Accession No. 410312-38

DATA EVALUATION RECORD

1. **CHEMICAL:** RH-7592.
Shaughnessey No. -- Not available. 129011

2. **TEST MATERIAL:** RH-7592 Technical, Lot No. BPP-3-1786R, TD No. 87-186, 96.7% active ingredient, a fine powder.

3. **STUDY TYPE:** Acute Contact LD50 Test.
Species Tested: Honey Bee (Apis mellifera).

4. **CITATION:** Atkins, E.L. 1988. RH-7592 Technical: Bee Adult Toxicity Dusting Test. Conducted by Department of Entomology, University of California, Riverside, CA. Submitted by Rohm and Haas Company, Spring House, PA. Rohm and Haas Report No. 88RC-0066. EPA Accession No. 410312-38.

5. **REVIEWED BY:**

Prapimpan Kosalwat, Ph.D.
Staff Toxicologist
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Signature: P. Kosalwat
Date: June 30, 1989

6. **APPROVED BY:**

Michael L. Whitten, M.S.
Wildlife Toxicologist
KBN Engineering and
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Signature: Michael L. Whitten
Date: 6-30-89

Henry T. Craven, M.S.
Supervisor, EEB/HED
USEPA

Signature: Henry T. Craven
Date: 11/27/89

Allen W. Vaughan 11-28-89

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an acute contact LD50 test using honey bees. With a 96-hour LD50 value of greater than 292.179 ug a.i./bee, RH-7592 technical is considered relatively non-toxic to Apis mellifera, when administered as a dusting powder. The NOEL for this study was 292.179 ug a.i./bee, the only dosage tested.

8. **RECOMMENDATIONS:** N/A.

9. **BACKGROUND:**

10. **DISCUSSION OF INDIVIDUAL TESTS:** N/A.

11. **MATERIALS AND METHODS:**

A. **Test Animals:** Adult worker bees (Apis mellifera) of uniform age were obtained from colonies. No further information was given.

B. **Test System:** The test system follows the BATDT method developed by Atkins, et al. (1975). The bees were aspirated from the stock-bee cage into dusting cages before feeding. The dusting cage was 7.5 cm in diameter and 15.2 cm high and made with 5.6-mesh/cm screen. The dusting cage with the bees was placed in a bell-jar vacuum dusting equipment. Five hundred mg of RH-7592 dust, uniformly prepared with pyrolite as a common diluent, was placed in a watch glass in the duster and the air exhausted to a vacuum of 931 mm Hg. Outside air imploding onto the dust sample replaced the vacuum and uniformly dispersed the pesticide onto the caged bees. This 500 mg of RH-7592 dust used in the duster resulted in depositing 292.179 ug a.i./bee to the caged bees being treated.

The dusted bees were removed from the equipment and transferred through a funnel into clean 12.7 x 12.7 x 12.7-cm holding cages of 32-mesh/cm hardware cloth. Each holding cage held a 14-ml vial containing a 50% honey-water solution. The treated bees were kept in a constant temperature room at 26.7°C and 65% relative humidity.

C. **Dosage:** 96-hour acute contact LD50 test. The dosage selected was 292.179 ug a.i./bee.

D. **Design:** The test consisted of 1 treatment level and a control. Three replicates of 34-38 bees each were used for the treatment and control. The test was repeated three times using bees from a different colony each time, making 9 replicates each for the treatment and the control (see Section 12). Observations were recorded at 24, 48, 72, and 96 hours.

V

E. **Statistics:** No statistical analysis was reported as being used in this study.

12. **REPORTED RESULTS:** Throughout the test period, the temperature and relative humidity remained at 26.7°C and 65%, respectively. Cumulative mortalities of the test bees during the 96-hour exposure period are presented in the following table:

Treatment	Colony #	Replicate #	# of Bees Used	# Mortalities 24-h	48-h	72-h	96-h
RH-7592 technical at 292.179 ug a.i./bee	39	1	36	2	2	2	3
		2	36	0	2	2	2
		3	37	1	2	2	2
	61	4	36	1	1	1	1
		5	38	0	0	0	0
		6	36	0	0	0	0
	11	7	37	2	6	10	11
		8	37	0	3	4	4
		9	38	0	3	6	7
Control	39	1	37	0	0	0	0
		2	37	0	0	0	0
		3	34	0	2	4	4
	61	4	38	0	1	1	1
		5	38	0	0	0	1
		6	37	0	0	1	1
	11	7	35	0	3	3	3
		8	35	1	2	3	4
		9	36	0	1	2	2

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:** RH-7592 technical was non-toxic to adult worker honey bees at the rate of 292.179 ug a.i./bee. No stomach poison effect was evident during the test period. Based on these results, RH-7592 technical was classified as a Group III pesticide (i.e., essentially non-toxic to bees).

