

DATA EVALUATION RECORD
HONEY BEE - ACUTE CONTACT LC₅₀ TEST
§141-1

1. **CHEMICAL:** Mesosulfuron-methyl PC Code No.: 122009

2. **TEST MATERIAL:** Mesosulfuron-methyl (AE F130060) Purity: 95.9%

3. **CITATION:**

Author: Waltersdorfer, A.

Title: Code: Hoe 130060 00 ZC96 0002 (identical to the new AgrEvo code: AE F130060 00 1C96 0002) Contact toxicity (LD50) to honey bees (*Apis mellifera* L.)

Study Completion Date: September 24, 1997

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Laboratory Report ID: CW97/129

DP Barcode: D284719

MRID No.: 45386319

4. **REVIEWED BY:** Rebecca Bryan, Staff Scientist, Dynamac Corporation

Signature: *Rebecca Bryan*

Date: 8/22/03

APPROVED BY: Teri S. Myers, Ph.D., Staff Scientist, Dynamac Corporation

Signature: *Teri S. Myers*

Date: 8/22/03

5. **APPROVED BY:** Tim Bargas, Leo LaSota

Signature: *Leo LaSota*

Date: 01/09/04

6. STUDY PARAMETERS:

Scientific Name of Test Organism: *Apis mellifera* L.

Age or Size of Test Organism at Test Initiation: Not reported

Type of Concentrations: Nominal

Definitive Study Duration: 72 hours

7. CONCLUSIONS:

The honey bee, *Apis mellifera* L., was exposed to Mesosulfuron-methyl as AE F130060 for 72 hours, at a nominal concentration of 13 µg a.i./bee. By 72 hours, no mortalities or sublethal effects were observed in the control or treatment group. **The LD₅₀ value was >13 µg a.i./bee. As a result, Mesosulfuron-methyl is categorized as practically nontoxic to honeybees on an acute contact basis.**

This acute contact study is classified as Core. This study is scientifically sound and it satisfies the EFED concerning the guideline requirements for a contact toxicity test with honey bees (Subdivision L, §141-1 or 850.3020).

Reported Statistical Results:

LD₅₀: >13 µg a.i./bee 95% C.I.: N/A
NOEC: 13.0 µg a.i./bee Probit Slope: N/A

8. ADEQUACY OF THE STUDY:

A. Classification: This acute contact study is classified as Core. This study is scientifically sound and it satisfies the EFED concerning the guideline requirements for a contact toxicity test with honey bees (Subdivision L, §141-1 or 850.3020).

B. Rationale: N/A

C. Repairability: N/A

9. GUIDELINE DEVIATIONS:

The age of honey bees at study initiation was not reported.

10. SUBMISSION PURPOSE: This study was submitted to provide data on the acute contact toxicity of Mesosulfuron-methyl to honeybees for the purpose of chemical registration.

11. MATERIALS AND METHODS:

A. Test Organisms

Guideline Criteria	Reported Information
Species: Species of concern (<i>Apis mellifera</i> , <i>Megachile rotundata</i> , or <i>Nomia melanderi</i>)	<i>Apis mellifera</i> L.
Age at beginning of test:	Not reported
Supplier:	Laboratory colonies.
All bees from the same source?	Yes, from healthy hives.

B. Test System

Guideline Criteria	Reported Information
Cage size adequate?	The cages were made of wire mesh. Cage was 12-13 cm high with a 5 cm diameter.
Lighting:	Continuous darkness
Temperature:	26.2-27.5°C
Relative humidity:	64-73%

C. Test Design

Guideline Criteria	Reported Information
Range finding test?	Not reported.
Reference toxicant test?	The reference toxicant Triazophos 40EC was used. The test concentrations were 0.04, 0.08, 0.12, 0.16, and 0.2 µg a.i./bee.
Method of administration:	The test substance was diluted with acetone, and 1.0 µL of the test substance suspension was applied to the ventral thorax of each bee using a microapplicator.
Nominal doses:	13 µg a.i./bee.
Controls: Negative control and/or diluent/solvent control	Solvent (acetone) control
Number of colonies per group:	5 replicates; 10 bees/replicate
Solvent: The following solvents: acetone, dimethylformamide, triethylene glycol, methanol, ethanol.	Acetone
Feeding:	50% sugar solution was provided <i>ad libitum</i> .

Guideline Criteria	Reported Information
Observations period:	72 hours

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Control performance:	0% solvent control mortality by 72 hours.
Raw data included:	Mean treatment data were provided.
Signs of toxicity (if any) were described?	None reported.

Mortality

Dosage (µg a.i./bee)	No. of bees	Percent Mortality (%)		
		Hour of Study		
		24	48	72
Test Substance (AE F130060):				
Solvent control	50	0	0	0
13	50	0	0	0
Toxic Standard (Triazophos 40EC):				
0	50	0	0	0
0.04	50	0	0	2
0.08	50	14	14	14
0.12	50	90	90	90
0.16	50	92	94	94
0.2	50	96	96	96

Observations: No mortalities or sublethal effects were observed in the control or treatment group.

Statistical method: The LD₅₀ value was estimated due to less than 50% mortality in the treatment group.

Reported Statistical Results:

LD₅₀: >13.0 µg a.i./bee 95% C.I.: N/A
NOEC: Not reported Probit Slope: N/A

13. VERIFICATION OF STATISTICAL RESULTS:

Statistical analyses were not necessary, as there was not significant mortality in the contact test. LC₅₀/LD₅₀ and NOEC estimates could be determined visually.

Results:

LC₅₀: >13.0 µg a.i./bee 95% C.I.: N/A
NOEC: 13.0 µg a.i./bee

14. REVIEWER'S COMMENTS:

The reviewer's conclusions were identical to the study authors. **The LD₅₀ value was >13 µg a.i./bee, the only test concentration. As a result, Mesosulfuron-methyl is categorized as practically nontoxic to honeybees on an acute contact basis.**

The 48-hour LD₅₀ of the toxic standard, Triazophos 40EC, was 0.242 µg a.i./bee. This value was determined by the SAS probit analysis.

15. REFERENCES:

Guideline on test methods for evaluating the side-effects of plant protection products on honeybees. EPPO Bulletin 22, 203-215 (1992) No. 170.

Vaughan, A. 1985 Standard Evaluation Procedure Honey bee-Acute contact LD50 test; (EPA-

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Hitch, R.K. 1982 Pesticide Assessment Guidelines, Nontarget Insects, Honey Bee Acute Contact
LD50, Subdivision L, Series 141-1, Data reporting

The SAS System for Windows, Release 6.10 TS Level 0019, 1991.

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