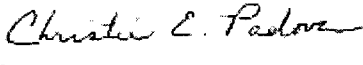
PMRA Submission Number {.....}

EPA MRID Number 466955-05


Data Requirement:	PMRA Data Code	{.....}
	EPA DP Barcode	D325337
	OECD Data Point	{.....}
	EPA MRID	466955-05
	EPA Guideline	850.2300

Test material:	AE 0172747	Purity: 94.0%
Common name:	AE 0172747	
Chemical name:	IUPAC 2-[2-Chloro-4-mesyl-3-((2,2,2-trifluoroethoxy)methyl)benzoyl]cyclohexane-1,3-dione	
	CAS name 2-[2-Chloro-4-(methylsulfonyl)-3-[(2,2,2-trifluoroethoxy)methyl]-benzoyl]-1,3-cyclohexanedione	
	CAS No. 335-104-84-2	
	Synonyms Bayer AE 0172747	

Primary Reviewer: Christie E. Padova
Staff Scientist, Dynamac Corporation

Signature: 
Date: 6/2/06

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

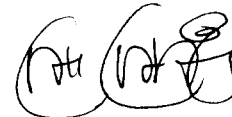
Signature: 
Date: 6/12/06

Primary Reviewer:
EPA/OPP/EFED/ERB –

Date: {.....}

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

Date: 7/14/06



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

Company Code	{.....}	[For PMRA]
Active Code	{.....}	[For PMRA]
Use Site Category:	{.....}	[For PMRA]
EPA PC Code	012801	

Date Evaluation Completed: XX-XX-XXXX

CITATION: Frey, LT., *et al.* 2004. AE 0172747; Substance Technical; Product Code: AE 0172747 00 1C94 0002: A Reproduction Study with the Mallard. Unpublished study performed by Wildlife International Ltd., Easton, MD. Laboratory Project No. 149-194. Study submitted by Bayer CropScience GmbH, Frankfurt am Main, Germany. Study initiated April 29, 2003 and submitted June 2, 2004.

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.



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EXECUTIVE SUMMARY

The one-generation reproductive toxicity of AE 0172747 Technical to 16 pairs per level of 21-week old mallard duck (*Anas platyrhynchos*) was assessed over approximately 20 weeks. AE 0172747 Technical was administered to the birds in the diet at nominal concentrations of 0 (vehicle control), 63, 250, and 1000 mg ai/kg dw diet. Mean-measured concentrations were <10 (<LOD, control), 65.3, 260, and 1030 mg ai/kg diet, respectively. The NOAEC could not be determined in this study (<65.3 mg ai/kg diet) due to statistically significant reductions in adult male weight gain and several reproductive endpoints (ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set) at all treatment levels.

Additionally, there were numerous adverse effects on adult and reproductive parameters at the highest treatment level (1030 mg ai/kg diet). These included (% reduction from control): female weight gain (81%), eggs laid (24%), eggs set (28%), the ratio of eggs set to eggs laid (8%), viable embryos (34%), live embryos (34%), number hatched (38%), 14-day-old survivors (43%), the ratio of survivors to number hatched (12%), and hatchling and survivor body weights (5 and 10%).

At the 1030 mg ai/kg diet level, a single treatment-related mortality occurred during Week 4, and a thin appearance was observed in nine adult birds. There was no effect on overall food consumption and amounts increased with higher concentrations.

This study is scientifically sound. However, adequate frozen storage stability data were not provided and a NOAEC was not determined due to significant adverse effects on several adult and reproductive endpoints at all treatment levels. As a result, this study is classified as SUPPLEMENTAL, and it does not satisfy the guideline requirement for a mallard duck (*Anas platyrhynchos*) reproductive toxicity study.

Results Synopsis

Test Organism Size/Age(mean Weight): 21-weeks old; 925-1396 g (combined sexes)

NOAEC: <65.3 mg ai/kg diet

LOAEC: 65.3 mg ai/kg diet

Endpoint(s) Affected: adult male and female weight gain, eggs laid, eggs set, the ratio of eggs set to eggs laid, viable embryos, live embryos, number hatched, the ratios of number hatched to eggs laid and eggs set, 14-day-old survivors, the ratios of survivors to eggs set and number hatched, and hatchling and survivor body weights.

Most sensitive endpoint: adult male body weight gain, the ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: The study protocol was based on procedures outlined in the U.S. EPA *Pesticide Assessment Guidelines*, §71-4; the U.S. EPA Ecological Effects Test Guideline OPPTS No. 850.2300; the OECD Guideline No. 206; and ASTM Standard E1062-86. Deviations from OPPTS 850.2300 included:

1. Adult birds were younger (21 weeks) at test initiation than recommended (≥ 28 weeks).
2. Mortality of the adult birds during acclimation was not reported.
3. Pen floor size was significantly less (3375 cm²/duck) than recommended (at least 10,000 cm²/duck). As cages were much smaller than recommended, documentation that reproductive parameters and health of birds are not adversely affected should be provided. THIS AFFECTS THE VALIDITY OF THE STUDY.
4. Pre-laying exposure of birds was 8 weeks instead of the recommended 10 weeks minimum. THIS AFFECTS THE VALIDITY OF THE STUDY.
5. The actual or expected field residue level was not reported, so it was unknown if the concentration range included this level.
6. It was not reported if the acetone used in preparing the treated feed was allowed to completely evaporate prior to offering.
7. Although adequate ambient 7-day feeder trough stability was demonstrated, frozen storage stability data were not generated. Premix batches were prepared every 3-4 weeks, and stored frozen in plastic bags until needed. THIS AFFECTS THE VALIDITY OF THE STUDY
8. It was unclear if a brooder temperature gradient was provided for the hatchlings.
9. Clinical effects of hatchlings, if observed, were not reported.
10. Significant adverse effects were detected at all treatment levels for adult male body weight gain and several reproductive endpoints (ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set); therefore, a NOAEC was not determined in this study. THIS AFFECTS THE VALIDITY OF THE STUDY.

COMPLIANCE: Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided.

A. MATERIALS:

1. Test Material AE 0172747 Technical
Description: Beige powder
Lot No./Batch No. : OP 2250027 / PFI 0215
Purity: 94.0%

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Stability of compound under test conditions:

Stability was verified at all treatment levels under actual use conditions. Samples were assessed after 7 days of ambient feeder storage during Week 1. Recoveries were 96.9-102% of initial measured concentrations.

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

Storage conditions of test chemicals:

Ambient conditions

Physicochemical properties of AE 0172747 Technical.

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

2. Test organism:

Table 1: Test organism.

Parameter	Details	Remarks
		<i>Criteria</i>
Species (common and scientific names):	Mallard duck (<i>Anas platyrhynchos</i>)	Birds were from the same hatch, and were phenotypically indistinguishable from wild birds. <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:	21 weeks old	It was stated that birds were approaching their first breeding season. Test birds should be at least 7 months (28 weeks) old. <i>Birds approaching their first breeding season should be used.</i>
Body Weight: (mean and range)	Males: Overall range (n=64) 946 to 1396 g, with group means of 1185 to 1188 g.	Body weights were recorded at weeks 0, 2, 4, 6, 8, and 20 (adult termination).

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Parameter	Details	Remarks
		<i>Criteria</i>
	Females: Overall range (n=64) of 925 to 1335 g, with group means of 1075 to 1133 g.	<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>
Source:	Whistling Wings, Inc. 113 Washington Street Hanover, IL	<i>All birds should be from the same source.</i>

B. STUDY DESIGN:

1. Experimental Conditions

a. Range-finding study: A 6-week exposure pilot study (Wildlife International Project No. 149-188) was conducted during the egg-laying phase of the reproductive cycle of mallard. Nominal dietary concentrations were 0, 130, 320, and 800 mg ai/kg diet. Endpoints assessed included health, weight gain, and feed consumption of adults as well as egg production and egg weights. Compound-related effects on body weight and necropsy results were noted in birds at the 800 mg ai/kg diet level, and upon feed consumption and egg production at the 320 and 800 mg ai/kg diet levels. No compound-related effects were observed at the 130 mg ai/kg diet level.

b. Definitive Study

Table 2: Experimental Parameters.

Parameter	Details	Remarks
		<i>Criteria</i>
Acclimation period:	5 weeks	The study author reported that at test initiation, all birds were examined for physical injuries and general health, and that birds that did not appear healthy, either due to injury or inability to acclimate to laboratory conditions, or were outside the desired weight range for the test, were excluded from the study. During acclimation, birds received 8 hours light/day.
Conditions (same as test or not):	Same as test	
Feeding:	Wildlife International Ltd. Game Bird Ration formulated by Agway Inc. and tap water were provided <i>ad libitum</i> .	
Health (any mortality observed):	Mortality not reported.	

