

US EPA ARCHIVE DOCUMENT

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

Laboratory: Hoechst Schering AgrEvo GmbH
Umweltforschung, Oekobiologie
D-65926 Frankfurt am Main
Federal Republic of Germany

Sponsor: Hoechst Schering AgrEvo GmbH, Umweltforschung
D-65926 Frankfurt am Main
Federal Republic of Germany

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-

DP Barcode: D284719

MRID No.: 45386319

540/9-85-002)

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.

Page ___ is not included in this copy.

Pages 8 through 9 are not included in this copy.

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.
