

US EPA ARCHIVE DOCUMENT

Shaughnessy No.: 111401

Date Out of EAB: DEC 5 1986

To: William Miller
Product Manager # 16
Registration Division (TS-767)

From: Emil Regelman, Supervisory Chemist
Review Section #3
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)



Attached, please find the EAB review of:

Reg./File # : 100-599

Chemical Name: Profenofos

Type Product : Insecticide

Product Name : Curacron®

Company Name : Ciba-Geigy

Purpose : Amend to add application on soybeans. Profenofos is
currently registered for cotton.

ACTION CODE: 335

EAB #(s) : 60816

Date Received: 9/16/86

TAIS Code: 63

Date Completed: 12/4/86

Total Reviewing Time: 3 days

Monitoring study requested: x

Monitoring study voluntarily:

Deferrals to: Ecological Effects Branch

 Residue Chemistry Branch

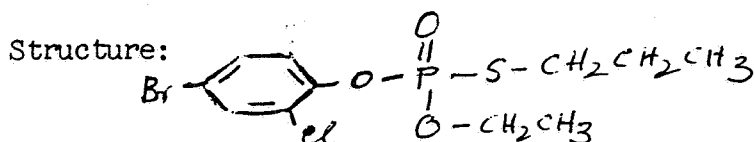
 Toxicology Branch

1. Chemical:

Common Name: Profenofos

Chemical Name: O-(4-bromo-2-chlorophenyl)-O-ethyl
S-propyl phosphorothioate

Trade Name: Curacron®



For detailed chemistry data, see attached one-liner.

2. Test Material:

Curacron 6E Insecticide-Miticide (EPA Registration No. 100-599)

3. Study/Action Type:

Ciba-Geigy is requesting amended registration to allow added use of Curacron® on soybeans to control Heliothis and other insects.

4. Study Identification:

Ciba-Geigy's letter dated August 5, 1986 to Product Manager #16 (Mr. W. Miller) requesting the use of Curacron 6E on soybeans to control Heliothis and other insects and a petition to obtain tolerances for profenofos and its metabolites in or on soybeans, soybean meal, and soybean hulls.

5. Reviewed by: Padma R. Datta, Ph.D.
Chemist
EAB/HED

Signature: *PR Datta*

Date: 12/4/86

6. Approved by: Emil Regelman
Supervisory Chemist
EAB/HED

Signature: *E Regelman*

Date: DEC 5 1986

7. Conclusions:

Exposure Assessment Branch cannot concur with the added application of profenofos on soybeans for the following reasons:

- (1) Ciba-Geigy conducted the 1983 monitoring studies and the follow-up study of 1984 under the accepted protocol dated 1/17/83 to EAB. The data from these two studies were inadequate to assess the effects on water quality and unreasonable risk to aquatic organisms. (Ref. to EFB review #5264, 4/10/85.)
- (2) Ciba-Geigy has not submitted the monitoring protocol requested on 4/10/85 for ponds and rivers typically found in the farmlands representative of cotton use patterns of Curacron®.

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8. Recommendation:

Previous data submitted to obtain full registration were inadequate. Therefore, it is recommended that the registrant (Ciba-Geigy) submit a monitoring protocol of ponds and rivers typically found across the farmlands of the United States representative of the proposed use patterns of Curacron® for EAB approval.

9. Background:

In the previous review (May 26, 1978) of environmental chemistry, data on hydrolysis, photolysis in water and soils, aerobic and anaerobic soil metabolism, effects on microbes, leaching, field soil dissipation, and rotational crops submitted to support the registration on cotton were acceptable to the Agency with few questions. Subsequent submission of data in response to the questions in the review of May 26, 1978 were found to be satisfactory by the previous reviewer. The spray drift and runoff data predicted by SWRRB/EXAMS models submitted by the registrant were found to be satisfactory since runoff quantities were negligible [<0.0001 lb/A (limit of calculation by model)]. For details, refer to EFB review #228, March 12, 1982.

The original protocol submitted on 7/2/82 by Ciba-Geigy was reviewed and the revisions suggested in EFB reviews #402, 8/2/82 and EFB #436, 8/19/82 were incorporated in the revised protocol "Field Monitoring of Profenofos Residue in National Pond Water and Sediments" of 1/17/83. This revised protocol was acceptable to EAB with minor modifications (for details see review EFB #258, 3/11/83). The revised protocol submitted by the registrant (Ciba-Geigy) consisted of a field monitoring study in 1983 and a follow-up monitoring study in 1984.

