109701
SHAUGHNESSY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 01/17/86 OUT 03/04/86

FILE OR REG. NO. 10182-65

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 12/13/85

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EEB ESTIMATED COMPLETION DATE 03/10/86

RD ACTION CODE/TYPE OF REVIEW 600

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

DATA ACCESSION NO(S). 260741, 260742, 260647

PRODUCT MANAGER NO. G. LaRocca (15)

PRODUCT NAME(S) Cypermethrin

COMPANY NAME ICI Americas, Inc.

SUBMISSION PURPOSE Submission of data/information in response to Data Call-In Notice

SHAUGHNESSY NO.	CHEMICAL & FORMULATION	% AI

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Submission of Cypermethrin Data/Information in Response to Data Call-In Notice

FROM: Thomas M. Armitage, Fisheries Biologist Thomas M. Armitage 3-13-86
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Hazard Evaluation Division (TS-769C)

THRU: Raymond W. Matheny, Head-Section 1 Raymond W. Matheny 3-13-86
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THRU: Michael W. Slimak, Chief 3/19/86
Ecological Effects Branch
Hazard Evaluation Division (TS-769C)

TO: George LaRocca, Product Manager 15
Registration Division (TS-767C)

EEB has reviewed the response of ICI Americas, Inc. to the call-in of data supporting registration of cypermethrin, and has reached the following conclusions:

1. Honeybee LD_{50} Test: The study submitted by the registrant (Honeybee acute oral and contact toxicity, Accession Number 260647) has been reviewed by EEB entomologist (A. Vaughan). Data from acute toxicity tests indicate that cypermethrin is highly toxic to honeybees. This study fulfills the guideline requirement for an acute contact toxicity determination on honeybees with the technical material. In order to completely assess the hazard to honeybees, EEB requires further data on the toxicity of foliar residues to honeybees (Guidelines reference No. 141-2). The residual toxicity test should be conducted with the formulated product, and should be submitted to the Agency within 15 months of data call-in notification.

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2. Estuarine Fish Acute LC_{50} Test: An acute toxicity study using sheepshead minnows was submitted to the Agency on December 28, 1981, under EPA Registration Numbers 10182-65 and 10182-64 and is located in Agency files under Accession Number 070561. This 96-hr acute toxicity study was reviewed by EEB (T. Johnston, April 27, 1982), and found to fulfill guideline requirements for an estuarine fish acute LC_{50} study. With an LC_{50} = .95 g/L, cypermethrin is very highly toxic to estuarine fish.

3. Fish Full Life-Cycle Test: EEB has reviewed the registrant's request for waiver of this data requirement, and does not concur. To support a request for data waiver the registrant presents the following argument:

> "The most sensitive stage in the fish life-cycle is the development of the young fry as shown by the early life-cycle and full life-cycle tests with permethrin. From the comparisons of permethrin and cypermethrin, it is clear that the early life-cycle study with cypermethrin is sufficient to determine its life cycle effects to fish.
>
> The concentrations of permethrin and cypermethrin to which fish are actually exposed in practice do not pose a hazard to these organisms."

This contention is supported by the following statement regarding permethrin and cypermethrin:

> "They are lipophilic and of low water solubility, and are therefore rapidly and strongly adsorbed to particulate matter in field soils and in bodies of water.
>
> - In the adsorbed state, the bioavailability of the pyrethroid is considerably reduced.
>
> - In natural aquatic environments, permethrin and cypermethrin disappear rapidly from the water column, principally by sedimentation of particles to which they are adsorbed or by adsorption to plant material.
>
> - Both compounds are degraded in the field to polar compounds, largely by microorganisms. They thus do not build up in terrestrial or aquatic environments."

On the basis of this rationale the registrant argues that, "there is no need to conduct a fish life cycle test with cypermethrin. The available data on the early life-cycle test with cypermethrin and on the early and full life-cycle test with its close analog, permethrin, give adequate information to assess the relevant effects."

The basis for EEB's non-concurrence with this data waiver request rests in the following points:

a. A full life cycle study provides information on the effect of a toxicant upon spawning behavior, success, and egg production. These data are not available from an early life stage test. The full life cycle study is triggered when the estimated environmental concentration of toxicant exceeds 1/10 the MATC obtained in an early life stage test. Data from a field runoff monitoring study conducted in Alabama in July through September of 1980 indicated that residues in the creek 2 miles downstream from the point of runoff were up to 13 ppt, which exceeds the above criterion for the Daphnia MATC value of 9 ppt. The residues of 165 meters downstream from the point of runoff were up to 24 ppt. The value exceeds the above criterion not only for the Daphnia but also for the fish MATC of 140 ppt. These measured residue levels in natural waterways indicate that there is a significant potential hazard to aquatic organisms. The risk criterion has been met and the full life cycle study is required. Data from the life cycle study are required to measure the effect of toxicant on the parameters listed above, and to measure the chronic effect of toxicant on second generation fish.

b. Although permethrin and cypermethrin are structurally similar, they differ in acute and chronic toxicity. Data from a definitive full fish life cycle test using cypermethrin are required to assess the risk to aquatic species from the use of this chemical.

c. It is not possible to quantify the bioavailability

of cypermethrin to aquatic species without the results of an acceptable field study. Because data from such a study are not currently available, EEB cannot accept the argument that this chemical will not be bioavailable.

Completion of a full fish life cycle using cypermethrin is therefore a condition of registration of this chemical.

4. Simulated or Actual Field Study: EEB has received a proposed protocol for this study and it is currently under review.