

US EPA ARCHIVE DOCUMENT

109702
SHAUGHNESSEY NO.

REVIEW NO.

EEE BRANCH REVIEW

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FILE OR REG. NO.

PETITION OR EXP. PERMIT NO. 10182-EUP-19 1G 2461

DATE DIV. RECEIVED 1/26/81

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TYPE PRODUCT(S): I, D, H, F, N, R, S Insecticide

DATA ACCESSION NO(S). 244017

PRODUCT MGR. NO. Heyward (17)

PRODUCT NAME(S) CYMBUSH

COMPANY NAME ICI Americas, Inc.

SUBMISSION PURPOSE Proposed Extension and Expansion of EUP
on cotton.

SHAUGHNESSEY NO.	CHEMICAL & FORMULATION	% A.I.
109702		

Environmental Safety Review
Cymbush (Cypermethrin)

- 100 Experimental use Label Information
- 101 Physical and Chemical Properties
Similar to permethrin. (See EEB review by C. Natella, 5/2/80).

- 102 Behavior in the environment

No environmental fate studies were submitted with this EUP package, according to John Harris, EFB, 4/24/80.

- 103 Toxicological Properties

Pertinent toxicological information is summarized below:

<u>Test</u>	<u>Species</u>	<u>Result</u>	<u>Status</u>	<u>EEB Validation</u> <u>Date</u>
Acute Oral LD ₅₀	Rat	4123 mg/kg	N/A	N/A
Acute Oral LD ₅₀	Mallard	10,248 mg/kg	Core	5/2/80
102-nr LC ₅₀	Rainbow Trout	0.82 ppb	Core	5/2/80
96-hr LC ₅₀	Bluegill	1.78 ppb	Core	This report
48-hr LC ₅₀	<u>Daphnia magna</u>	1.25 ppb	Core	This report
96-hr LC ₅₀	<u>Rainbow Trout</u>	0.92 ppb	Core	This report
96-hr LC ₅₀ *	Rainbow Trout	4.79 ppb	Suppl.	This report
96-nr LC ₅₀ *	Bluegill	5.98 ppb ^{WF}	Suppl.	This report*
48-nr LC ₅₀ *	Daphnia magna	3.14 ppb	Suppl. Formulation	This report**
	"	1.25 ppb	Core	TC

*Test run with the formulated product GFM 061.

* DER reports 5.69 ppb 11/11/83 WF

** DER describes both Technical & Formulated products
Tech was considered scientifically sound & satisfied
requirements - see 104.4 See report
4/27/82

104 Hazard Assessment

104.1 Discussion

The application of cypermethrin to cotton at the proposed maximum rate of 0.125 a.i./acre will result in residue levels of 13 ppm (on leaves and leafy crops). Repeat applications will result in higher residues.

No environmental fate studies were submitted with this application for an EUP. If the behavior of cypermethrin in the environment is similar to that of permethrin, residues should be persistent, with half-lives of approximately 10 weeks in the soil and more than 50 days in water. Permethrin does not leach significantly in the soil, but may runoff due to the physical transport of soil. Permethrin has been shown to bioaccumulate in several species of fish. Cypermethrin may also bioaccumulate, because, like permethrin, it shows low solubility in water.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

An earlier EEB review (Natella, 5/2/80) concluded that the proposed use pattern should not pose hazards to mammals or birds. Natella also concluded that populations of aquatic organisms, especially in the western states, could be harmed by applications of cypermethrin to cotton fields.

104.3 Endangered Species Considerations

An earlier EEB review (Natella, 5/2/80) listed 9 endangered fish species likely to be exposed to cypermethrin if it is used on cotton. Natella also listed five other endangered fish species for which the likelihood of exposure was difficult to estimate. This reviewer concurs with her opinion-that these species should be included in any consultation with OES/NMFS prior to future registration considerations - but for the purposes of this experimental use program, such consultation is unnecessary.

104.4 Adequacy of Toxicity Data

The following basic studies have been submitted and found acceptable:

1. The acute oral LD₅₀ for waterfowl.
2. The 96-hr LC₅₀s for one coldwater and one warmwater fish species.
3. The 48-hr EC₅₀ for a freshwater aquatic invertebrate.

104.6 Additional Data Required

Prior to registration, two more basic pieces of data must be submitted and validated. These are dietary LC₅₀s for one waterfowl

(preferably the mallard duck) and one upland gamebird (preferably the bobwhite quail or ring-necked pheasant). These studies must be performed on technical cypermethrin.

105 Conclusions

105.3 Data Adequacy Conclusions

The available data are adequate to determine that cypermethrin is practically non-toxic to birds when administered as a single dose. The data are also adequate to determine that cypermethrin is very highly toxic to coldwater fish, warmwater fish, and freshwater invertebrates.

The available data do not provide sufficient information on which to base assessments of the hazards posed to fish and wildlife by the registration of cypermethrin for use on cotton. That information can only be provided by the following tests:

1. A dietary toxicity study on one species of waterfowl (preferably mallard ducks). Test must use technical cypermethrin.
2. A dietary toxicity study on one species of upland gamebird (preferably bobwhite quail or ring-necked pheasant). Test must use technical cypermethrin.
3. A spray drift field study. (For a suitable draft protocol, see the EEB review by Natella 5/2/80).
4. A field monitoring study using caged fish as indicator species. For a suitable protocol, contact EEB.

105.6 Recommendations

The Ecological Effects Branch concurs with this request for an extended and expanded EUP for Cymbush on cotton provided that:

1. The registrant must contact the Office of Endangered Species (U.S. Fish and Wildlife Service, Department of Interior) and the appropriate State Fish and Game Agencies prior to any application of the product to determine if any of the 15 endangered or threatened species identified by Natella (EEB, 5/2/80) are adjacent to treated areas.
2. This product must not be used in areas where impact on endangered/threatened species is likely.
3. The registrant must agree to conduct the field monitoring and spray drift studies discussed in Section 105.3.

Additional testing may be required if further registration actions are sought. A consultation with the Office of Endangered Species and the National Marine Fisheries Service will probably be necessary prior to consideration of this product for registration.

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February 25, 1981

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