241477
RECORD NO.

128831
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 3-13-89 OUT MAR 30 1989

FILE OR REG. NO 89-WA-04

PETITION OR EXP. NO.

DATE OF SUBMISSION 1-17-89

DATE RECEIVED BY EFED 3-10-89

RD REQUESTED COMPLETION DATE 3-25-89

EEB ESTIMATED COMPLETION DATE 3-25-89

RD ACTION CODE/TYPE OF REVIEW 512

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

DATA ACCESSION NO(S).

PRODUCT MANAGER NO. D. Stubbs-(41)

PRODUCT NAME(S) Baythroid

COMPANY NAME State of Washington

SUBMISSION PURPOSE RD request for review of §18 relative to synergistic effects data submitted to RD

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

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

MAR 30 1989

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Addendum to Section 18 using Cyfluthrin on Pears

FROM: James W. Akerman, Chief
Ecological Effects Branch
Environmental Fate and Effects Division (H-7507-C)

TO: Donald Stubbs
Registration Support Branch
Registration Division (H7505-C)

The Ecological Effects Branch (EEB) indicated in a January 30, 1989 section 18 review that based on the available aquatic toxicity data, cyfluthrin is very highly toxic to fish and invertebrates and that the use of this chemical on pears, pears/apples interplants would undoubtedly pose a hazard to both freshwater and marine fish and invertebrates. EEB also indicated that the use of piperonyl butoxide was expected to enhance the toxicity of the compound that was already very highly toxic to aquatic organisms.

Since this review, EEB received a response dated March 13, 1989, which included the following two references to support the conclusion that piperonyl butoxide does not stabilize against ultra-violet light:

1) Donaldson, J.M. and J.H. Stevenson. 1960. The Stabilising Effect of Piperonyl Butoxide on Pyrethrins Exposed to Ultra-violet Light.J. Sci. Food Agric.,11,July, 1960.

2) Burts,E.C.,van de Bann, H.E. and B. A. Croft. Pyrethroid Resistance in Pear Psylla, Psylla pyricola Foerster (Homoptera: Psyllida) and Synergism of Pyrethroids with Piperonyl Butoxide. Tree Fruit Research Center, 1100 N. Western Avenue, Wenatchee, WA 98801, (509)663-8181.

EEB evaluated the two references and offers the following comments:

The first reference indicated that "...piperonyl butoxide does not prevent or reduce the loss of toxicity of pyrethroids

2

brought about by irradiation with ultra-violet light." The reference also indicated that "....prolongation of the film may in fact, have been due to the increase in the ratio of piperonyl butoxide to pyrethrins which occurred as the pyrethrins degraded..."

The second reference indicated that levels less than 37.5 mg a.i./l of piperonyl butoxide did not increase the toxicity to the Psylla pyricola. However, concentrations greater than 37.5 mg a.i./l of piperonyl butoxide did increase the percent mortality by as much as 23 percent. It should be noted that cyfluthrin was used at 20% or less than the rate that the other synthetic pyrethroids were tested at in the study. This raises concern for the validity of the study.

EEB cited in earlier section 18 reviews the following two references:

- Ware, G.W. 1983. Pesticides Theory and Application. W.H. Freeman and Company. San Francisco.pp. 56-58 and p. 255.

- National Research Council of Canada Associate Committee on Scientific Criteria For Environmental Quality.1986. Pyrethroids: Their Effects on Aquatic and Terrestrial Ecosystems. Publication No. NRCC 24376 of the Environmental Secretariat.p. 116.

Based on the references available to EEB and the references recently submitted in response to the earlier review, EEB expects that the use of piperonyl butoxide at levels greater than 37 mg a.i./l is expected to enhance the toxicity of a chemical that is already very highly toxic to aquatic organisms.