

US EPA ARCHIVE DOCUMENT

109701

Shaughnessy No.

FEB 2 1983

Date out of EFB:

To: Gee  
Product Manager # 17  
Registration Division (TS-767)

From: E. Regelman, Head (acting)  
Review Section I  
Environmental Fate Branch  
Hazard Evaluation Division (TS-769c)

*David Sauer*

Attached please find the EFB review of...

Reg./File No.: 10182-AG; 4691-RMT; 4691-RNI; 4691-RNO

Chemical: Permethrin

Type Product: Insecticide

Product Name: Ectiban EC, Permethrin 10% EC, Permethrin II, Permethrin Horse  
and Pet Spray

Company Name: ICI Americas (Ectiban) and Anchor (Permethrin)

Submission Purpose: Human Exposure Analysis

ZEB Code: other

ACTION CODE: 435

Date In: 12/7/82

EFB# 91,93,94,95

Date Completed: 28 JAN 1983

TAIS (level II) Days

Deferrals To:

20

4

Ecological Effects Branch

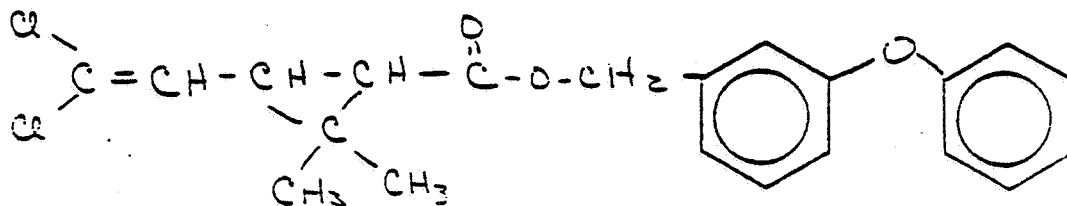
Residue Chemistry Branch

X Toxicology Branch

## I. INTRODUCTION

A human exposure analysis has been requested by RD for EC formulations of permethrin. The products include Ectiban EC, Permethrin 10% EC, Permethrin II, and Permethrin Horse and Pet Spray. Exposure analyses for Ectiban D and Ectiban WP have already been submitted (Regelman, Jan. 19, 1983 and Jan. 26, 1983). Labels are attached in Attachment A.

## II. Ectiban EC, Permethrin 10% EC, Permethrin II, Permethrin Horse and Pet Spray: permethrin



(3-phenoxyphenyl)methyl(+)-cis,trans-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate

## III. EXPOSURE ASSESSMENT

There is a potential for dermal and inhalation exposure during application of these products. While no actual measurements of this exposure have apparently been carried out, the Environmental Fate Branch has commonly prepared estimates of exposure based on measurements taken during application of other pesticides using similar application procedures.

### A. Exposure per Application: Dermal

According to the proposed labels, these products will be applied by spray, fog, or mist techniques of premises or livestock. Staiff et al (1975) measured the dermal exposure of applicators applying paraquat using similar techniques. Dermal exposure equivalent to 0.048 pt of diluted spray was reported (Federal Register, 1978). Using this value as an estimate of exposure the following calculation will be used to estimate the potential exposure to permethrin:

- Convert dilution rate in oz/gal to mg/pt
- Multiply this figure by the dermal dose of diluted material, 0.048 pt/application

$$\frac{\text{oz}}{\text{gal}} \times \left[ \frac{1 \text{ lb}}{16 \text{ oz}} \times \frac{1 \text{ gal}}{8 \text{ pt}} \times \frac{45 \text{ g}}{\text{lb}} \times \frac{1000 \text{ mg}}{\text{g}} \times \frac{0.048 \text{ pt}}{\text{application}} \right]$$

= exposure (mg)/application

The factor in brackets equals

$$\frac{170 \text{ mg-gal}}{\text{oz-application}}$$

and will not be repeated in its entirety in the calculations that follow.

1.0 Ectiban EC: 50 g ai/L = 1.67 oz ai/qt = 0.3 oz ai/pt

1.1 Dairy Cattle: once every two weeks as needed

(a) dilution rate: 1 pt/12.5 gal H<sub>2</sub>O  
application method: sprayer

$$\frac{0.8 \text{ oz}}{12.63 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 11 \text{ mg/application}$$

(b) dilution rate: 1 pt/1.25 gal H<sub>2</sub>O  
application method: low pressure sprayer

$$\frac{0.8 \text{ oz}}{1.33 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 102 \text{ mg/application}$$

(c) dilution rate: 1 pt/50 gal H<sub>2</sub>O  
applicatoin method: sprayer

$$\frac{0.8 \text{ oz}}{50.13 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 2.7 \text{ mg/application}$$

1.2 Beef Cattle: once every two weeks as needed

dilution rate: 1 pt/50 gal H<sub>2</sub>O  
application method: sprayer

2.7 mg/application (See 1.1(c))

1.3 Poultry and Swine: once (?)

(a) dilution rate: 1 pt/12.5 gal H<sub>2</sub>O  
application method: sprayer

11 mg/application (See 1.1(a))

