

US EPA ARCHIVE DOCUMENT

**DATA EVALUATION RECORD
EARTHWORM TOXICITY TEST**

1. **CHEMICAL:** Azoxystrobin (128810)
2. **TEST MATERIAL:** ICIA5504 technical; 96.2%
3. **CITATION:**

Authors: Fleming, T.M., H.A. Yearsdon, and J.M. Coulson
 Title: ICIA5504: toxicity to the earthworm *Eisenia foetida*.
 Date: 1993
 Laboratory: ICI Agrochemicals, Jealotts Hill Research Station, Bracknell, Berkshire, UK
 Lab. Report #: 92JH272
 Sponsor: ICI Americas Inc, Wilmington, DE
 MRID No.: 436781-68
4. **REVIEWED BY:**

William Erickson Biologist EEB/EFED	Signature: <i>W. Erickson</i> Date: <i>4/4/96</i>
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5. **APPROVED BY:**

Harry Craven Section Head 4 EEB/EFED	Signature: <i>H. J. Craven</i> Date: <i>6/21/96</i>
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6. **STUDY PARAMETERS/RESULTS SYNOPSIS:**

Age/size of Test Organism:	clitellate adults
Test Duration:	14 days
LC ₅₀ :	278 mg ai/kg
95% C.I.:	not determined
NOEC:	180 mg ai/kg
7. **CONCLUSIONS:** The study is scientifically sound.
8. **ADEQUACY OF THE STUDY:** Supplemental.
9. **MAJOR GUIDELINE DEVIATIONS:** Not a guideline study.
10. **SUBMISSION PURPOSE:** New chemical.

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11. **MATERIALS AND METHODS:**

Test Organism:

Guideline Criteria	Reported Information
<u>Species</u>	earthworm (<i>Eisenia foetida</i>)
<u>Age</u>	clitellate adults
<u>Mean weight</u>	0.37 g (\pm 0.05 g)
<u>No. worms/test vessel</u>	10
<u>Acclimation of worms to test conditions</u>	24 h

Test System:

Guideline Criteria	Reported Information
<u>Test site</u>	laboratory
<u>Test vessels</u>	1-1 glass beakers with plastic-film covers (6 small holes per cover for ventilation)
<u>Test soil</u>	70% fine silica sand, 20% Kaolinite clay, 10% peat; w/calcium carbonate incorporated into the soil at 5 g/kg
<u>Room temperature</u>	20 \pm 2°C
<u>Soil moisture content</u>	50 \pm 7% (moisture content was maintained by surface watering with deionised water)
<u>Soil pH</u>	6.1 \pm 0.3
<u>Photoperiod</u>	24 h light (750-1000 lux)

Test Design:

<u>Guideline Criteria</u>	<u>Reported Information</u>
<u>Duration</u>	14 days
<u>Nominal concentrations</u>	10, 100, 180, 320, 560, 1000 ppm
<u>No. reps</u>	4
<u>Controls</u>	solvent (acetone)
<u>Application method</u>	sprayed onto soil surface through a fan jet (Allman 000)
<u>Mixing of soil and test substance</u>	soil poured into food mixer bowl and mixed for 2 min. by heavy duty food mixer to evenly incorporate the test substance into the soil
<u>Addition of worms to soil/ test substance mixture</u>	test organisms placed on soil surface 1-2 h after chemical treatment

12. REPORTED RESULTS:**General Results:**

<u>Guideline Criteria</u>	<u>Reported Information</u>
<u>Quality assurance and GLP compliance statements were included in the report?</u>	yes
<u>Control Mortality</u>	none
<u>Data Endpoints</u>	mortality, body weight
<u>Raw data included?</u>	yes

Effects Data: Data tabulated below are based on 40 earthworms per test concentration and a 14 day observation period.

Concentration (mg ai/kg)	Mortality		Mean body weight (mg)	
	no. dead	% dead	day 0	day 14
control	0	0	401.8	411.8
10	0	0	379.5	403.8
100	0	0	338.5	354.5
180	0	0	376.5	389.8
320	29	73	385.0	346.3
560	40	100	-	-
1000	40	100	-	-

Statistical analysis: The LC₅₀ value and 95% confidence limits were estimated using iteratively re-weighted linear regression of the logit of percentage mortality upon log₁₀ (dose). Body weight data were analyzed by a one-way analysis of covariance and t-tests between mean final body weight (adjusted for the mean initial body weight) at each dose with the mean final body weight (adjusted for the mean initial body weight) in the control. Body weight gains of earthworms at treatment levels of 10, 100, and 180 mg ai/kg did not differ significantly from the control group.

14-day LC₅₀: 283 mg ai/kg
95% confidence limits: 254-313 mg ai/kg
NOEC: 180 mg ai/kg

13. REVIEWER'S DISCUSSION:

Statistical analysis: EPA's TOXANAL program was used to determine the LC₅₀ value (results attached). The NOEC is based on no mortality and no major decrease in the 14-day weight gain of earthworms treated at 180 mg ai/kg as compared to weight gain in the control group.

14-day LC₅₀: 278 mg ai/kg
95% confidence limits: not determined
NOEC: 180 mg ai/kg

Conclusions: The study is scientifically sound and can be used in risk assessments for azoxystrobin. The study was not a guideline requirement.

W. ERICKSON AZOXYSTROBIN EARTHWORM TOXICITY

CONC.	NUMBER EXPOSED	NUMBER DEAD	PERCENT DEAD	BINOMIAL PROB. (PERCENT)
1000	40	40	100	0
560	40	40	100	0
320	40	29	72.5	0
180	40	0	0	0
100	40	0	0	0
10	40	0	0	0

BECAUSE THE NUMBER OF ORGANISMS USED WAS SO LARGE, THE 95 PERCENT CONFIDENCE INTERVALS CALCULATED FROM THE BINOMIAL PROBABILITY ARE UNRELIABLE. USE THE INTERVALS CALCULATED BY THE OTHER TESTS.

AN APPROXIMATE LC50 FOR THIS SET OF DATA IS 278.1947

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISTICALLY SOUND RESULTS.