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Parameter	Details	Remarks
		<i>Criteria</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>

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Parameter	Details	Remarks
		Criteria
<p><u>Test duration</u> pre-laying exposure: egg-laying exposure: withdrawal period, if used:</p>	<p>8 weeks Approx. 12 weeks N/A</p>	<p>Egg laying commenced upon photostimulation.</p> <hr/> <p><u>Recommended pre-laying exposure duration:</u> At least 10 weeks prior to the onset of egg-laying.</p> <p><u>Recommended exposure duration with egg-laying:</u> At least 10 weeks.</p> <p><u>Recommended withdrawal period:</u> If reduced reproduction is evident, a withdrawal period of up to 3 weeks should be added to the test phase.</p>
<p><u>Pen (for parental and offspring) size:</u></p> <p>construction materials:</p> <p>number:</p>	<p>Parents (one pair) were housed in battery cages measuring 75 x 90 x 45 cm high. Offspring (by set and group) were housed in 62 x 92 x 25.5 cm high battery brooders.</p> <p>Parental and offspring pens were constructed of vinyl-coated wire mesh.</p> <p>16 parental pens/treatment level. Hatchlings were group-housed according to the appropriate parental concentration.</p>	<p>Pen floor size was significantly less (3375 cm²/duck) than recommended (at least 10,000 cm²/duck). As cages were much smaller than recommended, documentation that reproductive parameters and health of birds are not adversely affected should be provided.</p> <hr/> <p><u>Pens</u> Pens should have adequate room and be arranged to prevent cross-contamination.</p> <p><u>Materials</u> Recommended materials include nontoxic material and nonbinding material, such as galvanized steel.</p> <p><u>Number</u> 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.</p>
<p>Number of birds per pen (male:female)</p>	<p>2 birds/pen (1 male:1 female)</p>	<hr/> <p>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.</p>

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Parameter	Details	Remarks
		Criteria
<p><u>Number of pens per group/treatment</u> negative control: solvent control: treated:</p>	<p>N/A 16 pens 16 pens/treatment</p>	<p><i>At least 12-16 pens should be used, but considerably more if birds are kept in pairs.</i></p>
<p><u>Test concentrations (mg ai/kg diet)</u> nominal: measured:</p>	<p>0 (vehicle control), 63, 250, and 1000 mg ai/kg diet <10 (<LOD, control), 65.3, 260, and 1030 mg ai/kg diet</p>	<p>Dietary concentrations were adjusted for purity of the test substance. Measured concentrations were determined at all levels during Weeks 2, 3, 4, 8, 12, 16, and 20. Mean-measured concentrations had coefficients of variation of approximately 4% indicating relative precision among the samples.</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 reported</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 and corn oil Approx. 1.6 and 0.8%, respectively (v:w)</p>	<p><i>Recommended solvents include corn oil or other appropriate vehicle not more than 2% of diet by weight</i></p>

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Parameter	Details	Remarks
		<i>Criteria</i>
Was detailed description and nutrient analysis of the basal diet provided? (Yes/No)	Yes. The basal ration contained at least 27% protein and 2.5% fat, and no more than 5% fiber. The diet was supplemented with limestone, to increase the calcium level to approximately 3%.	Offspring were fed basal ration without the addition of limestone. <i>A commercial breeder feed or an equivalent that is appropriate for the test species is recommended.</i>
Preparation of test diet	The appropriate amount of test material was dissolved in acetone and corn oil using a magnetic stir plate, and quantitatively transferred to a bowl containing a portion of basal feed. The contents of the bowl were mixed on a Hobart mixer for approximately 15 minutes. The remainder of the basal ration was added, and the contents mixed for an additional 10 minutes. Premixes were prepared every 3-4 weeks, and if not used immediately after mixing, they were stored frozen in plastic bags. As needed, the appropriate premix was combined with additional basal ration and limestone and mixed in a Patterson-Kelly Twin Shell Blender for approximately 20 minutes.	It was not reported if the acetone (350 ml per premix) was allowed to completely evaporate prior to offering. <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	

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Parameter	Details	Remarks
		<i>Criteria</i>
Did chemical analysis confirm that diet was stable and homogeneous?	Yes, for ambient 7-day feeder storage. Frozen storage stability data were not generated (premix batches were prepared every 3 to 4 weeks and were stored frozen until needed). Yes	Stability was assessed in treated feed prepared at all treatment levels after 7 days of ambient feeder storage during Week 1. Recoveries averaged 98.0, 96.9, and 102% of initial concentrations for the 63, 250, and 1000 mg ai/kg diet levels, respectively. Homogeneity was assessed in treated feed prepared on Day 0 of Week 1 at all test levels. Six samples per level were collected: one sample per side from the top, middle, and bottom of the batch. Calculated coefficients of variations (CV=RSD) were 3.36, 6.12, and 4.18% for the 63, 250, and 1000 mg ai/kg diets, respectively.
Feeding and husbandry	Feeding and husbandry conditions appeared to be adequate, given guideline recommendations.	
<u>Test conditions (pre-laying)</u> temperature: relative humidity: photoperiod:	24.1 ± 1.5°C 70 ± 9% 8 hr light/day up through Week 8; 17 hr light/day thereafter.	Temperature and humidity were for the adult room during the entire study. The air handling system provided up to 15 room air volumes every hours. Light intensity averaged approximately 211 lux (or 20 foot candles). ----- <i>Recommended temperature:</i> <i>about 21 °C (70 °F)</i> <i>Recommended relative humidity:</i> <i>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>

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Parameter	Details	Remarks
		<i>Criteria</i>
Egg Collection and Incubation		
<u>Egg collection and storage</u> collection interval: storage temperature: storage humidity:	Daily 13.5 ± 0.7°C 87 ± 7%	To reduce the possibility of pathogen contamination, the collected eggs were washed in a commercial egg washer (Kuhl) with a chlorine-based detergent at 45°C for approximately 3 minutes. The eggs were allowed to cool to ambient temperature and rinsed with fresh water prior to storage. <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 21 (embryo survival).	<i>Quail: approx. day 11 Ducks: approx. day 14</i>
When the eggs were transferred to the hatcher?	Day 24	<i>Bobwhite: usually day 21 Mallard: usually day 23</i>
<u>Hatching conditions</u> temperature: humidity: photoperiod:	Petersime Hatcher: 37.2 ± 0.0°C NatureForm incubator: 37.4 ± 0.0°C Petersime Hatcher: approx. 77% NatureForm incubator: approx. 58% 16 hours light/8 hours dark (hatchlings)	<i>Recommended temperature is 39 °C (102 °F) Recommended humidity is 70%</i>

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Parameter	Details	Remarks
		<i>Criteria</i>
Day the hatched eggs were removed and counted	Day 27 or 28	The temperature of the brooding compartment (during the 14-day post-hatch period) was approximately 38°C. It is recommended that a temperature gradient in the pen of approximately 22 to 35°C is provided to allow the hatchlings to seek a proper temperature. <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?	Yes	
<u>Egg shell thickness</u> no. of eggs used: intervals: mode of measurement:	One egg was collected (when available) from each odd numbered cage during odd numbered weeks and from each even numbered cage during the even numbered weeks. Once weekly throughout the egg laying period. Five points around the equatorial circumference were measured to the nearest 0.002 mm.	<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)	- mortality - body weight - food consumption - signs of toxicity - necropsy	All adult birds were subjected to gross necropsy.
<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)	- eggs laid - eggs cracked - egg shell thickness - eggs set - viable embryos - live 3-week embryos - number of hatchlings - hatchling body weight - number of 14-day-old survivors - 14-day-old survivor body weight - signs of toxicity of hatchlings	----- <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 parental signs of toxicity were recorded once daily. Parental body weights were recorded at weeks 0 (test initiation), 2, 4, 6, 8, and 20 (adult termination). Parental food consumption was measured weekly throughout the test.	----- <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 were observed in either the 63 or 250 mg ai/kg diet groups. However, one incidental mortality occurred in the control group, and one treatment-related mortality occurred in the 1000 mg ai/kg diet treatment group.

The single control mortality was a female (pen 813) that was found dead during Week 20; foot lesions were noted prior to death. Necropsy findings included lesions on both feet, autolysis throughout the abdominal cavity

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with lesions consistent with egg-yolk peritonitis, pale kidneys, enlarged spleen, observation of cystic follicles, and a regressing ovary. Necropsy of the pen-mate was unremarkable.

The single mortality in the 1000 mg ai/kg diet level was a male (pen 851) that was euthanized due to a debilitated condition during Week 4. Clinical effects noted prior to death included reduced reaction to external stimuli and ataxia. At necropsy the bird was noted as emaciated, with a loss of muscle mass and prominent keel.

In addition, the spleen and kidneys were pale. Gastrointestinal findings included an empty proventriculus and primarily-empty gizzard, and pasty cecal contents. Necropsy of the pen-mate showed foot lesions and a regressed ovary, but was otherwise unremarkable.

Due to the nature of the lesions observed at necropsy of the single decedent bird from the 1000 mg ai/kg diet level, and the lack of lesions indicative of an incidental cause of death, a treatment-related effect could not be precluded. Given the correlation of the mortality with the weight loss and reduced feed consumption observed at this level (see below), it was concluded that the mortality was treatment-related. The NOAEC for adult mortality was therefore 250 mg ai/kg diet.

Table 4: Effect of AE 0172747 Technical on Mortality of Mallard Duck.

Treatment (mg ai/kg diet) Mean-measured (and Nominal) Concentrations	Observation Period					
	Week 7		Week 14		Week 20	
	No. Dead		No. Dead		No. Dead	
	Male	Female	Male	Female	Male	Female
Control	0	0	0	0	0	1
65.3 (63)	0	0	0	0	0	0
260 (250)	0	0	0	0	0	0
1030 (1000)	1	0	1	0	1	0

B. REPRODUCTIVE AND OTHER ENDPOINTS:

Abnormal Effects/Behavior: No overt signs of toxicity were observed in birds from the 63 or 250 mg ai/kg diet levels. However, nine birds in the 1000 mg ai/kg diet level were noted to have a thin appearance (streamlined, lacking body width, less breast muscle mass apparent, keel evident). Since the observation correlates with the body weight loss observed in this group, this observation was considered to be treatment-related. Incidental clinical observations noted in the control group and all treatment groups during the test included those normally associated with injuries and pen wear; effects included foot lesions, feather loss, and dyspnea. The NOAEC for clinical signs of toxicity was 250 mg ai/kg diet.

Food Consumption: No apparent treatment-related effects on feed consumption were observed in birds from the 63 or 250 mg ai/kg diet levels. Although there was a statistically-significant increase (of 131% of control value) in feed consumption during Week 4 at the 250 mg ai/kg diet level, the difference was transient and not considered to be treatment-related. Treatment-related effects in food consumption were observed at the 1000 mg ai/kg diet level; statistically-significant decreases in consumption were observed during Weeks 1 (50%) and 2 (39%) at $p < 0.01$. Statistically-significant increases in food consumption (perhaps compensatory) were then observed during Weeks 5 (136%), 6 (134%), and 18 (131%) at $p < 0.01$ and during Weeks 19 (132%) and 20 (130%) at $p < 0.05$. The NOAEC for feed consumption was 250 mg ai/kg diet.

