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17
REVIEW NO.

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TYPE PRODUCT(S): I, D, H, F, N, R, S Herbicide

DATA ACCESSION NO(S). _____

PRODUCT MANAGER NO. R. Mountfort (23)

PRODUCT NAME(S) Goal 2E

COMPANY NAME Rohm & Haas Company

SUBMISSION PURPOSE Submission of Avian Reproduction studies

LAUGHNESSEY NO. CHEMICAL, & FORMULATION Z A.I.

111601 Oxyfluorfen _____

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Goal 2E

103 Toxicological Properties

103.3.1 Avian Reproduction Studies

The purpose of this submission was to provide two avian reproduction studies that had been requested. Both studies were validated as core and fulfill the requirements.

Mallard Duck

This study meets the guideline requirements for an avian reproductive study with a waterfowl. It shows that exposure to 100 ppm throughout their reproductive season should not effect reproduction.

Bobwhite Quail

This study meets guideline requirements for an avian one-generation reproduction study with an upland gamebird species and shows no effect at 100 ppm.

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Data Evaluation Report

1. Chemical: Oxyflourfen

Sha #: 111601

2. Formulation: Goal 2E

3. Citation: Piccirillo, V.J. 1982. One Generation Reproduction Study in Mallard Duck with RH-2915 technical. An unpublished report prepared by Borriston Laboratories for Rohm and Haas Company. Data Accession No. 248736

4. Reviewed by: Daniel Rieder
Wildlife Biologist

5. Date Reviewed: Dec 1, 1982

6. Test Type: One generation reproduction test

Species: Mallard Duck

Test Material: RD-2915 is 72.5 % pure oxyfluorfen. It is considered technical grade.

7. Results: The study showed no difference between the reproductive capabilities of the control group and the 100 ppm test group.
8. Conclusion: This study meets the guideline requirements for an avian reproductive test. It shows that if birds were exposed to 100 ppm throughout their reproductive season, they should experience no adverse effects.

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Methods

Test Material

The test material was referred to as RH-2915. It was 72.5% active ingredient (oxyfluorfen). A premix was prepared every two weeks from RH-2915, corn oil and basal diet. This premix was later used to make the final diet of 100 ppm (adjusted at the premix stage so that it was equivalent to 100 ppm of 100 % pure active ingredient).

Test Animals

Sixty four ducks (16 male, 48 female) were divided into two treatment groups, a control and a 100 ppm test level. Each group consisted of 8 pens containing 1 male and 3 female. The test group was fed the treated diet ad libitum for 21 weeks (11 weeks prelaying and 10 weeks laying cycle). The birds were 6 months old at the beginning of the study.

Husbandry

Pens for parents were 14 feet by 4 feet by 7 feet. Temperature ranged from 33° to 64° F and humidity ranged from 33%-77%. Light cycle was 6 hours light per day for 9 weeks then it was increased to 16 hours of light per day. At initiation, mean light intensity was 6.4 foot candles in control and 6.8 foot candles in the test group. This light intensity induced early egg laying so the light intensity was reduced to 1-2 foot candles at week 7.

Collection of Eggs

Eggs were collected daily, marked by pen and stored at 65°F. Each week the eggs were placed in an incubator at 99.9°F. On days 0, 14 and 21 the eggs were candled for eggshell cracks, fertility and death of embryos and embryo viability respectively. On day 23 the remaining eggs were allowed to hatch. On day 7 of weeks 1, 3, 7 and 9 egg shell thickness was measured.

Observations

Parents were observed twice a day for toxic effects. Individual body weights were recorded at week 0, week 10, and at termination. Hatchlings were observed twice daily for toxic effects.

Reproductive factors observed were:
eggs laid; eggs cracked; eggs set; viable embryos; live 21-day embryos; and hatchability.

Results

Mortality

One female died in the treatment group about halfway through egg-laying phase.

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Mean Reproductive Indices and Eggshell Thickness

Factor		Group	
		1 (control)	2 (100 ppm)
Eggs Cracked/Eggs laid	Ratio Percent	10/1371 0.73	15/1339 1.12
14-Day Embryos/Eggs Set	Ratio Percent	1152/1264 91.1	1079/1231 87.7
21-Day Viable Embryos/ 14-Day Viable Embryos	Ratio Percent	1135/1152 98.5	1062/1079 98.4
Eggs Hatched/21-Day Viable Embryos	Ratio Percent	953/1135 84	832/1062 78.3
14-Day Survivors/Eggs Hatched	Ratio Percent	942/953 98.8	831/832 99.9
14-Day Survivors/ Eggs Laid	Ratio Percent	942/1371 68.7	831/1339 62.1
Eggshell thickness (mm)	Mean and S.D. Total Eggs Meas.	0.40 $\pm$ 0.032 97	0.401 $\pm$ 0.027 93
Parental Body Weight (grams)	Week 0 Male	1232.1 $\pm$ 98.5	1217.4 $\pm$ 79.3
	Female	1127.9 $\pm$ 122.6	1077.2 $\pm$ 126.0
	Week 10 Male	1228.9 $\pm$ 78.0	1225.1 $\pm$ 92.7
	Female	1124.6 $\pm$ 104.6	1139.8 $\pm$ 139.4
	Week 21 Male	1290.3 $\pm$ 77.8	1224.9 $\pm$ 88.8
	Female	1233.3 $\pm$ 145.6	1232.2 $\pm$ 148.8

Reviewer Evaluation

This study fulfills the guideline requirements for an avian reproduction study. It shows that 100 ppm oxyfluorfen should not have an adverse effect on avian reproduction.

