10-15-96

DP Barcode: ~~D211863~~ D210808 MRID No.: 434928-45

DATA EVALUATION RECORD
FOLIAGE RESIDUE TOXICITY TEST WITH THE HONEY BEE
§ 141-2

1. **CHEMICAL:** PIRATE™ PC Code No.: 129093

2. **TEST MATERIAL:** AC 303,630 3SC Purity: 29.8 %

3. **CITATION**

Authors: R.L. Kirkland, Ph.D.
Title: A Foliar Residue Toxicity Study with AC-303,630 Applied in a 3SC Formulation (PIRATE™ insecticide) in the Honey Bee (*Apis mellifera* L.)
Study Completion Date: August 2, 1994
Laboratory: Bio Research, Fresno, CA
Sponsor: American Cyanamid Company, Princeton, NJ
Laboratory Report ID: 954-93-166
MRID No.: 434928-45
DP Barcode: D210808

4. **REVIEWED BY:** John D. Eisemann, Wildlife Biologist, EEB, EFED
Signature: John D. Eisemann **Date:** 7/30/96

5. **APPROVED BY:** Ann Stavola, Head, Section 5, EEB, EFED
Signature: Ann Stavola **Date:** 10/15/96

6. **STUDY PARAMETERS**

Age of Test Organisms at Test Initiation: < 2 weeks
Exposure Duration: 24 hours

7. **CONCLUSIONS:** This study is scientifically sound and shows that residues of Pirate (AC 303,630 3SC), when applied at 0.34 and 0.43 lbs ai/A, are not toxic to honeybees 3 to 24 hours after application. None of the treatment concentrations resulted in statistically significant mortality in comparison to the control, regardless of the foliage aging interval.

8. **ADEQUACY OF THE STUDY**

A. Classification: Core

B. Rationale:

C. Repairability:

9. **GUIDELINE DEVIATIONS**

1. Sugar water was used as a food source during the exposure period instead of sugar cubes.
2. Four alfalfa leaf samples were less than the 300 cm^2 specified in the protocol.
3. A corrected method was used for analyzing dislodgable residue samples.
4. The freezer storage temperature range exceeded that specified in the protocol.
5. Four sample jars were broken.
6. Only for replicates were used per aging period. The EEB guideline (09/19/95) recommends 6 replicates.
7. Raw data was not included in the report.

10. **SUBMISSION PURPOSE:**

To support registration of AC 303,630 for use on cotton.

11. **MATERIALS AND METHODS**

A. Test Organisms

Guideline Criteria	Reported Information
Species Honey Bee (*Apis mellifera L.*)	Honey Bee (*Apis mellifera L.*)
Age at beginning of test Worker bees of uniform age.	Nurse bees under two weeks of age
Source	Outdoor bee frames
Were bees from diseased-free colonies?	Yes
Were bees kept in conditions conforming to proper cultural practices?	Yes

B. Test System

Guideline Criteria	Reported Information
Plot size	90 ft^2
Test Chambers	Wire mesh cylinders 8.5 cm diameter x 11 cm high, a 5 ml vial was attached to the mesh to provide water or 50% sugar solution.
Temperature during exposure (25 to 35 °C)	Mean: not reported Range: 22 to 27 °C
Relative humidity during exposure (50 to 80°C)	Mean: not reported Range: 44 to 50 %
Feeding	Initially sugar cubes were placed in the cages. When the bees were not observed feeding a 50% sugar water solution was substituted.

C. Test Design

Guideline Criteria	Reported Information
Maximum proposed label rate	0.35 lbs ai/A
Nominal application rate The test material should be applied at the maximum proposed label rate.	0.4 lbs ai/A and 0.6 lbs ai/A **Actual application rate 0.34 and 0.43 lbs/acre**
Crop species	Alfalfa (*Medicago sativa*)
Number of bees exposed per aging interval	120
Residue aging intervals	3, 8 and 24 hours

Guideline Criteria	Reported Information
Other experimental design information	Four replicates per aging interval with 30 bees per replicate, one spray plot per treatment
Were bees randomly or impartially assigned to test groups?	Yes
Control(s)	Yes
Exposure period 24 hours	24 hours

12. **REPORTED RESULTS**

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Were there no observed adverse effects on bees at the greatest aging interval?	Yes
Control Mortality	0 %
Were raw data included?	No
Were signs of toxicity (if any) described?	Yes
Were residues measured? (optional)	Yes

Mortality and Observations

Experimental Group	Number Exposed / group	Treatment Drying Period		
		3 Hour	8 Hour	24 Hour
Control	120	0 (0%)	1 (0.8%)	0 (0%)
0.34 lbs/acre	120	4 (3.3%)	3 (2.5%)	2 (1.7%)
0.43 lbs/acre	120	2 (1.7%)	3 (2.5%)	2 (1.7%)

13. **REVIEWER'S COMMENTS:**

This study is scientifically sound and can be used in a risk assessment. From the reported data, it appears the toxicity of PIRATE to honey bees declines rapidly after treatment.

Spray tank solution analysis revealed actual tank concentrations 84% and 71% of the nominal concentrations equivalent to 0.4 and 0.6 lbs/acre. This deviation places the actual spray concentrations at 0.34 and 0.43 lbs/acre.

No significant differences were observed between either treatment group and the controls.

Dislodgable leaf residues were determined for all treatment levels and drying time periods. Leaf samples were shaken in 100 ml distilled water with 4 drops of 1:50 (wt:vol) dioctlysulfosiccinate sodium salt and distilled water. The results are tabulated below. Linear correlation analysis showed that correlation coefficients between residue aging interval and the 0.4 and 0.6 treatment rates were -0.212 and -0.296, respectively. Little correlation exists between treatment rate and aging interval.

Average dislodgable residues from Alfalfa after treatment.

Post-treatment Drying Period	Treatment Level	
	0.34 lbs ai/acre	0.43 lbs ai/acre
Control	< 15 ng/cm^2	< 15 ng/cm^2
3 hours	232 ng/cm^2	210 ng/cm^2
8 hours	154 ng/cm^2	310 ng/cm^2
24 hours	189 ng/cm^2	201 ng/cm^2