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Body Weight: No apparent treatment-related effects on body weight were observed in males or females at the 63 mg ai/kg diet level, or in males at the 250 mg ai/kg diet level. In females from the 250 mg ai/kg diet level, statistically-significant treatment-related reductions in body weight (of 10%, $p<0.05$) were noted at Weeks 2 and 4. No other statistically-significant differences were observed in females from this level. At the 1000 mg ai/kg diet level, statistically-significant reductions in the body weights of males were observed at Weeks 2 (14%, $p<0.01$) and 4 (10%, $p<0.05$) compared to the control. In females from this level, statistically-significant reductions (ranging from 19 to 10%, $p<0.01$) were observed at Weeks 2, 4, 6 and 20 (termination). The subsequent NOAEC for adult body weight was 63 mg ai/kg diet.

Necropsy: There were no macroscopic findings at necropsy that were considered related to treatment.

Reproductive Effects: No statistically-significant differences from controls were observed by the study author on any reproductive parameter for the 63 and 250 mg ai/kg diet levels. Although not statistically-significant, there was a decrease in hatchability (hatchlings as a percentage of live 3-week embryos) at the 250 mg ai/kg diet level (68 versus 83% for the control). It was noted that this decrease was primarily influenced by data from one pen (Pen 844) from which none of the 32 live 3-week embryos hatched.

At the 1000 mg ai/kg diet level, there were treatment-related reductions in several reproductive parameters. Although not statistically-significant, there were slight decreases in egg production (eggs laid as a percentage of the maximum laid; 44 versus 55% for the control), viable embryos (viable embryos as a percentage of eggs set; 89 versus 95%), and hatchability (hatchlings as a percentage of live 3-week embryos, 73 versus 83%). In addition, a statistically-significant reduction in offspring survival (14-day old survivors as a percentage of hatchlings; 87 versus 99%, $p<0.01$) was observed. Additionally, there were statistically-significant reductions in hatchlings as a percentage of the maximum number of eggs set (28 versus 46%, $p<0.01$), 14-day old survivors as a percentage of eggs set (58 versus 77%, $p<0.05$), and 14-day old survivors as a percentage of maximum set (26 versus 45%, $p<0.01$).

No treatment-related differences in egg shell thickness or hatchling body weights were observed at any treatment level by the study author. However, the body weight of 14-day old survivors was statistically-reduced (10%, $p<0.01$) at the 1000 mg ai/kg diet level. Clinical effects of hatchlings, if observed, were not reported. Based on treatment-related reductions in various reproductive parameters at the 1000 mg ai/kg diet level, the NOAEC for reproductive endpoints was 250 mg ai/kg diet.

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

Parameter	Control	63 mg ai/kg	250 mg ai/kg	1000 mg ai/kg	NOAEC/ LOAEC
Eggs laid/pen	47	54	49	36	N/A
Eggs laid/hen/day	0.56	0.64	0.58	0.43	N/A
Eggs cracked	3	8	5	14	N/A
Eggs set	635	769	704	456	N/A
Shell thickness (mm ± SD)	0.395 ± 0.019	0.397 ± 0.021	0.393 ± 0.019	0.382 ± 0.021	1000 mg ai/kg >1000 mg ai/kg
Viable embryos	604	723	682	401	N/A
Live 3-week embryos	600	720	675	397	N/A
No. of hatchlings/hen ^(a)	33.0	36.0	29.5	20.4	N/A
No. of normal hatchlings	496	577	472	306	N/A
Hatchling weight (g ± SD)	32 ± 2	34 ± 2	31 ± 2	31 ± 2	1000 mg ai/kg >1000 mg ai/kg
14-day old survivors	490	570	463	280	N/A
14-day old survivors weight (g ± SD)	313 ± 27	306 ± 15	302 ± 26	281 ± 22**	250 mg ai/kg 1000 mg ai/kg
Mean food consumption (g/bird/day) ^(a)	154	168	175	188	250 mg ai/kg 1000 mg ai/kg
Weight (g) of parent females at test initiation: at onset of egg laying: at test termination:	1133 1080 1221	1118 1035 1178	1098 1018 1187	1075 1015 1095**	63 mg ai/kg 250 mg ai/kg
Weight (g) of parent males at test initiation: at onset of egg laying: at test termination:	1187 1122 1175	1188 1067 1132	1185 1117 1124	1187 1079 1101	250 mg ai/kg 1000 mg ai/kg
Gross pathology	No treatment-related abnormalities observed.				1000 mg ai/kg >1000 mg ai/kg

N/A = Not statistically-analyzed.

^(a) Reviewer-calculated.

** Statistically different from the control at p<0.01.

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C. REPORTED STATISTICS:

The following variables were statistically analyzed: adult body weight, adult feed consumption, eggs laid of maximum laid, eggs cracked of eggs laid, viable embryos of eggs set, live 3-week embryos of viable embryos, hatchlings of live 3-week embryos, 14-day old survivors of hatchlings, hatchlings of eggs set, 14-day old survivors of eggs set, hatchlings of maximum set, 14-day old survivors of maximum set, egg shell thickness, and offspring's body weight (0 and 14 days).

Each of the treatment groups was compared to the control group using an analysis of variance (ANOVA) followed by Dunnett's Multiple Comparison Procedure. Sample units were the individual pens within each experimental group, except adult body weights, where the sample unit was the individual bird. Percentage data were arcsine square root transformed prior to analysis. Nominal concentrations were used for all estimations.

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.

NOAEC: <65.3 mg ai/kg diet

LOAEC: 65.3 mg ai/kg diet

Most sensitive endpoints: adult male body weight gain, the ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set

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

Parameter	Control	65.3 mg ai/kg	260 mg ai/kg	1030 mg ai/kg	NOAEC/ LOAEC
Eggs laid/pen	47.1	53.6	49.0	36.0*	260 mg ai/kg 1030 mg ai/kg
Eggs cracked/pen	0.2	0.5	0.3	0.9	1030 mg ai/kg >1030 mg ai/kg
Eggs not cracked/eggs laid (%)	99.6	99.1	99.3	97.5	1030 mg ai/kg >1030 mg ai/kg
Eggs set/pen	42.3	48.1	44.0	30.4*	260 mg ai/kg 1030 mg ai/kg
Shell thickness	0.39	0.40	0.39	0.38	1030 mg ai/kg >1030 mg ai/kg

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Eggs set/eggs laid (%)	89.8	89.7	89.5	82.3*	260 mg ai/kg 1030 mg ai/kg
Viable embryos/pen	40.3	45.2	42.6	26.7*	260 mg ai/kg 1030 mg ai/kg
Viable embryos/eggs set (%)	95.2	94.1	96.8	88.6	1030 mg ai/kg >1030 mg ai/kg
Live embryos/pen	40.0	45.0	42.2	26.5*	260 mg ai/kg 1030 mg ai/kg
Live embryos/viable embryos (%)	99.5	99.5	99.0	98.8	1030 mg ai/kg >1030 mg ai/kg
No. of hatchlings/pen	33.1	36.1	29.5	20.4*	260 mg ai/kg 1030 mg ai/kg
No. of hatchlings/eggs laid (%)	70.3	66.3*	59.0*	54.0*	<65.3 mg ai/kg 65.3 mg ai/kg
No. of hatchlings/eggs set (%)	78.2	73.9*	65.6*	64.3*	<65.3 mg ai/kg 65.3 mg ai/kg
No. of hatchlings/live embryos (%)	82.6	79.0	68.0	73.0	1030 mg ai/kg >1030 mg ai/kg
Hatchling survival/pen	32.7	35.6	28.9	18.7*	260 mg ai/kg 1030 mg ai/kg
Hatchling survival/eggs set (%)	77.3	72.9*	64.2*	57.7*	<65.3 mg ai/kg 65.3 mg ai/kg
Hatchling survival/no. of hatchlings (%)	98.6	98.6	97.9	86.6*	260 mg ai/kg 1030 mg ai/kg
Hatchling weight (g)	32.2	33.8	31.2	30.7*	260 mg ai/kg 1030 mg ai/kg
Survivor weight (g)	312.5	305.4	301.7	280.6*	260 mg ai/kg 1030 mg ai/kg
Mean food consumption (g/bird/day)	153.7	168.1	175.1	188.2	1030 mg ai/kg >1030 mg ai/kg
Male weight gain (g)	-6.9	-56.1*	-60.4*	-87.3*	<65.3 mg ai/kg 65.3 mg ai/kg
Female weight gain (g)	89.5	59.8	88.5	16.8*	260 mg ai/kg 1030 mg ai/kg

* Statistically different from the control at p<0.05.

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E. STUDY DEFICIENCIES:

Treated premixes were prepared every 3 to 4 weeks and were stored frozen in plastic bags until needed; however, frozen storage stability data were not provided. This deficiency affects the scientific soundness of this study. In addition, notable deficiencies from OPPTS 850.2300 guideline included adult birds were younger (21 weeks) at test initiation than recommended (≥ 28 weeks), and pen floor size was significantly less (3375 cm²/duck) than recommended (at least 10,000 cm²/duck). As cages were much smaller than recommended, documentation that reproductive parameters and health of birds are not adversely affected should have been provided. Furthermore, a NOAEC could not be determined for this study because significant adverse effects on adult and reproductive endpoints were observed at all treated levels. Pre-treatment exposure time was shorter than recommended (8 weeks versus a minimum of 10 weeks).

F. REVIEWER=S COMMENTS:

Results of the reviewer's statistical verification were similar to the study author's, in that the mean values were identical. However, the reviewer's conclusions regarding the NOAEC for several affected endpoints differed from those conclusions drawn by the study author. In particular, the reviewer's analysis detected significant adverse effects on overall male body weight gain and relatively-expressed reproductive endpoints (i.e., ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set) which were not detected by the study author. The reviewer's conclusions are reported in the Executive Summary and Conclusions sections.

