7 6-12-2000

MRID No. 445050-12

DATA EVALUATION RECORD
OECD 207 - EARTHWORM 14-DAY ACUTE TOXICITY TEST

1. **CHEMICAL:** Mesotrione PC Code No.: 122990

2. **TEST MATERIAL:** ZA1296 technical Purity: 96.8%

3. **CITATION:**

Authors: J.D. Bembridge and D. Jackson
Title: ZA 1296: Toxicity of Technical Material to the Earthworm *Eisenia fetida* in an Artificial Soil Test
Study Completion Date: November 21, 1996
Laboratory: ZENECA Agrochemicals, Jealotts Hills Research Station, Bracknell, Berks, UK
Laboratory Report ID: RJ2225B
Sponsor: ZENECA Ag Products, Wilmington, DE
MRID No.: 445050-12
DP Barcode: D245475

4. **REVIEWED BY:** Mark A. Mossler, M.S., Toxicologist, Golder Associates Inc.

Signature: Mark A. Mossler **Date:** 8/25/98

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist, Golder Associates Inc.

Signature: P. Kosalwat **Date:** 8/25/98

5. **APPROVED BY:**

Signature: J. Goodyear **Date:** 6/12/00

6. **STUDY PARAMETERS:**

Scientific Name of Test Organism: *Eisenia fetida*
Age of Test Organisms at Test Initiation: Adult
Definitive Study Duration: 14 days

7. **CONCLUSIONS:** This study is scientifically sound and provides supplemental information pertaining to the toxicity of ZA1296. Based on nominal concentrations, the 14-day LC_{50} was >2000 mg ai/kg dry soil and the NOEC was 2000 mg ai/kg dry soil.

8. **ADEQUACY OF THE STUDY:**

A. Classification: Supplemental.

B. **Rationale:** There is no EPA guideline requirement for an earthworm acute toxicity study.

C. **Repairability:** N/A.

9. **GUIDELINE DEVIATIONS:** None noted.

10. **SUBMISSION PURPOSE:**

11. **MATERIALS AND METHODS:**

A. **Test Organisms**

OECD Guideline Criteria	Reported Information
Species: *Lumbricus terrestris* or preferably *Eisenia fetida*.	*Eisenia fetida*
Age at beginning of test: Adult (at least two months with clitellum present).	Clitellate adults (mean weight of between 0.34 and 0.43 g)
Supplier	In-house colony
Acclimation period: At least one day in artificial soil.	Overnight acclimation

B. **Test System**

OECD Guideline Criteria	Reported Information
Test Containers: Glass containers of approximately one liter in size, covered with perforated plastic film.	1-L Glass beakers, covered with perforated plastic wrap
Soil composition: 10% sphagnum moss, 20% kaolin clay, 70% sand, adjusted to pH 6.0 $\pm$0.5 with calcium carbonate	10% peat moss, 20% kaolinite clay, 70% sand, 5 g/kg calcium carbonate, pH of 6.5 $\pm$0.6
Test temperature: 20 $\pm$2°C	20 $\pm$2°C
Relative humidity:	Moisture content maintained by surface watering

OECD Guideline Criteria	Reported Information
Moisture content of soil:	45-50%
Photoperiod: Continuous (400-800 lux)	Continuous (600 ±200 lux)

C. Test Design

OECD Guideline Criteria	Reported Information
Range finding test?	Two preliminary tests conducted from 1 to 1000 mg ai/kg, one replicate demonstrated total mortality at 1000 mg ai/kg
Definitive Test **Nominal concentrations:** Five minimum, in a geometric series (not less than 50% dilution per concentration)	500, 1000, and 2000 mg ai/kg dry soil
Controls: Control group tested with soil receiving the maximum amount of solvent used in treated soils and the solvent allowed to evaporate before use?	Solvent and positive (chloro-acetamide) control groups
Solvent: Organic solvent which is allowed to evaporate from the soil before test initiation	Acetone, allowed to volatilize for 60 minutes prior to mixing
Number of replicates: 4 per treatment level or control	4 replicates per treatment level or control
Number of worms per replicate: 10	10 worms per replicate
Test duration: 14 days with observations at 7 and 14 days	Yes

12. REPORTED RESULTS:

OECD Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Body weights measured at beginning and end of study?	Individual body weights were measured at test initiation and termination
Control Mortality: Not more than 10%	No mortality in the solvent control group
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Mortality

Concentration Nominal (mg ai/kg)	No. of Worms	Cumulative Number of Dead	
		Day of Study	
		7	14
Control	40	0	0
500	40	0	0
1000	40	0	0
2000	40	0	0

Other Significant Results: One worm at the 500 mg ai/kg level was noted as missing several segments. This occurrence was not believed to be related to treatment. Mean body weights at the 1000 and 2000 mg ai/kg treatment levels were greater than the control group at termination. The 14-day LC_{50} for the reference toxicant was 52 mg/kg.

Statistical Results

Statistical Method: visual interpretation

LC_{50}: >2000 mg ai/kg dry soil 95% C.I.: N/A
NOEC: 1000 mg ai/kg dry soil Probit Slope: N/A

13. **VERIFICATION OF STATISTICAL RESULTS:** The lack of mortality at any treatment level precluded the use of statistical analyses. The 14-day LC_{50} was greater than 2000 mg ai/kg of dry soil. Mean initial body weights were slightly less than the control for all treatment groups, and terminal mean body weights were all slightly greater than the control value. Consequently, it is apparent that the test material did not adversely affect worm body weight.

14. **REVIEWER'S COMMENTS:** In Section 2.1.1, the purity of the test material was reported as "96.8 g ai kg^{-1}." The reviewer believes that this is a typographical error and that the value should have been 968 g ai kg^{-1} (96.8% purity), since it was reported to be technical material. However, if solution preparation calculations were included in the report, the reviewer's suspicions would have been confirmed.

    Since US EPA guidelines do not exist for the simulated-soil earthworm test, OECD guidelines were followed by the authors. The procedures employed for this test followed these guidelines. This study is scientifically sound and provides supplemental information pertaining to the toxicity of the test material. The 14-day LC_{50} was >2000 mg ai/kg dry soil and the NOEC was 2000 mg ai/kg dry soil.