US EPA ARCHIVE DOCUMENT

9-27-89

Accession No. 409958-11

DATA EVALUATION RECORD

1. **CHEMICAL:** Ametryn
Shaughnessey No. 80801.

2. **TEST MATERIAL:** Ametryn Technical, CAS #834-12-8, Batch code ML5477-66113, FL No. 862730, 99.0% active ingredient, a white powder.

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

4. **CITATION:** Hoxter, K.A. and M. Jaber. 1988. Ametryn: An Acute Contact Toxicity Study with the Honey Bee. Conducted by Wildlife International Ltd., Easton, Maryland. Project No. 108-288. Submitted by Ciba-Geigy Corporation, Greensboro, NC. EPA Accession Number 409958-11.

5. **REVIEWED BY:**

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Signature: P. Kosalwat
Date: 4/10/89

6. **APPROVED BY:**

James R. Newman, Ph.D.
Project Manager/
Principal Scientist
KBN Engineering and
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Signature: James R Newman
Date: 4/20/89

Henry T. Craven, M.S.
Supervisor, EEB/HED
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Signature:
Date: Henry T. Craven 9/28/89

7. **CONCLUSIONS:** This study is scientifically sound and meets the guideline requirements for a honey bee acute contact test. With an LD50 value of greater than 100 ug/bee, Ametryn is considered relatively non-toxic to honey bee (Apis mellifera).

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

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9. BACKGROUND:

10. DISCUSSION OF INDIVIDUAL TESTS: N/A.

11. MATERIALS AND METHODS:

A. **Test Animals:** The apparently healthy, worker honey bees (Apis mellifera) were obtained from the Wildlife International Ltd. bee colony. All test bees were adults of undetermined age. Prior to the initiation of the study, frames of honey with adult bees attached were selected from the hives and shaken to remove the adult bees. At least 25 bees were placed into each test chamber.

B. **Test System:** The test chambers were disposable one-pint rolled paper containers measuring approximately 87 mm in diameter and 85 mm high. Each container was covered with a disposable (90 mm) plastic Petri dish through which a 20-ml glass vial containing an approximately 50% sugar/water solution was inserted. The opening of the vial was covered with cheese cloth to prevent leakage. This food source was available ad libitum to the test bees throughout the study.

Each test solution was prepared by weighing out calculated amounts of Ametryn. The test substance was then mixed with sufficient pesticide-grade acetone to prepare a 10-ml volume. The dosages and LD50 value reported were not corrected for purity of the test substance.

The test bees were maintained in the dark except during dosing and during daily observations. Test temperatures at the time of observations ranged from 21°C to 23°C, with mean relative humidity of 65%.

C. **Dosage:** 48-hour acute contact LD50 test. Nominal dosages were 13, 22, 36, 60, and 100 micrograms/bee (ug/bee), applied to the thorax and/or abdomen with a micropipette.

D. **Design:** Test chambers, each containing 25 or more bees were assigned by random draw to five treatment, a solvent control, and a negative control groups. Two replicates were tested at each dosage. The bees in each replicate were immobilized with N_2 and laid out on paper. Twenty-five bees were individually dosed on the thorax and/or abdomen with 2 microliters of the appropriate test solution using an Eppendorf Digital

Pipette. Dosed bees were returned to the test chamber, and any surplus bees discarded. The solvent control bees received a volume of acetone equal to the largest volume used during the test (i.e., 2 ul/bee). The negative control bees were treated identically to all other bees with the exception of dosing.

Immediately following dosing, the bees were observed for mortality and signs of toxicity. Observations were made twice on the day of initiation and once on Day 1 and Day 2 after dosing.

E. Statistics: The mortality pattern in this study was not conducive to calculating the LD50 value. Therefore, an estimation of the LD50 value was made by a visual inspection of the mortality data. The LD50 value was used to classify the toxicity of test material according to the toxicity categories of Atkins et al. (1976). A chemical with an LD50 value greater than or equal to 11 ug/bee would be classified as relatively non-toxic to honey bees.

12. REPORTED RESULTS: Mortalities observed in the negative control, solvent control, and each treatment group are presented in Table 1 (attached). At study termination, no mortality was observed in both control groups. Mortalities at the 13-, 22-, 36-, 60-, and 100-ug/bee dosages ranged from 2 to 6%, and did not appear to be treatment related.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES: Ametryn was classified as relatively non-toxic, according to the toxicity categories of Atkins (1976). The honey bee 48-hour contact LD50 value for Ametryn was determined to be greater than 100 ug/bee.

The study was examined for conformance with Good Laboratory Practices as published by the U.S. Environmental Protection Agency, Office of Pesticide Programs in 40 CFR Part 160, and the final report was reviewed and signed by the Quality Assurance Unit of Wildlife International Ltd.

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

A. Test Procedure: The test procedures were in accordance with the protocols recommended in the SEP, except for that the test bees were reported as being adults of undetermined age. The SEP recommends the use of worker bees of uniform age.