(b) dilution rate: 1 pt/25 gal H<sub>2</sub>O  
application method: sprayer

$$\frac{0.8 \text{ oz}}{25.13 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 5.4 \text{ mg/application}$$

1.4 Premises: once every two weeks as needed

(a) dilution rate: 1 qt/12.5 gal H<sub>2</sub>O  
application method: residual sprayer

$$\frac{1.67 \text{ oz}}{12.75 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 22 \text{ mg/application}$$

- (b) dilution rate: 1.67 oz/qt (ready to use; undiluted)  
application method: mist sprayer

$$\frac{1.67 \text{ oz}}{0.25 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 1135 \text{ mg/application}$$

2.0 Permethrin 10% EC: 0.75 lb ai/gal = 3 oz ai/qt

2.1 Premise Spray: protected from elements

- (a) long action: retreat after 8 wk or as needed  
dilution rate: 3 oz ai/25 gal H<sub>2</sub>O

$$\frac{3 \text{ oz}}{25.25 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 20 \text{ mg/application}$$

- (b) medium action: retreat after 4-6 wk or as needed  
dilution rate: 3 oz ai/25-100 gal H<sub>2</sub>O

5-20 mg/application (see 2.1(a))

- (c) short action: retreat after 2 wk or as needed  
dilution rate: 3 oz ai with up to 250 gal H<sub>2</sub>O

2 mg/application (see 2.1(a))

2.2 Premise Spray: exposed to elements

- (a) long action: retreat after 4-6 wk or as needed  
dilution rate: 3 oz ai/25 gal H<sub>2</sub>O

20 mg/application (see 2.1(a))

- (b) medium action: retreat after 2-3 wk or as needed  
dilution rate: 3 oz ai/50 gal H<sub>2</sub>O

10 mg/application (see 2.1(a))

- (c) short action: retreat weekly or as needed  
dilution rate: 3 oz ai/100 gal

5 mg/application (see 2.1(a))

3.0 Permethrin II and Permethrin Horse and Pet Spray

Both products appear to be identical (10% EC formulation, 0.75 lb ai/gal or 3 oz ai/qt). The only exception seems to be that Permethrin II has additional uses on poultry or exotic bird premises only and to poultry in houses or cages. Therefore, potential exposures will be generated using the Permethrin II label. 4

3.1 Inside Premises Only: retreat after 8-10 wk  
Application method: spray, fog, or mist

(a) dilution rate: 3 oz ai/10-25 gal water  
20-50 mg/application (see 2.1(a))

(b) dilution rate: 3 oz ai/25-50 gal water  
10-20 mg/application (see 2.1(a))

(c) dilution rate: 2-4 oz undiluted product  
0.18 oz/ai/0.015 gal-0.36 oz ai/0.03 gal

$$\frac{.36 \text{ oz}}{0.03 \text{ gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 2040 \text{ mg/application}$$

3.2 Only on Exterior Premises: retreat after 4-6 wk  
Application method: spray, fog, or mist

10-50 mg/application when diluted (see 3.1)

2040 mg/application when undiluted (see 3.1(c))

3.3 Beef and Dairy Cattle and Horses: once every two weeks if needed  
Application method: spray, fog, or mist

(a) dilution rate: 2-4 oz product undiluted  
2040 mg/application (see 3.1(c))

(b) dilution rate: 3 oz ai/100-200 gal H<sub>2</sub>O  
2.5-5 mg/application (see 2.1(a))

(c) dilution rate: 0.1 oz ai/gal H<sub>2</sub>O  
$$\frac{0.1 \text{ oz}}{\text{gal}} \times \frac{170 \text{ mg-gal}}{\text{oz-application}} = 17 \text{ mg/application}$$

3.4 Swine, Sheep, Cats or Dogs: retreat 4-6 wk or as needed  
Application method: spray, paint or dip

dilution rate: 3 oz ai/200 gal H<sub>2</sub>O

2.5 mg/application (see 2.1(a))

3.5 Poultry or Exotic Bird Premises Only: retreat 7-10 wk or as needed  
Application method: spray, fog or mist blow

dilution rate: 3 oz ai/25-50 gal H<sub>2</sub>O

10-20 mg/application (see 2.1(a))

3.6 To Poultry in Houses or Cages: repeat 7-10 wk  
Application method: spray

dilution rate = 3 oz ai/gal

10 mg/application (see 2.1(a))

B. Exposure per Application: Respiratory

In order to determine the potential respiratory exposure, the % of ai in diluted product is first determined. The dilution which results in a solution containing the greatest concentration of permethrin is used because it would represent the highest potential exposure. On the Permethrin II label, a dilution of 1 qt product/10 gal H<sub>2</sub>O is recommended for one of the uses. Since Permethrin II contains 0.75 lb ai/gal product, the present ai in the diluted product is

$$\frac{0.2 \text{ lb ai}}{10 \text{ gal H}_2\text{O}} \times \frac{\text{gal}}{3.4 \text{ lb}} \times 100 = 0.25\%$$

