FILE

109301

Date Out EFB: 20 APR 1984

TO: Tim Gardner
Product Manager 17
Registration Division
TS-767

FROM: Samuel Creeger, Chief
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

Attached please find the environmental fate review of:

Reg./File No.: 201-401

Chemical: Fenvalerate

Type Product: Insecticide

Product Name: Pydrin

Company Name: Shell Oil Co.

Submission Purpose: Review rotational crop data to support removing restriction

ZBB Code: Other

ACTION CODE: 300

Date in: 2/28/84

EFB # 4218

Date Completed: 4/18/84

TAIS (level II) Days

63 3

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

1.0 INTRODUCTION

Shell Chemical Co. has submitted a table beet rotational crop study to support the request that the current label restriction against planting root crops earlier than 12 months after last application be removed from the Pydrin 2.4 EC (Fenvalerate as a. i.) label (EPA Reg No. 201-401).

This study is in response to previous EAB review dated 2/4/83. That review considered rotational crop data submitted to remove the label restriction against planting non-root crops (other than those listed on the label) earlier than 9 months after last application and root crops (other than those listed on the label) earlier than 12 months after last application.

Based on the data submitted then, EAB concluded that the data suggested that the rotational crop restrictions can be removed for grain and leafy vegetable but should remain for root crops. EAB suggested that the root crop cold study be repeated using table beets so that a comparison can be made with the hot study which used beets.

In the 14C-SD 43775 (fenvalerate, pydrin) study, Shell reported that beet leaves and roots contained 0.10-0.18 and 0.27-0.31 ppm 14C residues, respectively, when planted 30 days after one application equivalent to 2 lb. a.i/acre. Soil was aged outdoors. When planted 120 days after application 0.02 and 0.03-0.04 ppm were found in beet leaves and roots, respectively. In the field study, radishes sampled 206 days after treatment contained 0.01 and 0.02 ppm residues of SD 43775 in roots and tops, respectively. Identity of the 14C residues was not determined in either study.

1.1 Chemical

Common name: Fenvalerate

Chemical name: Cyano (3-phenoxyphenyl) methy-4-chloro-alpha-(1-methylethyl) benzeneacetate

2.0 DIRECTIONS FOR USE

Briefly, The proposed rotational crop restriction is changed to read: "Rotational crops may be planted immediately after last application." This would eliminate the root crop restriction.

Note: The review dated 2/4/83 is adequate for removing the restriction against planting non-root crop rotational crops earlier than 9 months. ef 2/20/85

3.0 DISCUSSION OF DATA

1983-Residue Data for SD 43775 in Table Beets Grown in Soil Which Had Previously Received Ten Applications of SD 43775, A California Study. RIR-24-142-83

Procedure

A sandy loam field plot (65% sand, 25% silt, 10% clay, and 1% organic matter) in which cotton was growing was treated with 0.2 lb a.i./acre per application for 10 applications. Application was over period from 7/20/82 to 9/21/82. On 5/25/83 table beets were planted, grown to maturity and harvested 7/5/83. Samples were frozen ca. 12 days before extraction and analysis.

Residues were extracted with hexane/isopropyl alcohol. then cleaned up by column chromatograpahy. Analysis was by GLC using electron capture detector.

Results

The registrant reports that the minimum detectable concentration for residues in beet roots and leaves was 0.01 ppm and recovery was 93-97% at 0.05 ppm fortification level.

Residues were reported as less than minimum detectable limits (< 0.01 ppm) in table beet roots and tops. See Table I.

Conclusion

The data suggest that root crops, when planted in soil 287 days after last of 10 treatments of 0.2 lb. a.i./acre applied at weekly intervals, would contain non-detectable residues of Pydrin (fenvalerate, as a.i). However, analysis of only one sample of beet roots and tops each is insufficient for EAB to conclude that residues would not be present.

4.0 EXECUTIVE SUMMARY

4.1 The data do not support the removal of the rotational crop restriction against planting root crops earlier than 12 months after last application of Pydrin 2.4 EC.

TABLE I

ANALYSES OF SAMPLES - Table Beets

CODE NO.	COMPOUND APPLIED	DOSAGE (LB AI/A)*	INTERVAL (DAYS)**	COMPOUND OF ANALYSIS	RESIDUE FOUND (PPM)***
SAMPLE: Roots					
7B	SD43775	0.2	287	SD43775	<0.01
8B	CHECK	0.0	-	SD43775	<0.01
SAMPLE: Tops					
7A	SD43775	0.2	287	SD43775	<0.01
8A	CHECK	0.0	-	SD43775	<0.01

*No. of applications is 10 (to cotton).
**Interval is final application to sampling
***Values are not corrected if an apparent residue is found in a non-treated check sample.

(NOTE: THIS TABLE IS TAKEN FROM REGISTRANT'S SUBMISSION.)

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3, this label restrict
re showed that the rot
oved for grain and lea
ion should remain for

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4.2 The results of this study cannot be compared to t
of the previously submitted confined ^{14}C-fenvaler
In the current study, 287 days lapsed between las
cation and planting while, in the confined study,
were planted 30 and 120 days after application.

4.3 The analysis of only one sample of beet roots and
is insufficient in number for EAB to conclude tha
crops will not contain detectable residues when p
9 months (or approximately 287 days) after last t

4.4 The registrant should be informed that, if remova
the rotational crop restriction for root crops is
(and inserting, " Rotational crops many be plante
iately after harvest") a cold field study must be
showing no detectable residues in table beets whe
30 days after last treatment. If an interval sho
12 months but greater than 30 days is desired, th
must include data which show no detectable resid
table beets at the desired rotational interval.

The field should be treated according to maximum
rate simulating actual field practice. A group o
beets should be taken from several different are
treated field. The crop should be analyzed for p
compound and for major metabolites identified in
aerobic soil metabolism study. Roots and tops sh
analyzed separately.

4.5 Alternatively, the registrant can repeat the ^{14}C
study with the appropriate rotational crop inter
show that any ^{14}C taken up has been incorporated
natural plant constituents and is not parent com
or degradation products identified in the aerobi
metabolism study.

4.6 It is suggested that the registrant submit a pro
for conducting the study to EAB for review befor
the study.

4.7 Note to PM: In EAB reviews dated 3/20/84 for app
registration of fenvalerate for use on wheat, ba
brussels sprouts, EAB recommended that the label
to contain the rotational crop restriction, " Al
crops must not be planted within 9 months after

cation." Based on the data submitted earlier and reviewed by EAB 2/4/83, this label restriction is unnecessary. Data reviewed there showed that the rotational crop restriction could be removed for grain and leafy vegetable crops but the restriction should remain for root crops.

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