

109301

FILE

Date Out EFB: 20 MAR 1984

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

FROM: Sam 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 2.4EC

Company Name: Shell Chemical Company

Submission Purpose: Add new use - stone fruit

ZBB Code: Other

ACTION CODE: 330

Date in: 1/23/84

EFB # 4171

Date Completed: 3/14/84

TAIS (level II) Days

63

2

Deferrals To:

 Ecological Effects Branch

 Residue Chemistry Branch

 Toxicology Branch

1.0 INTRODUCTION

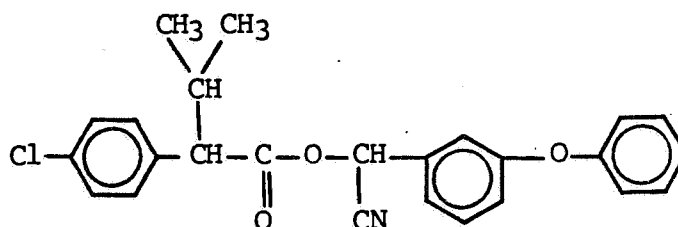
Shell Chemical Co. has submitted an application for registration of Pydrin 2.4 EC (Fenvalerate, as a. i) for use on stone fruits.

1.1 Chemical

Common/Code name: Fenvalerate, SD 43775

Chemical name: Cyano-(3-phenoxyphenyl) methyl 4-chloro-alpha-(1-methylethyl)benzene acetate

Chemical structure:



2.0 DIRECTIONS FOR USE

Use directions are appended to this review. Briefly, 0.15-0.3 lb a. i. is applied per acre per application. Repeat as necessary to maintain control. Do not exceed 1.5 lb. a. i. per acre per season between bloom and harvest.

3.0 DISCUSSION OF DATA

3.1 No additional data were submitted.

3.2 Adequate data to support registration have been previously submitted. See EAB reviews dated 11/9/81, 9/28/81, 11/19/80, 1/16/79 and 5/11/78 for complete details of the submitted data. Conclusions of submitted data were:

3.2.1 Hydrolysis

Fenvalerate (Pydrin, SD 43775) is stable to hydrolysis.

3.2.2 Photolysis

Aqueous: Fenvalerate has a photolytic half-life of 41 days (EAB Decline Program analysis, $r^2 = .936$). With acetone as sensitizer, data are scattered but EAB Decline Program analysis calculated a half-life of 28 days ($r^2 = .605$).

Soil surface: Fenvalerate does not photodegrade to significant amounts of non-volatile products on surface of sandy loam soil. In both irradiated and dark control, SD 47117 major photo-degradation product. See attached Table for nomenclature and structures of products.

3.2.3 Soil Metabolism

Aerobic: Fenvalerate soil metabolism half-life reported as:

<u>Soil type</u>	<u>Half-life</u>
Sandy loam	28-65
Silty loam	95 days
Silty clay loam	8 months

Major degradation products include:

SD 48838
SD 44064
SD 53065

Microbial degradation is major degradation route in soil.

Anaerobic: Half-life is > 60 days (estimated to be 6 months).
SD 44064 is the major anaerobic soil degradation product.

Note: Fenvalerate had little or no effect on soil microorganisms or activated sludge.

3.2.4 Leaching

In soil column study, fenvalerate showed very little mobility in agricultural sand, loam, sandy loam and silty loam soils. Aged residues of fenvalerate showed very little mobility in sandy loam soil.

3.2.5 Field Dissipation

In the field, fenvalerate had half-lives of:

<u>Soil type</u>	<u>Half-life (days)</u>
Sandy loam	25 -54
Silt loam	54
Clay loam	34

Field degradation products; SD 48838, SD 47117 and SD 44064 did not persist in the soils.

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3.2.6 Fish Accumulation

Flow-through: In rainbow trout study, fenvalerate had a bioaccumulation factor of 400X based on parent residues in edible tissue. Depuration was slow (40-60% of residues remaining in fish after a 33 day withdrawal period).

Static: In catfish study, fenvalerate had a bioaccumulation factor of 490X based on parent residues in whole fish. Depuration half-life was 46 days.

3.2.7 Rotational Crop

Non-root crops may take up residues if planted earlier than 270 days after last application.

4.0 EXECUTIVE SUMMARY

Adequate environmental chemistry data are available to define the environmental fate of Pydrin 2.5 EC for the proposed use on stone fruits.