Wolfe, et al (1959) measured the respiratory exposure to workers spraying 5% DDT solutions. They determined that the concentration near the breathing zone of a worker was 7.1 mg/m<sup>3</sup>. If a breathing rate of 1.2 m<sup>3</sup>/hr is assumed and that 1% of the spray contains respirable particles, then the exposure for a 0.25% permethrin spray becomes

$$\frac{7.1 \text{ mg}}{\text{m}^3} \times \frac{0.25\%}{5\%} \times \frac{1.2 \text{ m}^3}{\text{hr}} \times \frac{1}{\text{application}} \times 0.01 = 0.004 \text{ mg/application}$$

The most dilute spray solution would contain 1 qt product in 200 gal water or 0.01%. Using the same calculation except for the concentration factor, the potential exposure at the lower limit becomes

$$\frac{7.1 \text{ mg}}{\text{m}^3} \times \frac{0.01\%}{5\%} \times \frac{1.2 \text{ m}^3}{\text{hr}} \times \frac{1 \text{ hr}}{\text{application}} \times 0.01 = 0.0002 \text{ mg/application}$$

The range of respiratory exposure is

$$0.0002-0.004 \text{ mg/application}$$

C. Back-Rubbers, Self Oilers, and Overhead Space Spray System

It is assumed that exposure only results when these systems are recharged or loaded with permethrin. Exposure should result only during loading or mixing. A high exposure could occur if any of the concentrated material spilled on the skin. However, it will be assumed that under normal use, exposure will be negligible or fall within ranges already calculated. See Attachment B' for examples of back-rubbers, self-oilers and automatic spray equipment.

D. Hourly Exposure and Annual Exposure

It was assumed that a farmer will spend on the average about one hour spraying his livestock or premises. The exposure per application values represent hourly exposure values as well.

Since the label recommend treatment only once every two weeks as needed, it is assumed that, during a 5 month fly season, a maximum of 10 applications are made. The exposure per application is multiplied by 10 to give potential annual exposure.

IV. CONCLUSIONS and RECOMMENDATIONS

A summary of the exposures determined is presented in the Table.

In all these calculations, it was assumed that protective clothing was not worn. The use of any protective clothing would result in lower exposures. The use of gloves and long sleeved shirts should result in at least an 80% reduction in exposure to these areas.

EFB defers to Tox Branch the determination of the risk assessment based on the exposure values found in the Table.



Richard V. Moraski, Ph.D  
Chemist, Review Section No. 1  
Environmental Fate Branch, HED



Table. Summary of Applicator Exposure Values to Permethrin in EC Formulations

	<u>Exposure per Application *</u> <u>(mg/application)</u>	<u>Annual Exposure**</u> <u>(mg/yr)</u>
<u>Dermal</u>		
Diluted	2 - 102	20 - 1020
Undiluted	1135 - 2040	11350 - 20400
<u>Respiratory</u>	0.0002 - 0.004	0.002 - 0.04

\* This is also hourly exposure since 1 application takes 1 hr.  
 \*\* Assuming a maximum of 10 applications/yr.

REFERENCES

Federal Register, 1978. 43 (78), 17138

Regelman, E., EFB/HED/OPP/EPA, Jan. 19, 1983. Human Exposure Analysis, Ectiban D. Memo to FDR Gee, RD/OPP/EPA

Regelman, E., EFB/HED/OPP/EPA, Jan. 26, 1983. Human Exposure Analysis, Ectiban WP. Memo to FDR Gee, RD/OPP/EPA

Staiff, D.C., Comer, S.W., Armstrong, J.F., and Wolfe, H.R., 1975. Exposure to the Herbicide, Paraquat. Bull Environ Contam Toxicol, 14(3): 334-340.

Wolfe, H.R., Walker, K.C., Elliott, J.W. and Durham, W.F., 1959. Evaluation of the Health Hazard Involved in House Spraying with DDT. Bull Wld Hlth Org, 20: 1-14

ATTACHMENT A







**ANCHOR**  
**PERMECTRIN**  
**HOUSE & PET**  
**SPRAY**

10% EMULSIFIABLE INSECTICIDE  
 LONG LASTING  
 AND PREMISE SPRAY

**ACTIVE INGREDIENTS**

Permethrin  
 (3-cyanoxyphenyl) methyl (2)-cis,  
 trans-3-(2,2-dichloroethoxy)-2,  
 2-dimethylcyclopropanecarboxylate\* 10.00%  
 INERT INGREDIENTS ..... 90.00%  
 TOTAL 100.00%

\*Cis/trans ratio: Min. 35% (2) cis, and max. 65%  
 (2) trans isomers. Contains 0.75 lbs. permethrin  
 per gallon.

CAUTION: Keep out of the reach of children.

HARMFUL IF SWALLOWED

See other side for directions for use.

NET CONTENTS: 8 OZ.

Distributed by

**ANCHOR LABORATORIES, INC.**

A Division of PHILIPS ROXANE, Inc.  
 St. Joseph, Missouri 64502 U.S.A.