Based on mean body weights and food consumption, the overall estimated daily dietary dose was calculated as 9.7, 40.2, 181.0 mg ai/kg bw/day for the nominal 63, 250, and 1000 mg ai/kg diet levels, respectively.

Matrix blanks were fortified at 25, 250, or 1200 mg ai/kg diet and analyzed concurrently with sample analysis. Recoveries ranged from 91-109% for all samples (mean range of 100-105%). Sample concentrations were not corrected for mean procedural recoveries.

Samples were analyzed by HPLC/UV. The analytical LOD and LOQ were 10 and 25 mg ai/kg diet, respectively.

In-life dates were May 16 – November 13, 2003.

G. CONCLUSIONS:

This study is scientifically sound; however, freezer storage stability data were not provided and a NOAEC was not determined. In addition, this study does not fulfill guideline requirements because the ducks were younger than required and were maintained in cages significantly smaller than recommended. This study does not fulfill the guideline requirement for an avian reproduction study and is classified as SUPPLEMENTAL.

NOAEC: <65.3 mg ai/kg diet

LOAEC: 65.3 mg ai/kg diet

Endpoint(s) Affected: adult male and female weight gain, eggs laid, eggs set, the ratio of eggs set to eggs laid, viable embryos, live embryos, number hatched, the ratios of number hatched to eggs laid and eggs set, 14-day-old survivors, the ratios of survivors to eggs set and number hatched, and hatchling and survivor body weights.

Most sensitive endpoint: adult male body weight gain, the ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set

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E. STUDY DEFICIENCIES:

Treated premixes were prepared every 3 to 4 weeks and were stored frozen in plastic bags until needed; however, frozen storage stability data were not provided. This deficiency may affect the scientific soundness of this study if inadequate data are provided. In addition, notable deficiencies from OPPTS 850.2300 guideline included adult birds were younger (21 weeks) at test initiation than recommended (≥ 28 weeks), and pen floor size was significantly less (3375 cm²/duck) than recommended (at least 10,000 cm²/duck). As cages were much smaller than recommended, documentation that reproductive parameters and health of birds are not adversely affected should have been provided. Furthermore, a NOAEC could not be determined for this study because significant adverse effects on adult and reproductive endpoints were observed at all treated levels.

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Matrix blanks were fortified at 25, 250, or 1200 mg ai/kg diet and analyzed concurrently with sample analysis. Recoveries ranged from 91-109% for all samples (mean range of 100-105%). Sample concentrations were not corrected for mean procedural recoveries.

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NOAEC: <65.3 mg ai/kg diet

LOAEC: 65.3 mg ai/kg diet

Endpoint(s) Affected: adult male and female weight gain, eggs laid, eggs set, the ratio of eggs set to eggs laid, viable embryos, live embryos, number hatched, the ratios of number hatched to eggs laid and eggs set, 14-day-old survivors, the ratios of survivors to eggs set and number hatched, and hatchling and survivor body weights.

Most sensitive endpoint: adult male body weight gain, the ratios of number hatched to eggs laid and eggs set and the ratio of survivors to eggs set

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III. REFERENCES:

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APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

Mallard repro, Bayer AE0172747, MRID 466955-05

PRINTOUT OF RAW DATA

Obs	TRT	EL	EC	ENC_EL	ES	ES_EL	VE	VE_ES	LE	LE_VE	NH	NH_EL
1	Ctrl	57	0	100.00	52	91.23	52	100.00	51	98.08	41	71.93
												78.85
2	Ctrl	61	0	100.00	56	91.80	54	96.43	53	98.15	48	78.69
												85.71
3	Ctrl	53	2	96.23	41	77.36	38	92.68	38	100.00	34	64.15
												82.93
4	Ctrl	44	0	100.00	39	88.64	38	97.44	38	100.00	12	27.27
												30.77
5	Ctrl	32	0	100.00	29	90.63	29	100.00	29	100.00	25	78.13
												86.21
6	Ctrl	18	0	100.00	16	88.89	15	93.75	15	100.00	14	77.78
												87.50
7	Ctrl	64	0	100.00	59	92.19	59	100.00	58	98.31	53	82.81
												89.83
8	Ctrl	43	0	100.00	39	90.70	39	100.00	39	100.00	26	60.47
												66.67
9	Ctrl	58	0	100.00	54	93.10	51	94.44	51	100.00	48	82.76
												88.89
10	Ctrl	45	0	100.00	41	91.11	40	97.56	39	97.50	33	73.33
												80.49
11	Ctrl	43	0	100.00	39	90.70	37	94.87	37	100.00	37	86.05
												94.87
12	Ctrl	45	0	100.00	41	91.11	39	95.12	39	100.00	36	80.00
												87.80
13	Ctrl	.	.	.	.	.	.	.	.	.	.	.
14	Ctrl	39	0	100.00	35	89.74	34	97.14	34	100.00	31	79.49
												88.57
15	Ctrl	50	0	100.00	46	92.00	39	84.78	39	100.00	35	70.00
												76.09
16	Ctrl	55	1	98.18	48	87.27	40	83.33	40	100.00	23	41.82
												47.92
17	Dose1	43	0	100.00	39	90.70	38	97.44	38	100.00	33	76.74
												84.62
18	Dose1	33	0	100.00	30	90.91	28	93.33	27	96.43	24	72.73
												80.00
19	Dose1	60	0	100.00	55	91.67	41	74.55	41	100.00	37	61.67
												67.27
20	Dose1	35	0	100.00	32	91.43	30	93.75	30	100.00	18	51.43
												56.25
21	Dose1	54	0	100.00	49	90.74	46	93.88	46	100.00	38	70.37
												77.55
22	Dose1	45	2	95.56	38	84.44	37	97.37	37	100.00	18	40.00
												47.37
23	Dose1	63	1	98.41	57	90.48	54	94.74	53	98.15	42	66.67
												73.68
24	Dose1	46	0	100.00	42	91.30	40	95.24	40	100.00	28	60.87
												66.67
25	Dose1	51	0	100.00	47	92.16	45	95.74	45	100.00	37	72.55
												78.72
26	Dose1	62	3	95.16	53	85.48	51	96.23	51	100.00	46	74.19
												86.79

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27	Dose1	66	0	100.00	61	92.42	59	96.72	59	100.00	49	74.24
80.33												
28	Dose1	57	0	100.00	52	91.23	51	98.08	50	98.04	33	57.89
63.46												
29	Dose1	48	0	100.00	43	89.58	41	95.35	41	100.00	27	56.25
62.79												
30	Dose1	82	0	100.00	72	87.80	70	97.22	70	100.00	65	79.27
90.28												
31	Dose1	51	1	98.04	45	88.24	44	97.78	44	100.00	38	74.51
84.44												
32	Dose1	62	1	98.39	54	87.10	48	88.89	48	100.00	44	70.97
81.48												
33	Dose2	62	0	100.00	58	93.55	56	96.55	56	100.00	48	77.42
82.76												
34	Dose2	62	0	100.00	56	90.32	54	96.43	53	98.15	41	66.13
73.21												
35	Dose2	37	0	100.00	33	89.19	33	100.00	33	100.00	26	70.27
78.79												
36	Dose2	53	0	100.00	48	90.57	48	100.00	48	100.00	44	83.02
91.67												
37	Dose2	44	1	97.73	39	88.64	37	94.87	36	97.30	20	45.45
51.28												
38	Dose2	59	0	100.00	53	89.83	51	96.23	51	100.00	42	71.19
79.25												
39	Dose2	57	0	100.00	52	91.23	51	98.08	51	100.00	40	70.18
76.92												
40	Dose2	34	0	100.00	29	85.29	27	93.10	27	100.00	16	47.06
55.17												
41	Dose2	50	1	98.00	45	90.00	45	100.00	44	97.78	37	74.00
82.22												
42	Dose2	55	1	98.18	49	89.09	47	95.92	45	95.74	23	41.82
46.94												
43	Dose2	56	0	100.00	52	92.86	51	98.08	51	100.00	35	62.50
67.31												
44	Dose2	39	1	97.44	33	84.62	32	96.97	32	100.00	0	0.00
0.00												
45	Dose2	37	0	100.00	33	89.19	33	100.00	33	100.00	32	86.49
96.97												
46	Dose2	48	0	100.00	44	91.67	43	97.73	43	100.00	29	60.42
65.91												
47	Dose2	47	0	100.00	42	89.36	38	90.48	37	97.37	7	14.89
16.67												
48	Dose2	44	1	97.73	38	86.36	36	94.74	35	97.22	32	72.73
84.21												
49	Dose3	16	0	100.00	11	68.75	10	90.91	10	100.00	4	25.00
36.36												
50	Dose3	25	3	88.00	18	72.00	18	100.00	18	100.00	13	52.00
72.22												
51	Dose3	.	.	.	.	.	.	.	.	.	.	.
.												
52	Dose3	17	0	100.00	15	88.24	15	100.00	15	100.00	9	52.94
60.00												
53	Dose3	53	0	100.00	49	92.45	37	75.51	37	100.00	32	60.38
65.31												
54	Dose3	46	2	95.65	38	82.61	33	86.84	33	100.00	31	67.39
81.58												

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55	Dose3	47	0	100.00	41	87.23	38	92.68	38	100.00	32	68.09
78.05												
56	Dose3	39	7	82.05	23	58.97	10	43.48	9	90.00	6	15.38
26.09												
57	Dose3	58	1	98.28	51	87.93	43	84.31	41	95.35	26	44.83
50.98												
58	Dose3	39	0	100.00	35	89.74	32	91.43	32	100.00	30	76.92
85.71												
59	Dose3	46	1	97.83	40	86.96	34	85.00	33	97.06	27	58.70
67.50												
60	Dose3	48	0	100.00	43	89.58	41	95.35	41	100.00	31	64.58
72.09												
61	Dose3	15	0	100.00	12	80.00	12	100.00	12	100.00	10	66.67
83.33												
62	Dose3	37	0	100.00	33	89.19	33	100.00	33	100.00	22	59.46
66.67												
63	Dose3	10	0	100.00	7	70.00	6	85.71	6	100.00	3	30.00
42.86												
64	Dose3	44	0	100.00	40	90.91	39	97.50	39	100.00	30	68.18
75.00												