In 1984, the results of the 1983 monitoring study were submitted. Previous reviewer concluded " For purposes of measuring spray drift into a pond adjacent to a field being sprayed under these or similar conditions, this study is acceptable", with a general remark about the complexity of processes (spray drift, interflow, etc), in a natural aquatic system (pond, river, etc.). This reviewer also noted that a 300-foot buffer zone must be maintained during spraying near aquatic systems such as ponds, rivers, and lakes. [For details, see review EFB #4258, May 23, 1984.]

In 1985, the data for the follow-up study of 1984 on the pond monitoring survey study to satisfy full registration requirements were submitted. The results of this study were judged inadequate. The reviewer noted that the stonecut pond in Mississippi under study was not typical of ponds encountered in farmlands across the United States, and commented that "therefore, except for assessing spray drift, neither the study of 1983 and the follow-up study of 1984 produces adequate results to state that Curacron 6E used according to the label directions (a) does not adversely affect the water quality and (b) does not pose unreasonable risk to aquatic organisms." (For details, see EFB review #5264, April 10, 1985).

In this current submission, (1) no environmental fate study(s) were included; and, (2) the previously submitted metabolism studies conducted in cotton plants and soil with ^{14}C -profenofos which were used to obtain full registration for cotton were included.

10. Discussion of Individual Test or Studies:

Not applicable.

11. Completion of One-Liner:

See attached One-Liner.

12. CBI Appendix:

Not applicable.

EXPOSURE ASSESSMENT BRANCH ONE LINER

SHAUGH. NO. 11401 TYPE PESTICIDE: Insecticide STRUCTURE

COMMON NAME: Profenofos

CHEMICAL NAME: 0-(4-bromo-2-chlorophenyl)-
0-ethyl s-propyl phosphorothioate

TYPICAL USES Cotton

CHEMICAL PROPERTIES:

<u>Molecular Wt</u>	<u>Aqueous Solubility</u>	<u>Vapor Pressure</u>	<u>K_{ow}</u>	<u>K_{oc}</u>
<u>373.65</u>	<u>20 (ppm)</u>	<u>1x10⁻⁵ (torr)</u>	<u>47,863</u>	<u></u>

Soil Adsorption Coefficient

<u>Soil Type</u>	<u>pH</u>	<u>% Soil O.M.</u>	<u>K</u>	<u>K_{om}</u>	<u>Soil TLC R_f</u>	<u>Mobility Class</u>
<u>sand</u>		<u>6.3</u>	<u>20.2</u>	<u></u>	<u></u>	(1) Immobile
<u>sand</u>		<u>7.8</u>	<u>4.56</u>	<u></u>	<u></u>	(2) Low
<u>sandy loam</u>		<u>6.7</u>	<u>55.6</u>	<u></u>	<u></u>	(3) Low to Mod.
<u>silt loam</u>		<u>6.1</u>	<u>22.2</u>	<u></u>	<u></u>	(4) Moderate
						(5) Mobile

Degradation

<u>Lab Half-life--</u>	<u>Field Half-Life</u>	<u>Hydrolysis (23°)</u>		<u>Photolysis</u>
<u>Soil</u>		<u>pH</u>	<u>T¹/₂</u>	<u>T¹/₂</u>
<u>Aerobic: 4-7 wks</u>	<u>Soil 4.5 d loam</u>	<u>5</u>	<u>93 d</u>	<u>Soil: _____</u>
<u>Anaerobic: _____</u>	<u>16.8 d sandy</u>	<u>7</u>	<u>15 d</u>	<u>Water: 27 hr</u>
<u>Aquatic</u>				
<u>Aerobic: _____</u>	<u>Aquatic: _____</u>	<u>9</u>	<u>6 hr</u>	
<u>Anaerobic: _____</u>				

ENVIRONMENTAL EXPOSURE

Found in Ground Water (Y/N)? _____ Reentry Interval Established _____

Site(s) _____ Level: _____

Rotational Crop Restrictions _____ Leaching Potential _____

_____ Lab: Yes _____ No _____

_____ Field: Yes _____ No _____

EAB Chemical One-Liner (Cont).

Chemical Profenofos

Fish Bioaccumulations Factors

Species	Tissue		Whole Fish	Duration (Half-life)
	Edible	Viscera		
_____	_____X	_____X	_____X	_____
_____	_____X	_____X	_____X	_____
_____	_____X	_____X	_____X	_____

DEGRADATION SUMARRY

REFERENCES:

From Registration Actions.