2982

**PRECAUTIONARY STATEMENTS  
 HAZARDS TO HUMANS**

**CAUTION:** May be harmful if swallowed, inhaled or absorbed through skin. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. In case of eye contact, immediately flush eyes for at least 15 minutes with water. Wash skin with soap and water. Get medical attention if irritation persists.

**ENVIRONMENTAL HAZARDS**

This product is toxic to fish. Keep out of lakes, ponds or streams. Do not contaminate water by cleaning of equipment or disposal of wastes.

**DIRECTIONS FOR USE**

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

**STORAGE AND DISPOSAL**

**PROMPTIONS:** Do not contaminate water, food or feed by storage or disposal. Open burning is prohibited. Do not reuse empty container.

**PESTICIDE DISPOSAL:** Pesticide spray mixture or rinse liquids that cannot be used should be disposed of in a landfill approved for pesticides or buried in a safe place away from water supplies.

**CONTAINER DISPOSAL:** Triple rinse and dispose of in an incinerator or approved landfill or bury in a safe place.

**GENERAL:** Consult Federal, State or local disposal authorities for approved alternative procedures.

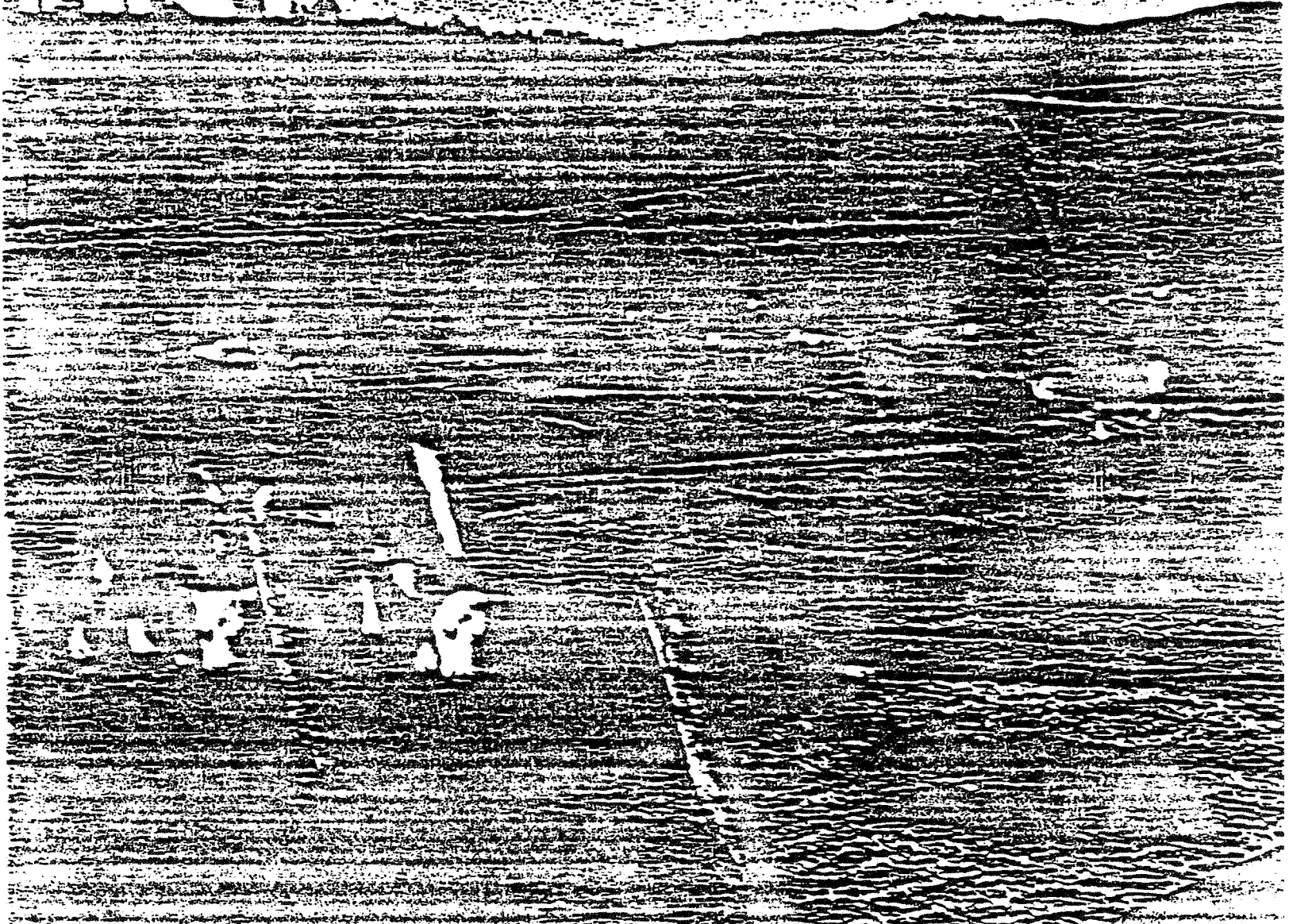




ATTACHMENT B'