Mallard repro, Bayer AE0172747, MRID 466955-05

PRINTOUT OF RAW DATA (continued)

Obs	TRT	NH_LE	HS	HS_ES	HS_NH	THICK	HATWT	SURVWT	FOOD	WTGAINM	WTGAINF
1	Ctrl	80.39	41	78.85	100.00	0.40	35	341	145	-76	148
2	Ctrl	90.57	48	85.71	100.00	0.38	34	358	176	-27	164
3	Ctrl	89.47	34	82.93	100.00	0.36	33	337	153	-34	140
4	Ctrl	31.58	12	30.77	100.00	0.43	32	293	125	-123	75
5	Ctrl	86.21	25	86.21	100.00	0.38	29	260	115	42	-67
6	Ctrl	93.33	14	87.50	100.00	0.40	34	338	127	126	187
7	Ctrl	91.38	53	89.83	100.00	0.43	34	307	150	96	234
8	Ctrl	66.67	26	66.67	100.00	0.40	31	311	181	13	29
9	Ctrl	94.12	48	88.89	100.00	0.38	31	289	143	102	152
10	Ctrl	84.62	33	80.49	100.00	0.37	32	310	122	-68	-164
11	Ctrl	100.00	36	92.31	97.30	0.39	29	305	219	59	177
12	Ctrl	92.31	35	85.37	97.22	0.40	35	346	143	-36	17
13	Ctrl	.	.	.	.	.	.	.	.	.	.
14	Ctrl	91.18	30	85.71	96.77	0.39	31	316	145	57	-35
15	Ctrl	89.74	34	73.91	97.14	0.39	30	278	178	-128	219
16	Ctrl	57.50	21	43.75	91.30	0.39	33	298	184	-107	67
17	Dose1	86.84	33	84.62	100.00	0.36	36	315	165	30	133
18	Dose1	88.89	23	76.67	95.83	0.40	31	286	161	-94	107
19	Dose1	90.24	37	67.27	100.00	0.37	31	303	141	-119	73
20	Dose1	60.00	18	56.25	100.00	0.44	36	309	105	-46	-89
21	Dose1	82.61	36	73.47	94.74	0.38	34	303	185	-86	19
22	Dose1	48.65	18	47.37	100.00	0.38	36	295	149	1	28
23	Dose1	79.25	41	71.93	97.62	0.41	34	282	207	-18	75
24	Dose1	70.00	28	66.67	100.00	0.42	32	288	225	-117	140
25	Dose1	82.22	37	78.72	100.00	0.38	33	317	149	-85	59
26	Dose1	90.20	46	86.79	100.00	0.40	37	316	133	18	32
27	Dose1	83.05	49	80.33	100.00	0.41	35	340	190	-162	39
28	Dose1	66.00	33	63.46	100.00	0.42	35	299	154	-28	159
29	Dose1	65.85	25	58.14	92.59	0.39	30	297	185	3	-44
30	Dose1	92.86	65	90.28	100.00	0.42	34	317	151	-56	-20
31	Dose1	86.36	37	82.22	97.37	0.41	33	305	169	-185	72
32	Dose1	91.67	44	81.48	100.00	0.39	33	315	221	47	174
33	Dose2	85.71	47	81.03	97.92	0.39	32	280	237	-117	44

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

34	Dose2	77.36	40	71.43	97.56	0.39	36	314	160	-43	172
35	Dose2	78.79	26	78.79	100.00	0.37	35	344	229	31	94
36	Dose2	91.67	44	91.67	100.00	0.40	31	289	133	-72	62
37	Dose2	55.56	20	51.28	100.00	0.39	33	300	178	-112	288
38	Dose2	82.35	42	79.25	100.00	0.39	31	288	128	-55	-10
39	Dose2	78.43	40	76.92	100.00	0.40	31	309	179	-159	107
40	Dose2	59.26	15	51.72	93.75	0.41	33	332	139	47	24
41	Dose2	84.09	37	82.22	100.00	0.38	31	332	168	-82	49
42	Dose2	51.11	22	44.90	95.65	0.39	29	288	161	-43	75
43	Dose2	68.63	35	67.31	100.00	0.37	31	313	126	-142	153
44	Dose2	0.00	0	0.00	.	0.42	.	.	141	-66	113
45	Dose2	96.97	30	90.91	93.75	0.36	27	259	138	-130	-154
46	Dose2	67.44	27	61.36	93.10	0.43	30	316	236	-39	118
47	Dose2	18.92	7	16.67	100.00	0.41	27	251	180	-15	77
48	Dose2	91.43	31	81.58	96.88	0.40	31	310	268	30	204
49	Dose3	40.00	1	9.09	25.00	0.35	27	249	187	-17	13
50	Dose3	72.22	12	66.67	92.31	0.35	28	262	228	-15	106
51	Dose3	.	.	.	.	.	.	.	.	.	.
52	Dose3	60.00	9	60.00	100.00	0.41	34	288	130	-115	86
53	Dose3	86.49	30	61.22	93.75	0.37	33	285	146	79	132
54	Dose3	93.94	29	76.32	93.55	0.36	30	281	315	-192	-76
55	Dose3	84.21	30	73.17	93.75	0.41	28	249	156	-18	-82
56	Dose3	66.67	5	21.74	83.33	0.39	34	248	135	-211	-9
57	Dose3	63.41	23	45.10	88.46	0.37	31	292	210	-31	84
58	Dose3	93.75	29	82.86	96.67	0.37	29	302	209	-160	72
59	Dose3	81.82	27	67.50	100.00	0.38	32	308	185	-22	17
60	Dose3	75.61	25	58.14	80.65	0.40	34	292	178	-136	-206
61	Dose3	83.33	10	83.33	100.00	0.40	30	279	199	-102	96
62	Dose3	66.67	21	63.64	95.45	0.38	32	302	201	-165	12
63	Dose3	50.00	2	28.57	66.67	0.39	30	313	163	-159	-57
64	Dose3	76.92	27	67.50	90.00	0.40	29	259	181	-45	64

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.981	0.439	1.596	0.200	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	47.13	11.93	3.08	25.32	40.52,	53.74
Dose1	16	53.63	12.39	3.10	23.10	47.02,	60.23
Dose2	16	49.00	9.21	2.30	18.79	44.09,	53.91
Dose3	15	36.00	15.40	3.98	42.78	27.47,	44.53

Level	Median	Min	Max	%of Control (means)	
Ctrl	45.00	18.00	64.00	.	.
Dose1	52.50	33.00	82.00	113.77	-13.77
Dose2	49.00	34.00	62.00	103.96	-3.96
Dose3	39.00	10.00	58.00	76.38	23.62

 **

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	58	5.59	0.002

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	47.13	.	50.48	.	0.468	0.975	0.077	.
Dose1	53.63	0.990	50.48	0.850	.	0.717	0.001	.
Dose2	49.00	0.873	49.00	0.783	.	.	0.025	.
Dose3	36.00	0.022	36.00	0.010	.	.	.	.

SUMMARY

	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.665	<.001	4.087	0.011	USE NON-PARAMETRIC

TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	0.20	0.56	0.14	280.31	0.00,	0.51
Dose1	16	0.50	0.89	0.22	178.89	0.02,	0.98
Dose2	16	0.31	0.48	0.12	153.19	0.06,	0.57
Dose3	15	0.93	1.91	0.49	204.36	0.00,	1.99

Level	Median	Min	Max	%of Control(means)	
Ctrl	0.00	0.00	2.00	.	.
Dose1	0.00	0.00	3.00	250.00	-150.00
Dose2	0.00	0.00	1.00	156.25	-56.25
Dose3	0.00	0.00	7.00	466.67	-366.67

 **

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	2.06	0.559

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	0.00	.	.
Dose1	0.00	1.000	0.122
Dose2	0.00	1.000	0.181
Dose3	0.00	1.000	0.112

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.623	<.001	6.655	<.001	USE NON-PARAMETRIC

TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	99.63	1.05	0.27	1.05	99.05, 100.00
Dose1	16	99.10	1.61	0.40	1.63	98.24, 99.96
Dose2	16	99.32	1.06	0.26	1.06	98.75, 99.88
Dose3	15	97.45	5.32	1.37	5.45	94.51, 100.00

Level	Median	Min	Max	%of Control (means)
Ctrl	100.00	96.23	100.00	.
Dose1	100.00	95.16	100.00	99.47
Dose2	100.00	97.44	100.00	99.69
Dose3	100.00	82.05	100.00	97.82

 **

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	2.13	0.547

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	0.123
Dose2	100.00	1.000	0.131
Dose3	100.00	1.000	0.091

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.987	0.781	2.337	0.083	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	42.33	11.03	2.85	26.06	36.22,	48.44
Dose1	16	48.06	10.91	2.73	22.70	42.25,	53.88
Dose2	16	44.00	9.11	2.28	20.70	39.15,	48.85
Dose3	15	30.40	14.69	3.79	48.31	22.27,	38.53

Level	Median	Min	Max	%of Control (means)	
Ctrl	41.00	16.00	59.00	.	.
Dose1	48.00	30.00	72.00	113.53	-13.53
Dose2	44.50	29.00	58.00	103.94	-3.94
Dose3	35.00	7.00	51.00	71.81	28.19

 **

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	58	6.60	<.001

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	42.33	.	45.29	.	0.518	0.978	0.032	.
Dose1	48.06	0.987	45.29	0.840	.	0.753	<.001	.
Dose2	44.00	0.869	44.00	0.776	.	.	0.009	.
Dose3	30.40	0.009	30.40	0.004	.	.	.	.

