14 6-13-00

MRID No. 445050-13

DATA EVALUATION RECORD
§ 143 - PREDATORY INSECT ACUTE TOXICITY TEST

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

2. **TEST MATERIAL:** ZA1296 100 g l^{-1} suspension concentrate (9.4% w/w)

3. **CITATION:**

Authors: A. Gill and H. Austin
Title: A Laboratory Study to Evaluate the Effects of ZA1296 on the Carabid Beetle *Poecilus cupreus*
Study Completion Date: June 25, 1997
Laboratory: Ecotox Limited, Tavistock, Devon, England
Laboratory Report ID: ER-97-19
Sponsor: ZENECA Ag Products, Wilmington, DE
DP Barcode: D245475
MRID No.: 445050-13

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

Signature: Mark Mossler **Date:** 8/26/98

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

Signature: P. Kosalwat **Date:** 8/26/98

5. **APPROVED BY:**

Signature: Bcodyear **Date:** 6/13/00

6. **STUDY PARAMETERS:**

Scientific Name of Test Organism: *Poecilus cupreus*
Definitive Study Duration: 14 days

7. **CONCLUSIONS:** This study is scientifically sound and provides supplemental information pertaining to the toxicity of ZA1296. The 14-day LC_{50} for carabid beetles sprayed with the suspension concentrate of ZA1296 was greater than the proposed labeled rate (200 g ai/ha). This rate also served as the NOEC.

1.1 lbs a.i./A

.2 Kg/HA .44 lbs/.405A

1.1 lbs/A

8. **ADEQUACY OF THE STUDY:**

A. **Classification:** Supplemental.

B. **Rationale:** There is no EPA guideline requirement for a predatory insect acute toxicity test.

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

9. **GUIDELINE DEVIATIONS:** N/A.

10. **SUBMISSION PURPOSE:**

11. **MATERIALS AND METHODS:**

A. **Test Organisms**

Criteria	Reported Information
Species:	*Poecilus cupreus*
Age at beginning of test:	Adults
Supplier:	Bio-Test Labor GmbH, Sagerheide, Germany
All insects from the same source?	Yes

B. **Test System**

Criteria	Reported Information
Chamber size adequate?	Yes
Lighting:	16-h light, 8-h dark
Temperature:	19.5-20.5°C
Relative humidity:	79-83%

C. **Test Design**

Criteria	Reported Information
Range finding test?	None reported
Reference toxicant tested?	Yes, dimethoate (336 g active ingredient [ai]/ha)

Criteria	Reported Information
Method of administration:	*P. cupreus* adults reared in sand-lined boxes on fly pupae, and the entire system (sand, pupae, and beetles) sprayed
Nominal doses: Sufficient number of dosage levels to yield statistically sound data.	Sprayed at the equivalent of 200 g ai/ha in a volume of 400 l/ha (43 GPA)
Controls: Negative control and/or diluent/solvent control.	Diluent (deionized water) and positive control groups
Number of beetles per box:	6 (3 female and 3 male)
Number of boxes per group: 3 replicate chambers per group is recommended.	Five boxes per treatment or control group
Solvent: Distilled water or the following solvents: dimethyl-formamide, triethylene glycol, methanol, acetone, ethanol.	Suspension concentrate dispersed in deionized water
Volume of test solution:	400 l/ha
Observation period:	Mortality assessed at 2h, 6h, 1, 2, 4, 7, 10, and 14 days after application and pupae consumption measured at 2, 4, 7, 10, and 14 days after application
Maximum labeled rate:	The proposed application rate is 200 g ai/ha

12. **REPORTED RESULTS:**

Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Controls:	No mortality in the control or treatment group

Criteria	Reported Information
Raw data included?	Yes
Signs of toxicity (if any) were described?	Yes

Other Significant Results: No adverse effects were noted upon beetles sprayed with ZA1296. Although there was a 12.5% reduction in food consumption, this reduction was not significant at the 95% level of confidence (determined by ANOVA). The effect value was used to place the pesticide in one of four IOBC categories: Class 1 - <30% effect (harmless), Class 2 - 30-80% effect (slightly harmful), Class 3 - 80-99% effect (moderately harmful), and Class 4 - >99% effect (harmful). The authors stated that the results of the test (12.5%) place the test material into Class 1 - "harmless." By day 7 after application, all beetles sprayed with dimethoate were dead.

13. **VERIFICATION OF STATISTICAL RESULTS:** Fly pupa consumption was compared with the use of a t-test. A significant reduction in food consumption was not detected.

14. **REVIEWER'S COMMENTS:** This study is scientifically sound and provides supplemental information pertaining to the toxicity of ZA1296. The 14-day LC_{50} for carabid beetles sprayed with the suspension concentrate of ZA1296 was greater than the proposed labeled rate (200 g ai/ha). This rate also served as the NOEC.

Pupae consumption
File: ins Transform: NO TRANSFORMATION

EQUAL VARIANCE t-TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.718	0.718		
2	Treatment	0.634	0.634	0.390	

2 Sample t table value = 1.86 (1 Tailed Value, P=0.05, df=8,1)

UNEQUAL VARIANCE t-TEST Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	0.718	0.718		
2	Treatment	0.634	0.634	0.390	

2 Sample t table value = 1.89 (1 Tailed Value, P=0.05, df=7,1)

Pupae consumption
File: ins Transform: NO TRANSFORMATION

EQUAL VARIANCE t-TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	5			
2	Treatment	5	0.401	55.8	0.084

UNEQUAL VARIANCE t-TEST Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	5			
2	Treatment	5	0.409	56.9	0.084