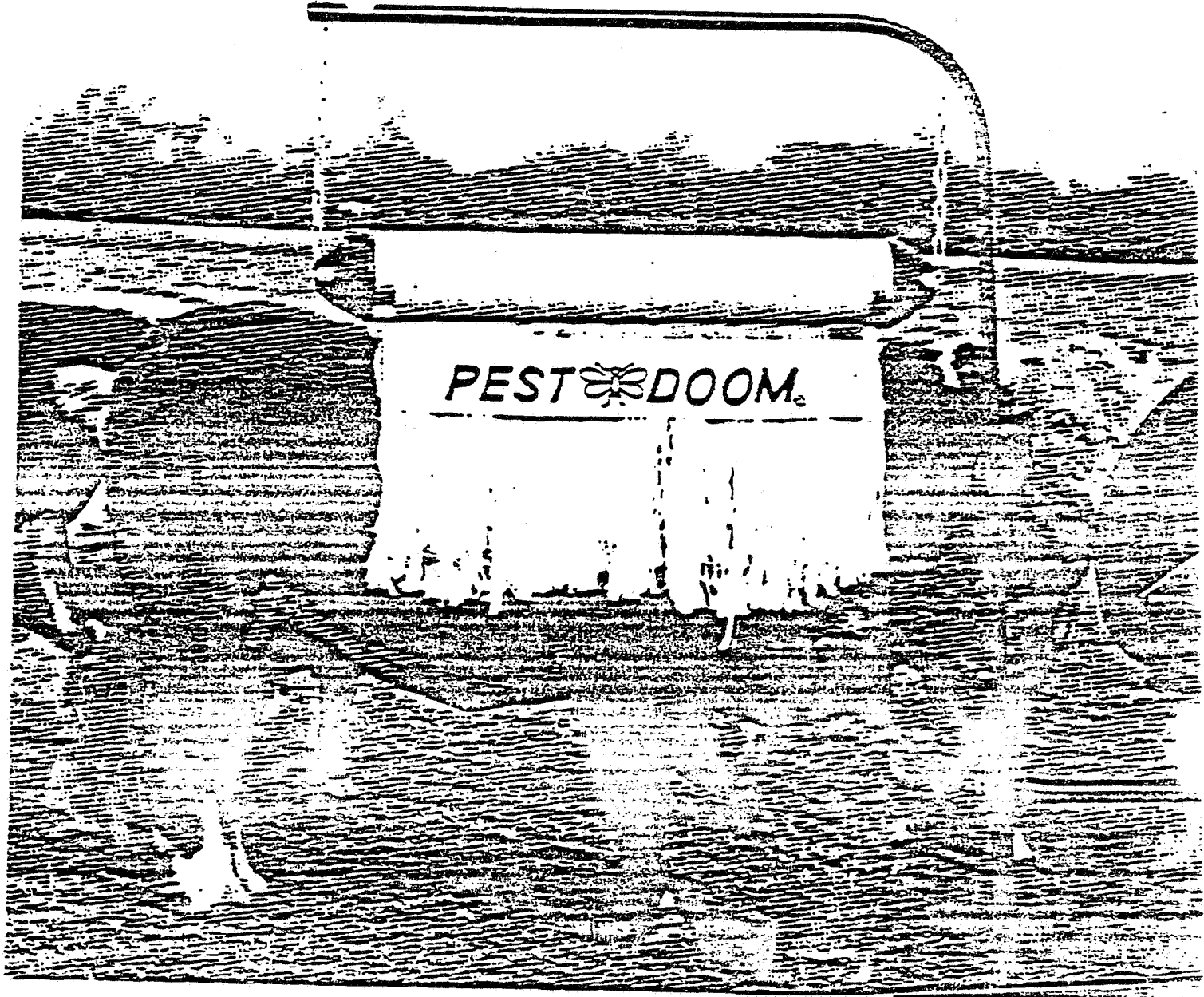
# Farm Equipment '79



World's largest and most complete  
line of farm and livestock equipment  
and supplies

17

# PEST-DOOM CATTLE OILER



## POLYETHYLENE TANK WILL NOT LEAK, RUST OR CORRODE

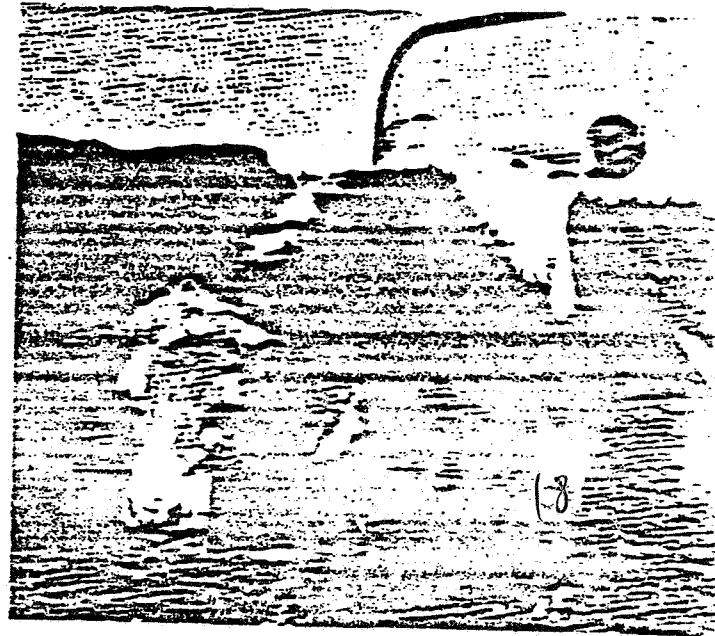
**EFFECTIVE, LOW-COST OILER** Here is the first low-cost oiler that is truly foolproof. Features a polyethylene tank that will not leak, rust or corrode. The tank is 45" long and 7" in diameter. Holds 4 gallons of oil. The Pest-Doom is made of ultra-high molecular-weight polyethylene plastic that is practically indestructible. Plus it contains an ultraviolet inhibitor to protect it against sun and the elements. It is guaranteed in even the coldest or hottest climates.