SUMMARY

Dunnett
 Williams

NOEC

Dose2
 Dose2

LOEC

Dose3
 Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.847	<.001	14.276	<.001	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	89.76	3.75	0.97	4.17	87.69,	91.84
Dose1	16	89.73	2.41	0.60	2.69	88.44,	91.02
Dose2	16	89.48	2.45	0.61	2.74	88.18,	90.79
Dose3	15	82.30	10.13	2.62	12.31	76.69,	87.91

Level	Median	Min	Max	%of Control(means)	
Ctrl	90.70	77.36	93.10	.	.
Dose1	90.72	84.44	92.42	99.96	0.04
Dose2	89.60	84.62	93.55	99.69	0.31
Dose3	87.23	58.97	92.45	91.69	8.31

**

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	11.20	0.011

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	90.70	.	.
Dose1	90.72	1.000	0.339
Dose2	89.60	0.428	0.135
Dose3	87.23	0.011	<.001

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose2	Dose3
Jonckheere	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.989	0.874	1.977	0.127	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	40.27	10.77	2.78	26.74	34.30,	46.23
Dose1	16	45.19	10.55	2.64	23.34	39.57,	50.81
Dose2	16	42.63	8.99	2.25	21.09	37.84,	47.41
Dose3	15	26.73	13.18	3.40	49.29	19.44,	34.03

Level	Median	Min	Max	%of Control (means)	
Ctrl	39.00	15.00	59.00	.	.
Dose1	44.50	28.00	70.00	112.22	-12.22
Dose2	44.00	27.00	56.00	105.86	-5.86
Dose3	33.00	6.00	43.00	66.39	33.61

 **

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	58	8.65	<.001

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	40.27	.	42.81	.	0.597	0.932	0.007	.
Dose1	45.19	0.981	42.81	0.821	.	0.911	<.001	.
Dose2	42.63	0.911	42.63	0.839	.	.	<.001	.
Dose3	26.73	0.002	26.73	<.001	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.713	<.001	4.512	0.007	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	95.17	5.12	1.32	5.38	92.34, 98.00
Dose1	16	94.14	5.71	1.43	6.06	91.10, 97.18
Dose2	16	96.82	2.68	0.67	2.77	95.39, 98.25
Dose3	15	88.58	14.45	3.73	16.32	80.58, 96.59

Level	Median	Min	Max	%of Control (means)
Ctrl	96.43	83.33	100.00	.
Dose1	95.55	74.55	98.08	98.92
Dose2	96.76	90.48	100.00	101.74
Dose3	91.43	43.48	100.00	93.08

**

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	5.03	0.170

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	96.43	.	.
Dose1	95.55	0.778	0.251
Dose2	96.76	1.000	0.821
Dose3	91.43	0.340	0.246

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.989	0.833	2.049	0.117	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	40.00	10.48	2.71	26.20	34.20,	45.80
Dose1	16	45.00	10.57	2.64	23.49	39.37,	50.63
Dose2	16	42.19	8.97	2.24	21.26	37.41,	46.97
Dose3	15	26.47	13.07	3.37	49.36	19.23,	33.70

Level	Median	Min	Max	%of Control(means)	
Ctrl	39.00	15.00	58.00	.	.
Dose1	44.50	27.00	70.00	112.50	-12.50
Dose2	43.50	27.00	56.00	105.47	-5.47
Dose3	33.00	6.00	41.00	66.17	33.83

 **

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	58	8.80	<.001

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	40.00	.	42.58	.	0.577	0.943	0.006	.
Dose1	45.00	0.983	42.58	0.826	.	0.883	<.001	.
Dose2	42.19	0.904	42.19	0.828	.	.	<.001	.
Dose3	26.47	0.002	26.47	<.001	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.662	<.001	3.417	0.023	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	99.47	0.93	0.24	0.93	98.96, 99.98
Dose1	16	99.54	1.05	0.26	1.06	98.98, 100.00
Dose2	16	98.97	1.45	0.36	1.46	98.20, 99.74
Dose3	15	98.83	2.80	0.72	2.83	97.28, 100.00

Level	Median	Min	Max	%of Control (means)
Ctrl	100.00	97.50	100.00	.
Dose1	100.00	96.43	100.00	100.07
Dose2	100.00	95.74	100.00	99.50
Dose3	100.00	90.00	100.00	99.36

**

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	1.78	0.620

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	0.647
Dose2	100.00	1.000	0.155
Dose3	100.00	1.000	0.303

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.983	0.556	0.264	0.851	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	33.07	11.84	3.06	35.81	26.51,	39.62
Dose1	16	36.06	12.04	3.01	33.39	29.65,	42.48
Dose2	16	29.50	13.55	3.39	45.93	22.28,	36.72
Dose3	15	20.40	11.43	2.95	56.01	14.07,	26.73

Level	Median	Min	Max	%of Control (means)	
Ctrl	34.00	12.00	53.00	.	.
Dose1	37.00	18.00	65.00	109.06	-9.06
Dose2	32.00	0.00	48.00	89.21	10.79
Dose3	26.00	3.00	32.00	61.69	38.31

 **

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	58	4.69	0.005

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	33.07	.	34.61	.	0.904	0.850	0.032	.
Dose1	36.06	0.925	34.61	0.724	.	0.436	0.004	.
Dose2	29.50	0.402	29.50	0.270	.	.	0.177	.
Dose3	20.40	0.009	20.40	0.004	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.878	<.001	2.095	0.111	USE NON-PARAMETRIC

TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	70.31	16.33	4.22	23.23	61.27,	79.36
Dose1	16	66.27	10.72	2.68	16.18	60.56,	71.99
Dose2	16	58.97	23.94	5.99	40.60	46.21,	71.73
Dose3	15	54.03	17.86	4.61	33.06	44.14,	63.93

Level	Median	Min	Max	%of Control(means)	
Ctrl	77.78	27.27	86.05	.	.
Dose1	70.67	40.00	79.27	94.26	5.74
Dose2	68.15	0.00	86.49	83.87	16.13
Dose3	59.46	15.38	76.92	76.85	23.15

 **

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	10.64	0.014

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	77.78	.	.
Dose1	70.67	0.155	0.045
Dose2	68.15	0.173	0.023
Dose3	59.46	0.009	<.001

SUMMARY

MannWhit (Bonf adjust)
 Jonckheere

NOEC
 Dose2
 <lowest dose

LOEC
 Dose3
 Dose1

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.887	<.001	1.926	0.135	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	78.21	17.46	4.51	22.32	68.54,	87.87
Dose1	16	73.86	12.05	3.01	16.31	67.44,	80.28
Dose2	16	65.58	26.44	6.61	40.32	51.49,	79.67
Dose3	15	64.25	17.85	4.61	27.78	54.37,	74.13

Level	Median	Min	Max	%of Control(means)	
Ctrl	85.71	30.77	94.87	.	.
Dose1	78.14	47.37	90.28	94.44	5.56
Dose2	75.07	0.00	96.97	83.86	16.14
Dose3	67.50	26.09	85.71	82.16	17.84

**

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	8.37	0.039

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	85.71	.	.
Dose1	78.14	0.149	0.043
Dose2	75.07	0.123	0.019
Dose3	67.50	0.017	0.002

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose2	Dose3
Jonckheere	<lowest dose	Dose1

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.876	<.001	1.671	0.183	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	82.60	17.86	4.61	21.62	72.71,	92.49
Dose1	16	79.04	13.07	3.27	16.54	72.08,	86.01
Dose2	16	67.98	26.57	6.64	39.08	53.82,	82.14
Dose3	15	73.00	15.45	3.99	21.17	64.45,	81.56

Level	Median	Min	Max	%of Control(means)	
Ctrl	89.74	31.58	100.00	.	.
Dose1	82.83	48.65	92.86	95.69	4.31
Dose2	77.89	0.00	96.97	82.30	17.70
Dose3	75.61	40.00	93.94	88.38	11.62

**

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	6.54	0.088

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	89.74	.	.
Dose1	82.83	0.223	0.067
Dose2	77.89	0.076	0.008
Dose3	75.61	0.084	0.007

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose3	>highest dose
Jonckheere	Dose1	Dose2

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.985	0.671	0.211	0.888	USE PARAMETRIC TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	32.67	11.94	3.08	36.55	26.06,	39.28
Dose1	16	35.63	12.16	3.04	34.15	29.14,	42.11
Dose2	16	28.94	13.49	3.37	46.61	21.75,	36.12
Dose3	15	18.67	10.90	2.81	58.39	12.63,	24.70

Level	Median	Min	Max	%of Control (means)	
Ctrl	34.00	12.00	53.00	.	.
Dose1	36.50	18.00	65.00	109.06	-9.06
Dose2	30.50	0.00	47.00	88.58	11.42
Dose3	23.00	1.00	30.00	57.14	42.86

**

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	58	5.63	0.002

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	32.67	.	34.19	.	0.906	0.829	0.013	.
Dose1	35.63	0.924	34.19	0.724	.	0.413	0.002	.
Dose2	28.94	0.384	28.94	0.254	.	.	0.100	.
Dose3	18.67	0.004	18.67	0.001	.	.	.	.