The rotational crop restriction (prohibiting planting root crops other than those listed on the label within 12 months after last application) is not appropriate since stone fruits are not usually rotated.



Clinton Fletcher
Review Section No. 1
Exposure Assessment Branch
Hazard Evaluation Division

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with the labeling.

STORAGE AND DISPOSAL

STORAGE: Store in a secure, dry and temperate area. Keep container closed when not in use. Do not store near food or feed. Do not use or store around the home. Avoid contact with water. In case of spill or leak, soak up with sand, earth or synthetic absorbent (Do not use alkaline absorbents) and dispose of wastes in compliance with local, State and Federal regulations.

PESTICIDE DISPOSAL: Pesticide, spray mixture, or insect water that cannot be used according to label instructions must be disposed of according to Federal or approved State procedures under Subtitle C of the Resource Conservation and Recovery Act.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning if prohibited, puncture metal containers and dispose of in a sanitary landfill, or by other approved State and local procedures. Dispose of plastic containers in a sanitary landfill, or by incineration if allowed by State and local authorities. Dispose of glass containers in a sanitary landfill, or by other approved State and local procedures.

In case of a significant spill, call (713) 473-9461 or CHEMTREC (800) 424-9300

GENERAL DIRECTIONS

PYDRIN Insecticide 2.4 Emulsible Concentrate contains 2.4 pounds of active ingredient per gallon. For the applications given below, mix the required amount of PYDRIN in sufficient diluent to provide uniform coverage (Refer to Use Tables). PYDRIN may be applied by ground or aerial application equipment. Do not enter treated areas before spray is dry. Do not plant root crops other than those in this label within 12 months after last application. Root crops in this label and all other rotation crops may be planted immediately following last application.

NOTICE OF WARRANTY

SHELL CHEMICAL COMPANY MAKES NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PURPOSE, OR OTHERWISE, EXPRESS OR IMPLIED, concerning this product or its uses which extend beyond the use of the product under normal conditions in accord with the statements made on this label.

Sunilomo Chemical Company, Ltd., holds U.S. Patents for the active ingredient. Sales by Shell Chemical Company of products containing the active ingredient are made under agreements with Sunilomo Chemical Company, Ltd.

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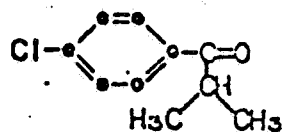
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CROP	INSECT	DOSAGE			NO. ACRES TREATED WITH GAL	FURTHER USE INSTRUCTIONS	DAYS TO HARVEST
		CONCENTRATE LB AI/A	SPRAY/DILUTE FL OZ/ACRE	SPRAY FL OZ/100 GALLONS			
Peach Apricot Nectarine Plum/Prune Cherry (sweet/sour)	Peach Twig Borer, Oriental Fruit Moth, Peach Tree Borer, Plum Curculio, Lesser Peach Tree Borer. Cherry Fruit Fly, Western Cherry Fruit Fly, American Plum Borer, Black Cherry Aphid, Leafrollers	0.15-0.3	8-16	4-8	16-8	Repeat as necessary to maintain control. Do not exceed 1.5 lbs a.i. per acre per season with no more than 1.2 lbs a.i. per acre per season between bloom and harvest. For dilute spray apply 200-400 gals. per acre. Do not apply more than 16 fl. oz. of PYDRIN 2.4 EC per acre per application. <u>Peach Tree Borer, Lesser Peach Tree Borer American Plum Borer control - Apply as directed trunk spray, using thorough coverage.</u> <u>Peach Twig Borer, Plum Curculio, Oriental Fruit Moth, Cherry Fruit Fly, Western Cherry Fruit Fly, Leafrollers, Black Cherry Aphid control - Apply by ground sprayer to achieve thorough coverage of all aerial portions of the tree. Do not graze livestock on treated orchard floors.</u>	14