**MOP-TYPE INSECTICIDE APPLICATOR** The heavy mop-type applicator is made of high-quality synthetic yarn. Gives even distribution of oil at all times, yet will give several years of service without wearing out. Allows the animal to get insecticide on the face to protect against face flies.

**SHIPPED COMPLETELY ASSEMBLED** This economy oiler comes complete with tank, mop-type insecticide applicator and chains — ready to install in your feedlot or pasture. You can attach this unit at the entrance to a watering area, creep feeder, or mount it on its own stand next to feed or water — wherever cattle congregate. Install the unit where cattle will use it and it will provide fly protection that doesn't cost out pays.

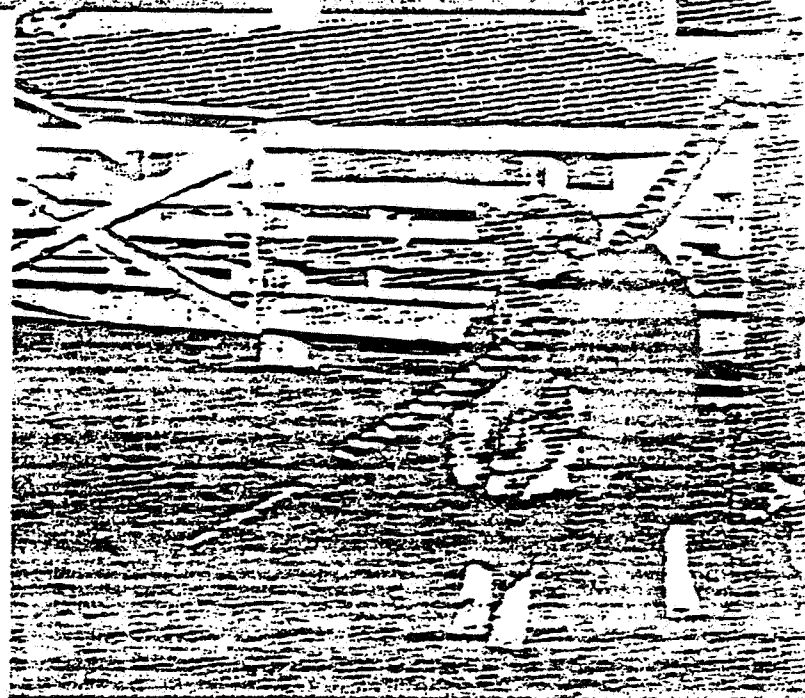
**YOUR "PEST-DOOM" CATTLE OILER WILL BE SHIPPED DIRECTLY TO YOU BY PRE-PAID PARCEL POST. YOU PAY NO SHIPPING CHARGES WHATSOEVER.**

MODEL	DESCRIPTION	WEIGHT	PRICE EA.	TWO OR MORE
221908	Pest-Doom Oiler	13 lbs.	\$46.50	\$42.00
221911	Canvas Mop	3 lbs.	\$14.90	\$13.50



# ROPE-WICK OILERS

## Fully Automatic LOW COST OILERS With Metered Oil Flow



**TIME-TESTED, PROVEN-PRACTICAL OILER** Automatic stock-pest control has now become a practical reality. Oilers are fast replacing sprayers in all parts of the country, and for all types of cattle. Farnam Rope-Wick Oilers have made this possible. Here, at last, is a low-cost, fully-automatic oiler that can be depended upon for trouble-free service . . . one that animals can't tear up and won't wear out . . . an oiler that oils cattle all over, does it thoroughly and really controls stock-pests. More than 100,000 of these oilers in operation throughout the 50 states and many foreign countries are proof of the time-tested, proven dependability of Rope-Wick Oilers.

**FULLY AUTOMATIC** Just fill it and forget it. Rope-Wick oilers are fully automatic. Constant refilling is not necessary. Features a plastic-lined 5-gallon oil supply tank. Prevents rust and resists the corrosive action of insecticides. 5-Gallon oil supply lasts for weeks. A measured amount of oil is released only when animal enters the oiler. Animals cannot stand in oiler and run the tank dry. There is no waste of oil. Rope is kept saturated by controlled oil flow, which is in direct proportion to the amount of use the oiler gets.

