

109701

2/4/76

DATA REVIEW NUMBER : (ES) (103.0) E.1

TEST : Avian Dietary LC₅₀

SPECIES : Mallard Duck, *Anas platyrhynchos*

RESULTS :

8-Day LC₅₀ = >23,000 ppm

Dieldrin LC₅₀ = 142(118-170)* ppm

*95% confidence limits

CHEMICAL : Permethrin (PP557): 92% a.i.

TITLE : The Subacute Toxicity (LC₅₀) of PP557 (Permethrin)
to Mallard Ducks

ACCESSION NO : 227722

STUDY DATE : February 4, 1976

RESEARCHER : Ross, David B.

REGISTRANT : ICI United States, Inc.

VALIDATION CATEGORY : Core

CATEGORY REPAIRABILITY : N/A

ABSTRACT :

The mallard duck 8-Day Dietary LC₅₀ using permethrin was determined.

ADDITIONAL INFORMATION/COMMENTS

A. Additional Test Data

1. Intent of Study: To determine the 8-Day dietary LC₅₀ of permethrin to mallard ducks.
2. Methodology/Protocol: Basically, performed according to protocol as listed in "EPA Guidelines for testing the effects of pesticides on fish and wildlife, March 29, 1972.

8 birds/treatment level were used at following permethrin dose levels:

<u>Groups</u>	<u>Dose Levels(ppm)</u>
6	2300
7	4600
8	11500
9	13800
10	16100
11	18400
12	23000

3. Additional Test Results:

- a. 0% mortality at all levels of permethrin tested.
- b. 0% mortality in control groups.
- c. No toxic effects observed in permethrin-treated birds.
- d. Post-mortem examination of selected birds from each treatment group revealed no abnormalities.
- e. Body weight/Food consumption
 - i/ See attached appendices 2&3
 - ii/ Calculations show the following food consumptions as percentages of body weight and the resultant mg/kg/day toxicant consumed:

--Bodyweight($\bar{x}$ for all groups for days 12 & 14)

Control Groups $\bar{x}$: 191.8 g/bird

Permethrin Groups $\bar{x}$: 201.5 g/bird

Dieldrin Groups $\bar{x}$: 210 g/bird

--Food Consumption($\bar{x}$ for all groups for days 12-14)

Control Groups $\bar{x}$: 46.5 g/bird/day

Permethrin Groups $\bar{x}$: 47.6 g/bird/day

Dieldrin Groups $\bar{x}$: 47.4 g/bird/day

--% Food Consumption and/or mg. toxicant/kg/day calculations:

Control: $\frac{46.5}{191.8} = 24.2\%$

Permethrin:

$\frac{47.6}{201.5} (23.6\%) \times 200 \text{ ppm} = 23,000 \text{ } \frac{5428}{4000} \text{ mg/kg/day}$

4. References:

Finney, D.J. Probit Analysis, 2nd edition, (1952), Cambridge University Press, 318p.

Dieldrin:

$\frac{47.4}{210} (22.6\%) \times 200 \text{ ppm} = 45.2 \text{ mg/kg/day}$

Appendix 2

Group mean bodyweights (g/bird)

Group	Inclusion level in diet (ppm)	Day of study				Bodyweight increase		
		12	14	19	22	12-14	14-19	19-22
1	Control	173.1	246.3	306.3	331.0	73.2	60.0	24.7
2	Control	150.8	182.5	280.8	300.8	31.7	98.3	20.0
3	Control	161.0	243.8	298.3	298.0	82.8	54.5	-0.3
4	Control	152.5	191.3	298.0	325.3	38.8	106.7	27.3
5	Control	165.9	250.8	310.0	346.3	84.9	59.2	36.3
6	PP 557 2,300	177.3	253.3	312.8	338.0	76.0	59.5	25.2
7	PP 557 4,600	166.4	236.0	303.8	338.8	69.6	67.8	35.0
8	PP 557 11,500	164.1	242.8	304.8	329.3	78.7	62.0	24.5
9	PP 557 13,800	160.0	280.5	299.0	342.5	120.5	18.5	43.5
10	PP 557 16,100	155.0	206.0	284.3	328.0	51.0	78.3	43.7
11	PP 557 18,400	170.0	204.5	292.8	290.0	34.5	88.3	-2.8
12	PP 557 23,000	165.8	238.8	316.0	339.5	73.0	77.2	23.5
13	Dieldrin 75	165.8	291.8	330.0	321.8	126.0	38.2	-8.2
14	Dieldrin 100	166.3	254.3	304.6	340.2	88.0	50.3	35.6
15	Dieldrin 125	171.5	236.3	283.7	312.0	64.8	47.4	28.3
16	Dieldrin 150	164.5	242.8	300.2	320.7	78.3	57.4	20.5
17	Dieldrin 200	162.5	243.8	307.4	323.0	81.3	63.6	15.6

Appendix 3

Group mean food consumption (g/bird/day)

Group	Inclusion level in diet (ppm)	Period of study (days)		
		12-14	15-19	20-22
1	Control	46.8	53.3	58.0
2	Control	44.0	60.8	64.3
3	Control	46.8	64.1	64.3
4	Control	42.5	56.6	60.8
5	Control	52.3	60.0	64.3
6	PP 557 2,300	45.3	60.3	66.5
7	PP 557 4,600	45.3	64.8	64.3
8	PP 557 11,500	56.5	47.7	68.0
9	PP 557 13,800	48.0	63.8	66.8
10	PP 557 16,100	43.1	63.8	69.8
11	PP 557 18,400	44.8	58.1	66.8
12	PP 557 23,000	50.5	61.8	72.0
13	Dieldrin 75	47.3	70.3	64.8
14	Dieldrin 100	44.0	55.5	58.8
15	Dieldrin 125	43.1	48.2	66.3
16	Dieldrin 150	52.8	56.8	64.0
17	Dieldrin 200	50.0	64.8	84.8