"The study director confirms that to the best of his knowledge this study was conducted in compliance with Good Laboratory Practice Standards, (Title 40 CFR Part 160, Pesticide Programs; and Part 792, Toxic Substances Control Act)."

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

A. **Test Procedure:** The test procedures generally follow the protocols recommended by the SEP, except for the following deviations:

o Detailed descriptions (e.g., source, physical conditions, acclimation conditions) of the test bees were not given.

o It is unclear from the report how the control bees were handled. Were they treated with the diluent (i.e., pyrolite) in the duster or not treated at all?

B. **Statistical Analysis:** One-way analysis of variance (ANOVA), following the arcsine square-root transformation of the 96-hour mortality data, was used to compare mortalities of the treated bees and control bees. The computer printout is attached. The ANOVA shows that mortalities of the treated bees were not significantly different from those of the control bees.

C. **Discussion/Results:** With a 96-hour LD50 of greater than 292.179 ug a.i./bee, RH-7592 technical is considered relatively non-toxic to honey bees (Apis mellifera), when administered as a dusting powder. The no-observed-effect level (NOEL) was determined to be 292.179 ug a.i./bee, the only dosage tested.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** The test follows previously approved protocols.

(3) **Repairability:** N/A.

15. **COMPLETION OF ONE-LINER:** Yes, June 28, 1989.

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Analysis of Variance File: rh7592 Date: 06-28-1989

FILTER: None

N's, means and standard deviations based on dependent variable: MORTALITY (Arcsine SQRT Transformation)

* Indicates statistics are collapsed over this factor

Factors: D		N	Mean	S.D.
*		18	0.2410	0.1362
1	292.179 ug/bee	9	0.2725	0.1629
2	Control	9	0.2095	0.1032

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Fmax for testing homogeneity of between subjects variances: 2.49

Number of variances= 2 df per variance= 8.

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Analysis of Variance Dependent variable: MORTALIT

Source	df	SS (H)	MSS	F	P
Between Subjects	17	0.3153			
D (DOSAGE)	1	0.0179	0.0179	0.961	0.3414
Subj w Groups	16	0.2974	0.0186		

Shaughnessy No. _____ Chemical Name RH-7592 Chemical Class _____ Page _____ of _____

Study/Species/Lab/ Accession	Chemical % a.i.	Results	Reviewer/ Date	Validati Status
14-Day Single Dose Oral LD_{50}		LD50 = mg/kg (95% C.L.) Contr. Mort.(%)=		
Species _____		Slope= # Animals/Level= Age(Days)= Sex =	_____	_____
Lab		14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
14-Day Single Dose Oral LD_{50}		LD50 = mg/kg. (95% C.L.) Contr. Mort.(%)=		
Species _____		Slope= # Animals/Level= Age(Days)= Sex =	_____	_____
Lab		14-Day Dose Level mg/kg/(% Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
8-Day Dietary LC_{50}		LC50 = ppm (95% C.L.) Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Age(Days)= Sex =	_____	_____
Lab _____		8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
8-Day Dietary LC_{50}		LC50 = ppm (95% C.L.) Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Age(Days)= Sex =	_____	_____
Lab _____		8-Day Dose Level ppm/(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
48-Hour LC_{50}		LC50 = pp__ (95% C.L.) Contr. Mort.(%)= Sol. Contr. Mort.(%)=		
Species		Slope= # Animals/Level= Temperature =	_____	_____
Lab _____		48-Hour Dose Level pp /(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		
96-Hour LD_{50}		LD50 = >292.179 µg a.i./bee pp__ (95% C.L. N/A) Con. Mor(%)= 4.9 Sol. Con. Mor.(%)=		
Species Apis mellifera 96.7		Slope= N/A # Animals/Level= 331 Temp.= 26.7°C	PK/6-28-89	Core
Lab Dept. of Entomology Univ. of California/Riverside		96-Hour Dose Level µg a.i./bee pp /(%Mortality) 292.179(19.1), ( ), ( ), ( ), ( )		
Acc. 410312-38		Comments: Only 1 dosage of RH 7592 technical was tested.		
96-Hour LC_{50}		LC50 = pp__ (95% C.L.) Con. Mort.(%)= Sol. Con. Mort.(%)=		
Species		Slope= # Animals/Level= Temp.=	_____	_____
Lab _____		96-Hour Dose Level pp /(%Mortality) ( ), ( ), ( ), ( ), ( )		
Acc.		Comments:		