**PREFERRED V-TYPE OILER** Animals go over it . . . under it . . . or straddle it. Thus, all parts of animal's body are contacted by the insecticide. V-type oiler treats the top-side, under-side, in fact, wherever cattle itch. Oils them thoroughly all over! Thus, it does a better job of contacting and controlling stock pests. Plus the Rope-Wick adjusts to any size animal. Tension spring at bottom of rubbing element stretches to accommodate any size animal, any breed. Applies just the right rubbing pressure. Even young calves can use this oiler.

**QUICK AND EASY TO INSTALL** Rope-Wick oilers come to you completely assembled. Can be installed in a matter of minutes. They attach to any post, anywhere with lag screws provided. Or they can be attached to the side of a building or a tree. No special post needed, because Rope-Wick Oilers are "side-mounted," and do not require post-top installations.

**SPRING-PROTECTED DESIGN** Prevents damage and wear. A highly tempered, steel tension spring connects the rope rubbing element to its ground anchor. Applies just the right rubbing pressure, yet protects the oiler from possible damage and excessive wear. Connecting chain provides quick, easy means of adjusting tension on rubbing element.

**AVAILABLE WITH FACE-FLY ATTACHMENT** Special mop-type insecticide applicator provides the only practical way to apply face-fly treatment daily. Automatically keeps saturated with insecticide. Attaches and detaches quickly and easily. The Rope-Wick is also available with choice of rubbing elements. Either the Giant-Rope rubbing element or the Steel Guard rubbing element.

**YOUR OILER WILL BE SHIPPED VIA PREPAID UPS OR PARCEL POST. YOU PAY NO SHIPPING CHARGES.**

MODEL	DESCRIPTION	CAP	WEIGHT	PRICE EA.
390201	Giant Rope Rubbing Element	5 gal.	35 lbs.	\$ 35.50
390202	Steel Guard Rubbing Element	5 gal.	39 lbs.	\$120.50
390557	Face Fly Attachment	-	5	\$ 3.95



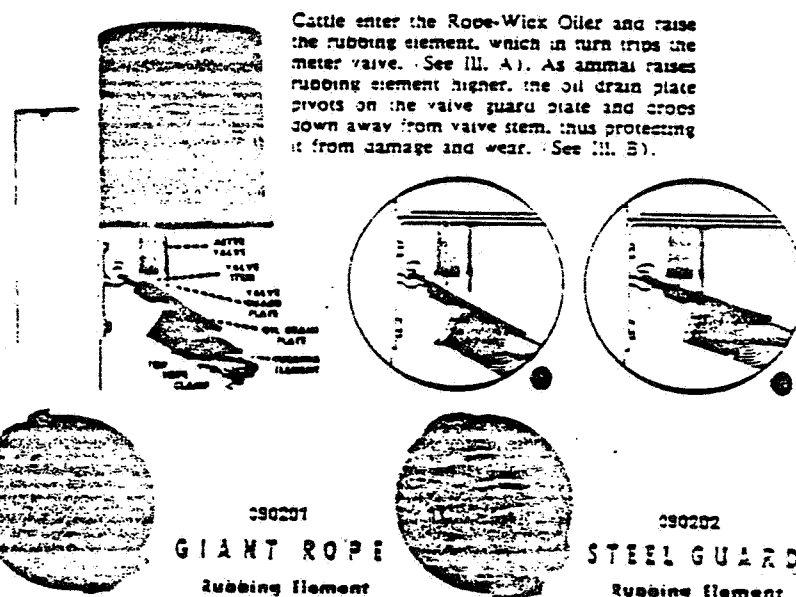
### STOPS FACE FLIES DEAD

The mop-type face-fly guard reaches the corners of the eye and around the nostrils where face flies gather. Coats these areas with a film of insecticide that kills face flies on contact, in turn stopping the spread of Pink-Eye.

### HANDLES 50 TO 100 HEAD OF CATTLE

**PROTECTED VALVE MECHANISM** Assures trouble-free service. The distinguishing feature of Farnam Rope-Wick Oilers is the metered oil flow and protected valve mechanism shown here. Cattle entering the Rope-Wick Oiler lift the rubbing element so that the oil drain plate contacts valve stem. Thus, a measured amount of oil is released by meter valve from the 5-Gallon oil supply tank. Rope rubbing element is kept saturated at all times. Oil follows ribs down full length of rope, being absorbed into the rope as it goes. There is no drip off at end, no waste of oil. Rope soaks up all the oil, releases it onto animals as they rub.

### HOW THE MECHANISM WORKS



Cattle enter the Rope-Wick Oiler and raise the rubbing element, which in turn trips the meter valve. (See III, A). As animal raises rubbing element higher, the oil drain plate pivots on the valve guard plate and drops down away from valve stem, thus protecting it from damage and wear. (See III, B).

**390201 GIANT ROPE Rubbing Element**  
Specially treated marine rope, 3 inches in diameter, acts as rubbing element. Holds a full quart of oil. Provides a perfect rubbing and scratching surface. Readily transfers oil to animals as they rub. Wears like iron. Inexpensive to replace.