SUMMARY

Dunnett
Williams

NOEC
Dose2
Dose2

LOEC
Dose3
Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.879	<.001	2.014	0.122	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	77.26	17.66	4.56	22.86	67.48,	87.04
Dose1	16	72.85	12.12	3.03	16.64	66.40,	79.31
Dose2	16	64.19	25.98	6.50	40.48	50.35,	78.03
Dose3	15	57.66	22.14	5.72	38.41	45.39,	69.92

Level	Median	Min	Max	%of Control(means)	
Ctrl	85.37	30.77	92.31	.	.
Dose1	75.07	47.37	90.28	94.30	5.70
Dose2	74.18	0.00	91.67	83.08	16.92
Dose3	63.64	9.09	83.33	74.63	25.37

**

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	10.53	0.015

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	85.37	.	.
Dose1	75.07	0.149	0.043
Dose2	74.18	0.114	0.020
Dose3	63.64	0.007	<.001

SUMMARY

	NOEC	LOEC
MannWhit (Bonf adjust)	Dose2	Dose3
Jonckheere	<lowest dose	Dose1

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05

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
0.547	<.001	7.311	<.001	USE NON-PARAMETRIC

TESTS

**

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	98.65	2.42	0.62	2.45	97.31, 99.99
Dose1	16	98.63	2.35	0.59	2.38	97.38, 99.89
Dose2	15	97.91	2.66	0.69	2.72	96.43, 99.38
Dose3	15	86.64	19.19	4.95	22.15	76.01, 97.26

Level	Median	Min	Max	%of Control(means)
Ctrl	100.00	91.30	100.00	.
Dose1	100.00	92.59	100.00	99.98
Dose2	100.00	93.10	100.00	99.25
Dose3	93.55	25.00	100.00	87.83

**

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	17.15	<.001

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	0.557
Dose2	100.00	1.000	0.224
Dose3	93.55	0.004	<.001

SUMMARY

MannWhit (Bonf adjust)
Jonckheere

NOEC
Dose2
Dose2

LOEC
Dose3
Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.982	0.507	0.467	0.706	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	0.39	0.02	0.01	4.96	0.38, 0.41
Dose1	16	0.40	0.02	0.01	5.29	0.39, 0.41
Dose2	16	0.39	0.02	0.00	4.79	0.38, 0.40
Dose3	15	0.38	0.02	0.01	5.46	0.37, 0.39

Level	Median	Min	Max	%of Control(means)
Ctrl	0.39	0.36	0.43	.
Dose1	0.40	0.36	0.44	100.71
Dose2	0.39	0.36	0.43	99.77
Dose3	0.38	0.35	0.41	96.72

 **

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	58	1.83	0.152

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	0.39	.	0.40	.	0.980	0.999	0.301	.
Dose1	0.40	0.865	0.40	0.666	.	0.954	0.142	.
Dose2	0.39	0.700	0.39	0.562	.	.	0.350	.
Dose3	0.38	0.099	0.38	0.052	.	.	.	.

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.981	0.461	0.209	0.889	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	32.20	2.01	0.52	6.23	31.09,	33.31
Dose1	16	33.75	2.05	0.51	6.07	32.66,	34.84
Dose2	15	31.20	2.48	0.64	7.96	29.82,	32.58
Dose3	15	30.73	2.34	0.61	7.63	29.44,	32.03

Level	Median	Min	Max	%of Control(means)	
Ctrl	32.00	29.00	35.00	.	.
Dose1	34.00	30.00	37.00	104.81	-4.81
Dose2	31.00	27.00	36.00	96.89	3.11
Dose3	30.00	27.00	34.00	95.45	4.55

 **

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	57	5.60	0.002

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	32.20	.	33.00	.	0.225	0.611	0.282	.
Dose1	33.75	0.998	33.00	0.905	.	0.012	0.002	.
Dose2	31.20	0.239	31.20	0.142	.	.	0.939	.
Dose3	30.73	0.092	30.73	0.048	.	.	.	.

SUMMARY

Dunnett
 Williams

NOEC
 Dose3
 Dose2

LOEC
 >highest dose
 Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.987	0.739	1.994	0.125	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	312.47	27.32	7.05	8.74	297.34,	327.60
Dose1	16	305.44	14.68	3.67	4.81	297.61,	313.26
Dose2	15	301.67	26.23	6.77	8.70	287.14,	316.19
Dose3	15	280.60	22.24	5.74	7.93	268.28,	292.92

Level	Median	Min	Max	%of Control (means)	
Ctrl	310.00	260.00	358.00	.	.
Dose1	304.00	282.00	340.00	97.75	2.25
Dose2	309.00	251.00	344.00	96.54	3.46
Dose3	285.00	248.00	313.00	89.80	10.20

 **

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	57	5.33	0.003

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	312.47	.	312.47	.	0.831	0.577	0.002	.
Dose1	305.44	0.386	305.44	0.239	.	0.968	0.020	.
Dose2	301.67	0.221	301.67	0.129	.	.	0.070	.
Dose3	280.60	<.001	280.60	<.001	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	Dose2	Dose3

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

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Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.949	0.012	0.851	0.472	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	153.73	28.60	7.38	18.60	137.90, 169.57
Dose1	16	168.13	32.49	8.12	19.32	150.81, 185.44
Dose2	16	175.06	44.61	11.15	25.48	151.29, 198.83
Dose3	15	188.20	45.27	11.69	24.05	163.13, 213.27

Level	Median	Min	Max	%of Control (means)
Ctrl	145.00	115.00	219.00	.
Dose1	163.00	105.00	225.00	109.36
Dose2	164.50	126.00	268.00	113.87
Dose3	185.00	130.00	315.00	122.42

 **

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	58	2.10	0.111

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	Tukey p-values
Dose5									
Ctrl	153.73	.	171.29	.	0.726	0.419	0.078	.	
Dose1	168.13	0.967	171.29	0.946	.	0.956	0.473	.	
Dose2	175.06	0.992	171.29	0.960	.	.	0.778	.	
Dose3	188.20	1.000	171.29	0.966	.	.	.	.

SUMMARY

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

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.973	0.179	1.474	0.231	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval
Ctrl	15	-6.93	84.51	21.82	-1218.86	-53.73, 39.87
Dose1	16	-56.06	68.94	17.24	-122.97	-92.80, -19.33
Dose2	16	-60.44	62.68	15.67	-103.72	-93.84, -27.04
Dose3	15	-87.27	83.64	21.60	-95.84	-133.58, -40.95

Level	Median	Min	Max	%of Control (means)
Ctrl	-27.00	-128.00	126.00	.
Dose1	-51.00	-185.00	47.00	808.59
Dose2	-60.50	-159.00	47.00	871.69
Dose3	-102.00	-211.00	79.00	1258.65

 **

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	58	2.97	0.039

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	-6.93	.	-6.93	.	0.276	0.208	0.025	.
Dose1	-56.06	0.089	-56.06	0.043	.	0.998	0.658	.
Dose2	-60.44	0.065	-60.44	0.032	.	.	0.754	.
Dose3	-87.27	0.007	-87.27	0.003	.	.	.	.

SUMMARY	NOEC	LOEC
Dunnett	Dose2	Dose3
Williams	<lowest dose	Dose1

Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

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Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

PMRA Submission Number {.....}

EPA MRID Number 466955-05

Mallard repro, Bayer AE0172747, MRID 466955-05
 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
0.966	0.080	1.126	0.346	USE PARAMETRIC TESTS

 **

BASIC SUMMARY STATISTICS

Level	N	Mean	StdDev	StdErr	Coef of Var	95% Conf.Interval	
Ctrl	15	89.53	114.68	29.61	128.09	26.02,	153.04
Dose1	16	59.81	73.31	18.33	122.57	20.75,	98.88
Dose2	16	88.50	97.76	24.44	110.46	36.41,	140.59
Dose3	15	16.80	91.12	23.53	542.39	-33.66,	67.26

Level	Median	Min	Max	%of Control (means)	
Ctrl	140.00	-164.00	234.00	.	.
Dose1	65.50	-89.00	174.00	66.80	33.20
Dose2	85.50	-154.00	288.00	98.85	1.15
Dose3	17.00	-206.00	132.00	18.76	81.24

 **

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	58	1.96	0.130

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	Tukey p-values	
							Dose3	Dose4
Dose5								
Ctrl	89.53	.	89.53	.	0.820	1.000	0.167	.
Dose1	59.81	0.376	74.16	0.389	.	0.829	0.593	.
Dose2	88.50	0.736	74.16	0.416	.	.	0.166	.
Dose3	16.80	0.051	16.80	0.025	.	.	.	.

SUMMARY

Dunnett
 Williams

NOEC
 Dose3
 Dose2

LOEC
 >highest dose
 Dose3

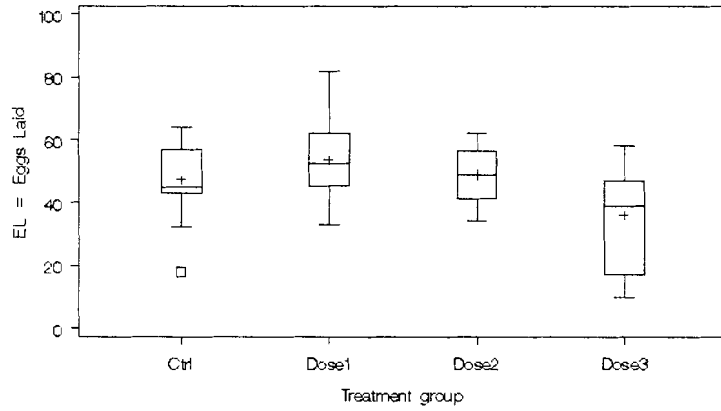
Data Evaluation Report on the Reproductive Effects of AE 0172747 Technical on Mallard Duck (*Anas platyrhynchos*)