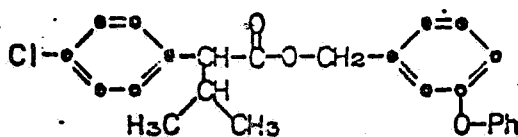
PYDRIN-RELATED COMPOUNDS REPORTED IN
ENVIRONMENTAL CHEMISTRY STUDIES

IN SOIL

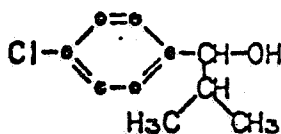
SD 39009



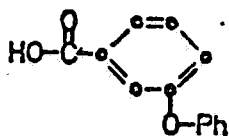
SD 43774



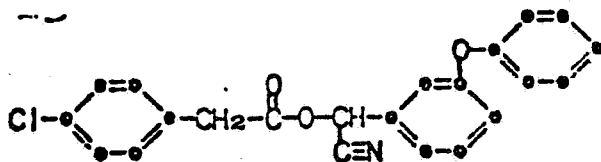
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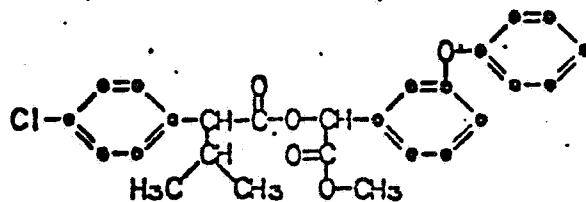
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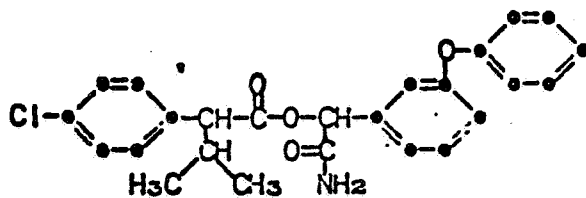
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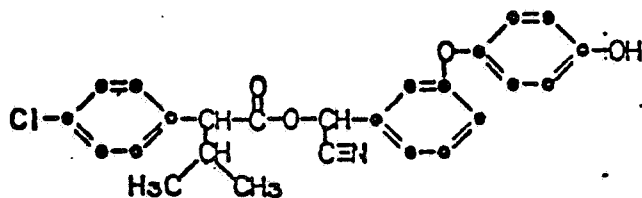
SD 47116



SD 47117



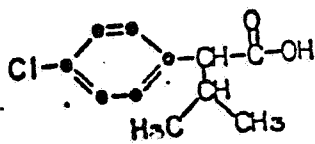
SD 48838



SD 52666

Diastereoisomers

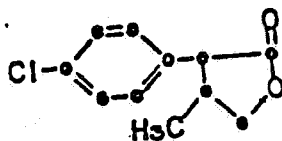
SD 53919



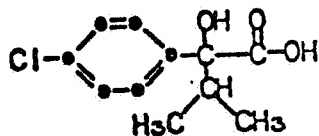
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Diastereoisomers

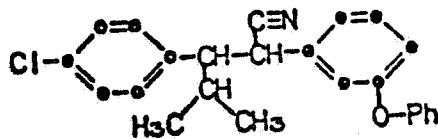
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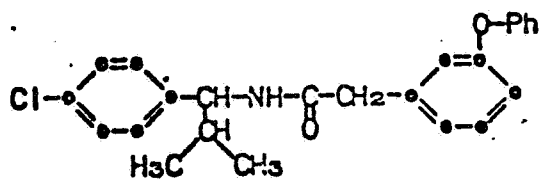
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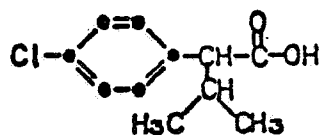
SD 54597



SD 55886

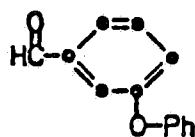


WL 10944

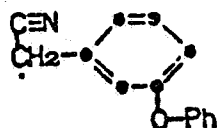


IN SOLUTION PHOTOCHEMISTRY

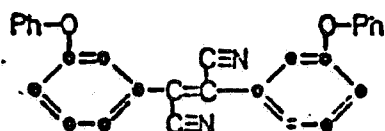
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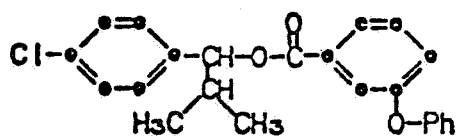
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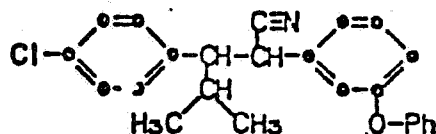
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SD 53036



SD 54597



WL 10944