**390202 STEEL GUARD Rubbing Element**  
Utilizes giant 3-inch rope as a wick. Rope is enclosed in a heavy duty, tempered steel enclosure spring. Adds "scratching ability." Protects rope from damaging wear. Makes it nearly a lifetime rubbing element.

# "Walk-Way" Automatic Cattle Oilers

## LIKE AN AUTOMATIC SPRAYER AT ONLY A FRACTION OF THE COST

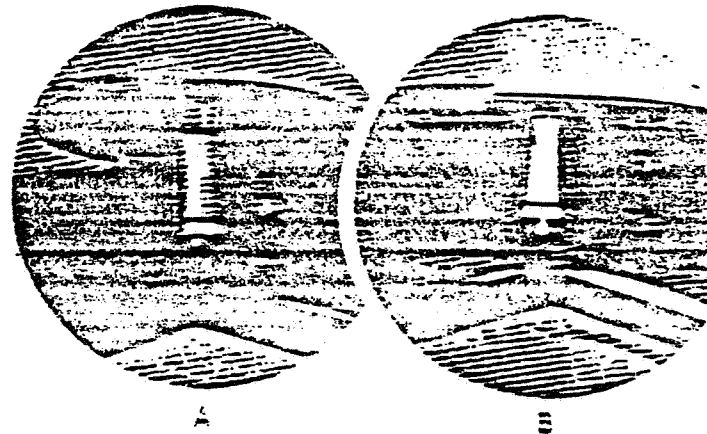
For an amazingly low price you can have an automated system of stock-pest control. With the Walk-Way, each animal is automatically treated with insecticide daily. One oiler protects your whole herd — regardless of size. And the Walk-Way doesn't waste insecticides. Every bit goes on the animal — not onto the ground or into the air. What's more, it's maintenance free — No nozzles to clog, no tricky pumps, no complicated parts of any kind. With the Walk-Way, you just fill it and forget it.

**PROTECTS YOUR COWS FROM FACE TO TAIL** just mount the Walk-Way at the milking barn exit. Cows quickly become accustomed to it. They wipe their faces on the mop-type applicator — they walk right through the oiler. Each cow coats its face, head, back, neck, sides and tail with a film of protective insecticide. Flies and other stock pests are killed on contact. Every day your cows build up additional protection from costly face flies, horn flies, and other stock pests — including tail and winter lice.

**YOUR WALK-WAY OILER WILL BE SHIPPED FREIGHT PREPAID TO YOUR NEAREST TRUCK STOP OR TERMINAL**

MODEL	DESCRIPTION	APPLICATOR	WEIGHT	PRICE EA.
250101	Walk-Way Oiler	Cotton	28 lbs.	\$115.95
250102	Walk-Way Oiler	DeLuxe Rayon	30 lbs.	\$128.95
252522	Canvas Appl. Replacement	Cotton	3 lbs.	\$ 41.00
252535	Canvas Appl. Replacement	DeLuxe Rayon	4 lbs.	\$ 45.00

- **GUARANTEES DAILY TREATMENT** — The Walk-Way automatically gives your cows a daily application of pest-killing insecticide. No more costly spraying — no more hit-or-miss back-rubbers.
- **ECONOMICAL** — Does the same job as an automatic sprayer at a fraction the cost, and it doesn't waste insecticide. Doesn't require costly maintenance. Pays for itself in no time. And can be used all year long — winter and summer.
- **COMPLETE STOCK-PEST CONTROL** — Assures effective control of costly stock-pests — including vicious horn flies and face flies. Completely effective because it treats cattle from face to tail every day.
- **INCREASES MILK PRODUCTION** — Face flies and horn flies alone can reduce milk production 20%. The Walk-Way eliminates these stock-pests. Allows your cattle to produce at full potential.
- **MAINTENANCE FREE** — Fully automatic. No adjustments to make. Just fill it and forget it. The Walk-Way will give years of trouble-free service.
- **SIMPLE-RUGGED CONSTRUCTION** — Indestructible. No complicated pumps or internal parts. Every component built to last.
- **EASY TO INSTALL** — Mounts anywhere. Just bolt the oiler to a brace. Fits any gate or doorway, indoors or outdoors. Can be mounted in fifteen minutes.
- **SERVICES ANY SIZE HERD** — Treats cows individually as quickly as they move through the oiler.



## HOW THE WALK-WAY WORKS

20

Each cow entering the Walk-Way Oiler through the canvas applicator, as the applicator moves, the oil distribution cup depresses the valve stem of the meter valve. See Photo A. As the valve stem is depressed, the valve automatically releases one ounce of insecticide into the rear inner segment of the canvas applicator. Since the rear is always saturated, the additional ounce of oil is forced into the fingers of the face fly guard. The insecticide is then transferred onto the face, back, head, sides and tail of the animal. As the cow leaves the oiler the canvas applicator swings back, relieving the pressure on the valve stem and closing the valve until another animal enters the oiler. See Photo B.