Shaugh. No. 059101

EAB Log Out Date: 01 OCT 1984

Init.: SM

To: Jay Ellenberger
Product Manager 12
Registration Division (TS-767)

From: Carolyn K. Offutt Carolyn K. Offutt
Chief, Environmental Processes and Guidelines Section
Exposure Assessment Branch, HED (TS-769)

Attached, please find the estimated environmental concentration review of:

Reg./File No.: 464-448 & 464-523

Chemical: Chlorpyrifos

Type Product: Insecticide

Product Name: LORSBAN 4E

Company Name: DOW Chemical Co.

Submission Purposes: EEC Review of Runoff and Water Quality

ZBB Code: --

Action Code: 575

Date In: 10 SEP 84

EFB#: 4557 & 4558

Date Completed: 21 SEP 84

TAIS (Level II) Days

63 .2

Deferrals To:

XX Ecological Effects Branch

____ Residue Chemistry Branch

____ Toxicology Branch

Chlorpyrifos

I. Introduction.

The Ecological Effects Branch requested on 5 September 1984 that the DOW Chemical Co. field study and evalution of chlorpyrifos applied to corn in Kankakee, IL in 1982 be evaluated.

II. Chemical/Physical Properties.

Common Name: Chlorpyrifos

(See EAB review of 11 September 1984 for additional information.)

III. Discussion.

The study "Modeling the runoff potential and behavior of chlorpyrifos in a terrestrial - aquatic watershed" performed by DOW Chemical Co. in 1982 in Kankakee IL was submitted and reviewed. The review report was forwarded to Registration Division on 11 September 1984.

In response to EEB's questions concerning the study and adequacy of toxicity data and the runoff/water quality study, several points must be made.

1. The quantity of chlorpyrifos that is transported from the field to the pond will depend upon the interval between the application and the rainfall/runoff event and the quantity of LORSBAN applied to the field. In this study the greatest quantity (0.4 ppb) was found immediately following the first heavy application (4 lb/acre) on 28 April. Apparently the greatest quantity of chlorpyrifos entering the pond was attributed to drift and residual chlorpyrifos (of previous years) on the berm around the pond not directly from runoff. The quantity of drift was not reported in detail nor a study evaluated.

2. The size of the fields feeding the pond is important. In this case the pond only flowed when runoff occurred into the pond. A larger field to pond ratio would have provided a greater flow-through and cleansing of the pond and a more continuous flow.

3. Even though the quantity of chlorpyrifos reached 0.4 ppb, no fish kills were observed. This would indicate that there is a possible safety factor in natural systems that is not duplicated in laboratory acute toxicity tests.

4. This is a good field study and shows the typical problems found in pesticide application to agronomic crops and pesticide entering aquatic systems.

Robert W. Holst, Ph.D.
Exposure Assessment Branch
HED/OPP (TS-769)

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SHAUGHNESSEY NO.
059101

REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 7-16-84 OUT 8-29-84

FILE OR REG. NO. 464-448/464-523

PETITION OR EXP. PERMIT NO.

DATE OF SUBMISSION 6-28-84

DATE RECEIVED BY HED 7-13-84

RD REQUESTED COMPLETION DATE 9-11-84

EEB ESTIMATED COMPLETION DATE 9-3-84

RD ACTION CODE/TYPE OF REVIEW 575/Amended registration

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

DATA ACCESSION NO(S). 253708

PRODUCT MANAGER NO. Ellenberger/Comfort (12)

PRODUCT NAME(S) Chlorpyrifos

COMPANY NAME Dow

SUBMISSION PURPOSE Review Modeling the runoff and behavior of chlorpyrifos in a terrestrial-aquatic watershed

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.I.
	Chlorpyrifos	

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Pesticide Name Chlorpyrifos

100 Submission Purpose

Data submission of an aquatic field residue monitoring and modeling study.

101 Hazard Assessment

101.4 Adequacy of Toxicity Data

The study was reviewed but not validated. Weaknesses of the study include the site selection and previous contamination. The highest level observed in the pond water was approximately 0.3 ppb which dissipated with a half-life of about 3 days. Concentrations of chlorpyrifos in pond sediment peaked at approximately 10 ppb. The levels of chlorpyrifos reported are indicative of potential hazard to aquatic organisms in waters receiving runoff from large agricultural areas. [G. Lacustris 96-hr LC_{50} = 0.11 ppb which is below the 0.3 ppb level reported].

103 Conclusions

The study submitted (Acc. No. 253708) may partially fulfill the Guidelines requirement for an acceptable aquatic field monitoring study requested in the Chlorpyrifos Registration Standard for agricultural crops. An additional study is needed which should also include population monitoring of sensitive aquatic organisms. Additional guidance regarding this study should be sought from the Ecological Effects Branch.

Note: The submitted study (Acc. No. 253708) should be forwarded to the Exposure Assessment Branch for formal validation. Information on the usefulness of the proposed model for extrapolating to larger field situations should be provided to EEB from EAB.

9-5-84

Les Tbuart
Fisheries Biologist, Sec. 4

9-6-84

Henry T. Craven
Head, Sec. 4

9-6-84

Clayton Bushong
Chief, Ecological Effects Branch