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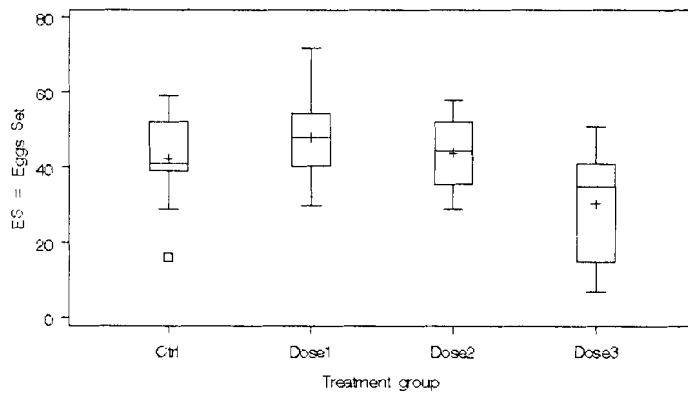
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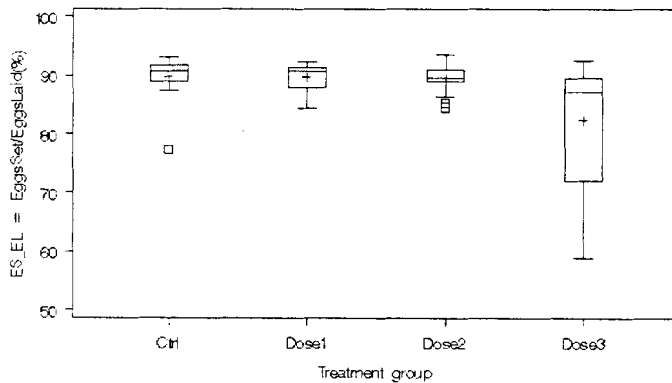
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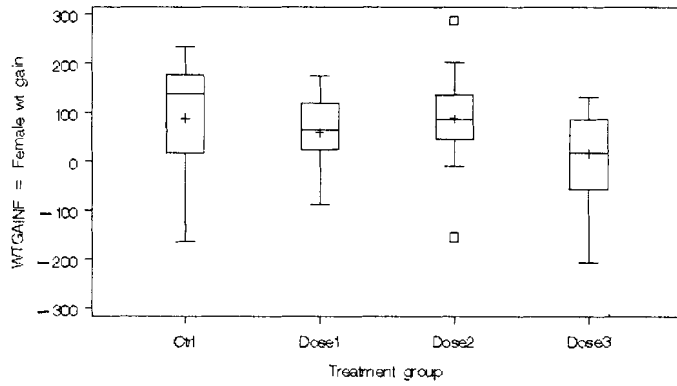


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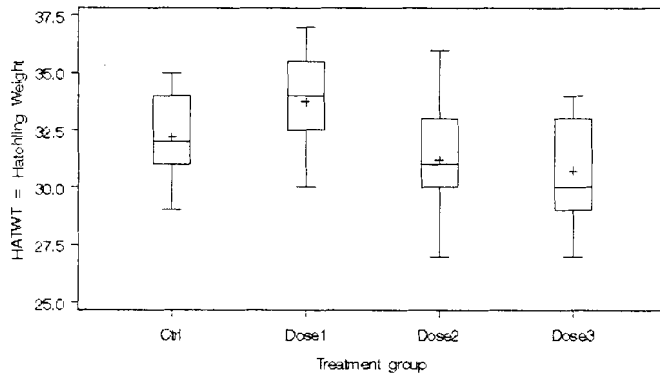
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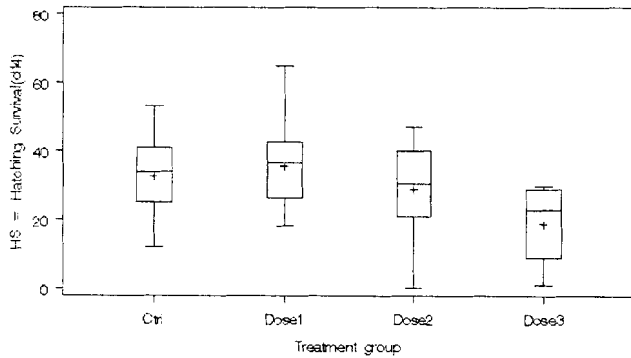
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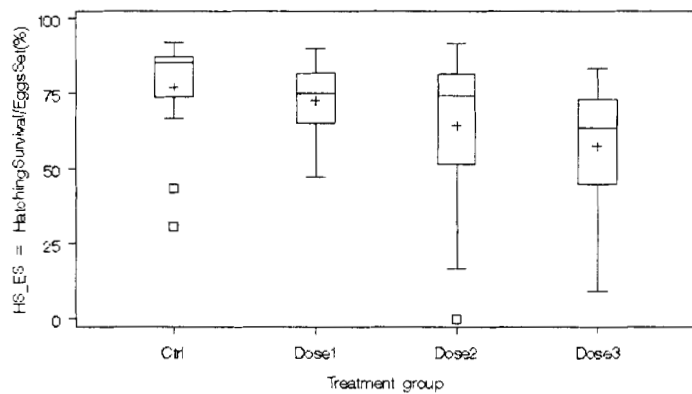


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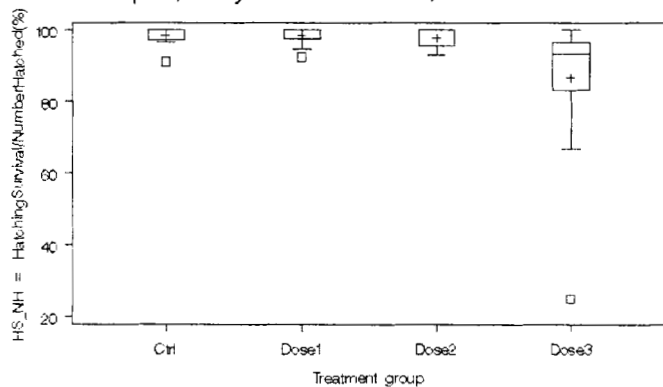
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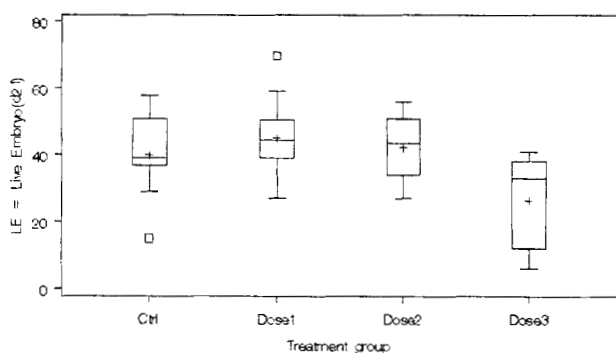
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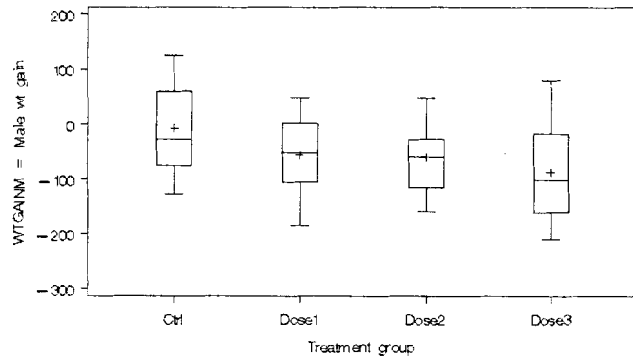


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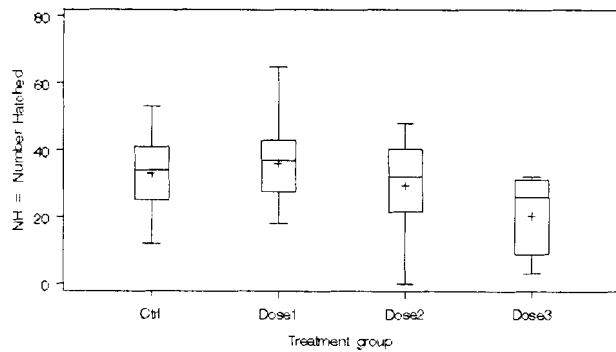
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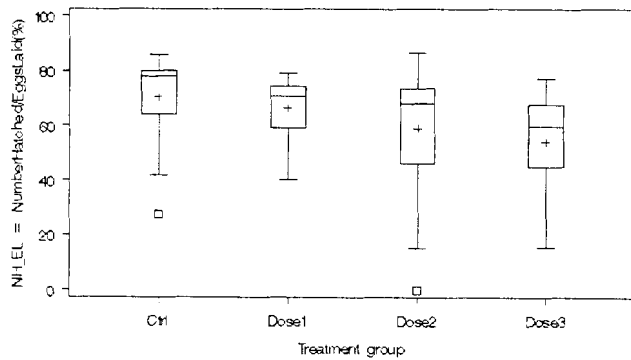
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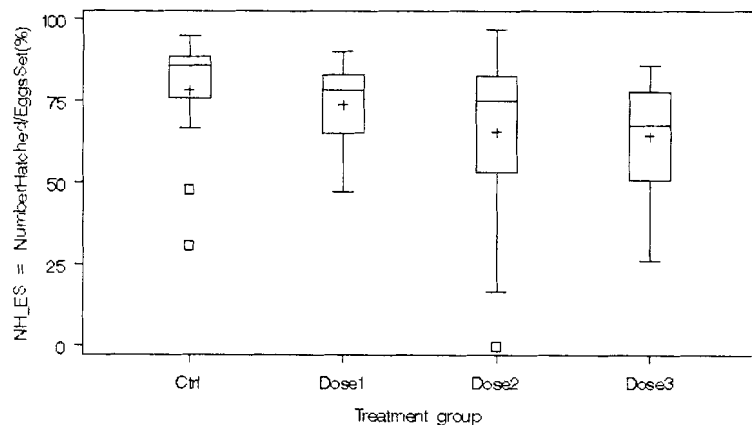


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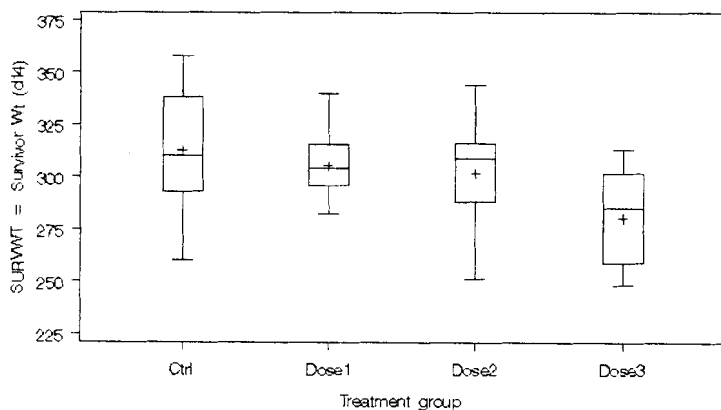
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