Conclusion

Category: Core

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Data Evaluation Report

1. Chemical: Oxyfluorfen

Sha #: 111601

2. Formulation: Goal 2E

3. Citation: Piccirillo, V.J. 1982. One generation Reproduction study in Mallard Duck with RH-2915 technical. An unpublished report prepared by Borriston Laboratories for Rohm and Haas Company. Data Accession No. 248736.

4. Reviewed by: Daniel Rieder
Wildlife Biologist

5. Date Reviewed: 12/2/82

6. Test Type: One generation reproduction test

Species: Bobwhite quail

Test Material: RH-2915 is 72.5% pure oxyfluorfen. It is considered technical grade.

7. Results: No effects were observed at up to 100 ppm. The concentrations were adjusted so that birds got the equivalent of 50 and 100 ppm of a 100% a.i. test material.
8. Conclusions: This study meets the guideline requirements for an avian one-generation reproduction study and showed no effect to reproduction at 100 ppm.

Methods

Test Material

The test material was RH-2915. It was 72.5% active ingredient (oxyfluorfen). A pre-mix was prepared every two weeks from RH-2915, corn oil and a basal diet. This premix was then used to make the final diet of 50 or 100 ppm. The amount of RH-2915 added at the premix stage was adjusted so the test concentration was 50 and 100 ppm of a 100% a.i.

Test Animals

<u>Group</u>	<u>No. of Birds</u>		<u>No. of Birds/Pen</u>		<u>Dosage Level</u>
	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>	<u>ppm</u>
1	12	24	1	2	0
2	12	24	1	2	50
3	12	24	1	2	100

The birds received the appropriate diets for a 12-week prelaying period and during a 10 - week laying cycle. All groups were placed on a control diet (no treatment) after ten weeks of laying and eggs were collected for three additional weeks.

Husbandry

During the study one male and two females were housed in 12" X 20" X 12" wire cages. Temperature ranged from 42°F to 65°F (6°C to 18°C)

during the egg laying induction phase (12 weeks) and from 58°F to 76°F (14°C to 24°C) during the egg collection phase. Light cycle during the first 12 weeks was 6 hours of light per day. This was increased to 16 hours a day after week 12. Light intensity ranged from 5.9 to 7.1 foot candles.

Collection of Eggs

Eggs were collected daily and stored at 65°F (18°C) Each egg was marked according to pen. At weekly intervals the eggs were removed from storage and incubated at 99.9°F (37.7°C). On days 0, 11, and 21 of incubation the eggs were candled for eggshell crack and embryo viability. On day 21 the eggs were allowed to hatch. On day 7 of weeks 1, 3, 5, 7, 9 and 11 of the egg laying phase all eggs collected were measured for eggshell thickness.

Hatchlings

Hatchlings were housed according to week of hatch and treatment group in 28" X 32" X 11" wire pens. They were observed for toxic effects for 14 days. Temperature was maintained at 77°F to 94°F (25°C to 34°C), light cycle was 17 hours of light per day.

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Observations

Parents were observed twice a day for toxic effects. Individual body weights were recorded at week 0, week 10 and week 25 (termination).
Reproduction factors observed were: eggs laid; eggs cracked; eggs set; viable embryos live 21-day embryos and hatchability.

Results

Reproductive Indices

<u>Factor</u>	<u>Group</u> 1 (control)	2 (50 ppm)	3 (100 ppm)
Mortality (all females)	2	5	5
Eggs cracked/eggs laid percent	172/1134 15.2	80/1035 7.7	63/1055 6.0
11 - day embryos/eggs set percent	779/884 88.1	806/887 90.9	742/916 81
21-day / 11-day viable percent	773/779 99.2	797/806 98.9	734/742 98.9
egg shatched/21-day viable percent	688/773 89	722/797 90.6	679/734 92.5
14-day survivors/ eggs hatched percent	588/688 88.5	673/722 93.2	552/679 81.3
14-day survivors/eggs laid percent	588/1134 51.8	673/1035 66.5	552/1055 52
Eggshell thickness (mm) eggs measured	0.234+0.015 98	0.24+0.017 81	0.232+0.013 92

<u>Factor</u>	<u>Group</u> 1 (control)	2 (50 ppm)	3 (100 ppm)
Parental	Week 0		
Body weight	Male	204.7 + 8.9	212.5 + 13.4
(grams)	Female	206.5 + 13.7	210.1 + 11.9
			205.0 + 13.7
	Week 10		
	Male	216.6 + 14.1	221.1 + 14.5
	Female	222.0 + 30.7	223.0 + 15.2
			214.1 + 29.0
	Week 25		
	Male	208.4 + 31.0	220.7 + 33.8
	Female	232.7 + 29.2	221.1 + 14.5
			223.0 + 15.2
			214.1 + 29.0
			225.3 + 20.5
			225.4 + 26.5

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Reviewer Evaluation

This study fulfills the guideline requirements for an avian reproduction study. It shows that 100 ppm of oxyfluorfen should have no adverse effect on avian reproduction.

Conclusion

Category: Core

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