DATA EVALUATION RECORD

1. Chemical: Cypermethrin

2. Test Material: Cymbush 3E, 35.6% ai

3. Study Type: Honey bee - toxicity of residues on foliage

   Species Tested: Apis mellifera

4. Study ID: Gough, H.J., D. Jackson, and W. Wilkinson. 1987. CYPERMETHRIN: Toxicity of Residues on Foliage to Honey Bees (Apis mellifera). Study conducted by ICI Plant Protection Division, submitted by ICI Americas Inc., Wilmington, DE. EPA Acc. No. 402740-01. EPA Reg. Nos. 10182-64, -65, -80.

5. Reviewed By:

   Allen W. Vaughan
   Entomologist
   EEB/HED

   Signature: Allen W Vaughan
   Date: 3.10.88

6. Approved By:

   Norman J. Cook
   Supervisory Biologist
   EEB/HED

   Signature: Norman J. Cook
   Date: 3/14/88

7. Conclusions: This study is scientifically sound, and shows cypermethrin to be highly toxic to honey bees, with residual toxicity persisting for up to 4 days. This study fulfills the guideline requirement for a residual toxicity study on honey bees.

8. Recommendations: N/A

9. Background: This study was submitted in response to a Data Call-In Notice dated October 25, 1985.

10. Discussion of Individual Tests: N/A

11. Materials and Methods

    A. Test Animals were worker honey bees from a research colony.

    B. Test System: Oilseed rape plots (2m X 10m) were sprayed with the test chemical. Treated foliage was cut at specified times after treatment. About 500 ml of cut material was chopped and placed in a petri dish cage for each replication.

Cotton saturated with sucrose was placed on the cage bottom to serve as food for the test bees.

Fifty bees were placed in each cage, and the cages were placed in a growth chamber for 24 hours at 25°C ± 1°C and 70% ± 10% relative humidity. Mortality was then evaluated after 24 hr of exposure.

C. Dose: Foliar application of formulated product; test bees exposed to treated foliage.

D. Design: 2 application rates (67 and 150 g ai/hectare) plus control; 3 reps.; test replicated 2 times over time.

E. Statistics: No analysis reported.

12. Reported Results:

At the application rate of 150 g ai per hectare, the toxicity of cypermethrin residues was high in both tests (75% to 95% mean corrected mortality), there being no decrease with time. The two tests with 67 g ai per hectare gave different results. The first showed a clear reduction in toxicity over time, due to a significant amount of rainfall early in the weathering period. Toxicity of the residue remained high in the second test (73% to 97% mean mortality), despite rainfall which occurred during the weathering period.

Under the conditions of the test the two rates of cypermethrin were toxic to worker bees for up to 96 hours.

13. Study Author's Conclusions/Q.A. Measures:

Under the conditions of the test cypermethrin sprayed at rates of 67 or 150 g ai per hectare onto oilseed rape left residues on the foliage which were toxic to honey bees for up to 96 hours.

Weather conditions, such as rainfall, can apparently reduce the toxicity of residues, as seen in one test at the lower rate.

High toxicity in the results obtained by this method does not necessarily mean high hazard in the field.

A Quality Assurance audit statement was included.

14. Reviewer's Discussion and Interpretation of the Study

A. Test Procedures: Procedures were in accordance with those recommended in the guidelines. There were no problems in this regard. Use of oilseed rape as a

test crop was agreed to by EPA in earlier correspondence.

B. Statistical Analysis: None reported

C. Discussion/Results: This study is scientifically sound. Residual toxicity of cypermethrin 3E, applied at 67 and 150 g ai/ha, persisted for the duration of the test (4 days), except when rainfall occurred soon after application.

D. Adequacy of Study:

1. Classification: Core
2. Rationale: Guideline protocol
3. Reparability: N/A

15. Completion of One-Liner: N/A

16. CBI Appendix: N/A