B. **Statistical Analysis:** Since mortalities of bees in the treatment groups ranged from 2 to 6% and did not appear to be treatment-related, statistical analysis was not used to estimate the LD50 value.

C. **Discussion/Results:** This study is scientifically sound. Compare to other pesticides (Table 2, attached) and according to classifications by Atkins, an LD50 value of greater than 100 micrograms a.i./bee classifies Ametryn as relatively non-toxic to Apis mellifera when administered through direct contact as topical solution.

D. **Adequacy of the Study:**

(1) **Classification:** Core.

(2) **Rationale:** N/A.

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

15. **COMPLETION OF ONE-LINER:** Yes, April 10, 1989.

Ametryn

RIN 4475-95 P.C. 080801

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Pages _____ through _____ are not included.

The material not included contains the following type of information:

____ Identity of product inert ingredients.

____ Identity of product impurities.

____ Description of the product manufacturing process.

____ Description of quality control procedures.

____ Identity of the source of product ingredients.

____ Sales or other commercial/financial information.

____ A draft product label.

____ The product confidential statement of formula.

____ Information about a pending registration action.

✓ FIFRA registration data.

____ The document is a duplicate of page(s) _____.

____ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Table 2. *Acute contact toxicity of some pesticides to worker honeybees determined in the laboratory during 1964, 1965 and 1966*

Mean median lethal doses (LD 50) expressed as μg compound per insect and mean slopes of regression lines, *n* is number of regression lines used to obtain each mean. LD 90 values derived from these means are also given.

	1964				1965				1966			
	n	Mean LD 50 (μg)	LD 90 (μg)	Mean slope	*n*	Mean LD 50 (μg)	LD 90 (μg)	Mean slope	*n*	Mean LD 50 (μg)	LD 90 (μg)	Mean slope
Azinphos-methyl	—	—	—	—	—	—	—	—	2	0·063	0·13	4·0
Mevinphos	6	0·070	0·10	7·3	—	—	—	—	—	—	—	—
'Bidrin'	1	0·076	0·10	9·6	—	—	—	—	—	—	—	—
Dimethoate	3	0·12	0·17	8·4	9	0·11	0·14	11	7	0·098	0·15	7·4
Dieldrin	8	0·16	0·23	7·6	6	0·16	0·26	6·0	—	—	—	—
Diazinon	2	0·22	0·30	9·4	—	—	—	—	—	—	—	—
Malathion	2	0·27	0·38	8·5	3	0·22	0·32	8·1	—	—	—	—
Pyrethrins	4	0·29	0·45	6·6	4	0·13	0·20	4·4	—	—	—	—
Phorate	3	0·32	0·42	11	—	—	—	—	2	0·33	0·57	5·3
BHC	3	0·46	0·68	7·4	6	0·20	0·33	5·8	—	—	—	—
Demeton-methyl	3	0·74	0·90	15	1	0·41	0·52	12	3	0·54	0·95	5·2
Endrin	—	—	—	—	3	1·2	2·1	4·9	2	0·65	1·5	3·6
Carbaryl	2	1·3	7·4	1·7	1	1·1	1·5	0·96	—	—	—	—
Chlordane	3	1·4	1·9	10	—	—	—	—	—	—	—	—
Carbophenothion	—	—	—	—	—	—	—	—	2	1·4	6·6	1·9
Allethrin	4	3·4	4·6	9·7	—	—	—	—	—	—	—	—
DDT	3	3·9	6·2	6·4	—	—	—	—	—	—	—	—
Disulfoton	3	4·1	5·9	8·1	4	4·3	8·0	4·7	2	5·0	6·8	9·4
Menazon	3	4·3	8·1	3·0	—	—	—	—	—	—	—	—
Endosulfan	4	7·1	13	4·6	—	—	—	—	—	—	—	—
Ethyl mercury chloride	2	22	43	4·4	—	—	—	—	—	—	—	—
Standard deviation (%)		27		23		21		24		20		20

From: Stevenson, J. H. 1968. Laboratory studies on the acute contact and oral toxicities of insecticides to honey bees. Ann. Appl. Biol. 61(3):467-472.

Shaughnessy No. 80801 | Chemical Name Ametryn (Ametryn Technical) | Chemical Class ____ | Page 1 of 1

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 LD_{50}		LD50 = >100 µg/bee (95% C.L. N/A) Contr. Mort.(%)= 0 Sol. Contr. Mort.(%)= 0		
Species Apis mellifera		Slope= N/A # Animals/Level= 50 Temperature = 21-23c PK/4-10-89 Corr		
Lab Wildlife International Ltd.	99.0	48-Hour Dose Level µg/bee /(%Mortality) 13(0), 22(0), 36(6), 60(0), 100(2)		
Acc. 409958-11		Comments:		
96-Hour LC_{50}		LC50 = pp__ (95% C.L.) Con. Mor.(%)= Sol. Con. Mor.(%)=		
Species		Slope= # Animals/Level= Temp.=		
Lab	____	96-Hour Dose Level pp /(%Mortality) ( ), ( ), ( ), ( ), ( )	____	____
Acc.		Comments:		
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:		