CASWELL FILE tn 159

DATE: September 25, 1981

SUBJECT: Captan 50W
EPA Registration No. 11678-40

FROM: Sherell A. Sterling
FHB/TSS

10-1-81 E 10/1/81

TO: Henry Jacoby
Product Manger (21)

Applicant: Makhteshim Chemical Works, Ltd.
c/o Solchem, Inc.
2 Park Avenue
New York, NY 10016

Active Ingredient:
Captan 50%
Inert Ingredients 50%

Background: Acute Oral, Acute Dermal, Acute Inhalation, and Eye and Skin Irritation studies were submitted for the files. All studies, with the exception of the Eye Irritation study, were conducted by the Warf Institute, Inc., of Madison, Wisconsin. The Eye Irritation study was conducted by Cosmopolitan Safety Evaluation, Inc., of Somerville, NJ.

Recommendations:

1. The Acute Oral, Acute Inhalation, and Eye and Skin Irritation studies are acceptable; however, please note the following comments for future studies:

   Acute Oral - Observations during study must be reported. Necropsies must be performed on all animals.

   Acute Inhalation - Actual concentration must be determined within the chamber during the study. See §163.81-3 of the enclosed Proposed Guidelines for additional information on this test.

   Skin Irritation - Solid substances must be moistened with physiological saline. Four sites, 2 abraded and 2 intact, must be tested on each animal.

2. The Acute Dermal study is Core Supplementary and, as such, is not acceptable as sole support in registering this product. Please note the following comments concerning Acute Dermal protocols:

   a. Equal numbers of males and females must be tested.

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b. If only tested at 2 g/kg, all sites must be abraded.

c. All animals must be subjected to necropsies.

d. Solid substances must be moistened with physiological saline.

e. See §163.81-2 of the enclosed "Proposed Guidelines" for an outline of an acceptable protocol.

3. All of these studies were conducted using "Merpan 50 WP" and "Merpan 50 WP 30.4.80" as the test substances. The composition for these test substances must be submitted in order that FHB/TSS may compare the test substance's compositions with Captan 50W.

4. Based on the data submitted, the appropriate signal word for this product is "CAUTION," provided that Merpan 50WP and Captan 50W are substantially similar.

Note to the Product Manager: Very recently FHB/TSS has found that products containing 10% or more of Captan required the signal word "DANGER" based on the Eye Irritation study. More and more registrants are changing their signal words from "CAUTION" to "DANGER." For this reason, FHB/TSS suggests that, given these recent data, the appropriate signal word is "DANGER."

Labeling Recommendations:

1. Refer to the enclosed format labeling for the correct placement of required headings -- "Precautionary Statements," "Hazards to Humans and Domestic Animals," "Environmental Hazards." In addition, the "Storage and Disposal" statements must be grouped together; refer to the enclosed Storage and Disposal statements guidance sheets for the appropriate required wording.

2. Based on recently submitted data, FHB/TSS suggests the "Hazards to Humans and Domestic Animals" statements be changed from "Avoid inhaling ... feed, foodstuffs, or water" to the following:

> DANGER. Causes eye damage. Harmful if swallowed. Do not get in eyes, or on clothing. Avoid breathing dust. Wear goggles or face shield when handling. Wash thoroughly with soap and water after handling.

If the signal word is "DANGER" based on the eye irritation, this product may be subject to child-resistant packaging requirements.

3. Under the "Environmental Hazards" section ("This product is toxic to fish ... disposal of wastes"), change the statement "Keep out of lakes, streams, or ponds" to the following:

> Do not apply directly to any body of water.

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Review:

1. Acute Oral Toxicity; Warf # 6051095; July 22, 1976; Acc. No. 245707

   Procedure: 10M, 10F Sprague-Dawley rats (150-250 g) each received a dose of Merpan 50W by oral intubation. The dosage levels tested were 2.0, 5.0, 7.5, and 10.0 g/kg, with the test substance mixed to a 25% concentration in distilled water. Animals were observed for 14 days. No necropsies were reported.

   Results: Mortalities were reported as follows: at 2.0 g/kg, no deaths; at 5.0 g/kg, 4/10 M and 5/10F; at 7.5 g/kg, 9/10M and 2/10F; at 10.0 g/kg, 10/10M and 9/10F. The LD50 for M was 5.4 g/kg; the LD50 for F was 5.5 g/kg. No other observations were reported.

   Study Classification: Core Minimum Data. Necropsies must be performed on all animals. Observations during study must be reported.

   Toxicity Category: IV - CAUTION

2. Acute Dermal Toxicity: Warf # 6051095; July 22, 1976; Acc. No. 245707

   Procedure: Four adult male rabbits were dermally exposed to Merpan 50WP. Exposure was for 24 hours under occlusive wrap. Animals were observed for 14 days. No necropsies were reported.

   Results: None of the animals died during this study. No observations were reported.

   Study Classification: Core Supplementary Data. Males and females must be tested. Sites must be abraded. Observations were not reported. Necropsies must be performed on all animals. Solid substances must be made slightly moist with physiological saline.

3. Acute Inhalation Test; Warf #6051095; July 22, 1976; Acc. No. 245707

   Procedure: 5M, 5F rats were exposed to Merpan 50 WP dust in a semi-portable inhalation exposure chamber for one hour. The test substance was delivered with a Wright's dust feeder. The chamber was equipped with an adjutable air flow operated at a rate of 1013.9 L/hr. The nominal concentration was determined by subtracting the amount that did not reach the exposure chamber from the total amount sprayed. Animals were observed for 14 days. All animals were subjected to necropsies; effects on lungs and trachea.

   Results: The nominal concentration was calculated to be 18.73 mg/L for a one-hour exposure. No mortalities were reported. No physical effects were noted during exposure. At necropsy, 1/5F was found to have consolidated abscesses in left lobe of lung.

Study Classification: Core Minimum Data. Actual (i.e., gravimetric for WP) concentration must be determined. Actual concentration must be 5 g/L for 4 hours or 20 mg/L for 1 hour if only one dosage level is tested.

Toxicity Category: III - CAUTION

4. Primary Eye Irritation Study in Rabbits; CSE #1429-3; July 24, 1980; Acc. No. 245707

Procedure: Nine New Zealand white rabbits each received 100 mg of "Merpan 50 WP 30.4.80" in one eye. Three eyes were rinsed with water for one minute, starting no sooner than 20 seconds after instillation of the test substance. Scoring was at 24, 48, 72 hours; 4, 7, 10 days.

Results: One animal (washed group) died at 72 hours death was attributed to enteritis. Scores for this animal had all been at 48 hours. The unwashed eyes at 24 hours exhibited corneal opacity in 1/6=10; redness in 6/6 = 3; chemosis in 4/6=2, 2/6=3; discharge in 2/6=2, 2/6=2, 2/6=3. At day 7, redness exhibited in 1/6=1 in the unwashed group; discharge in 1/6=1. All irritation was gone from the unwashed eyes by day 10. The washed eyes group exhibited corneal opacity in 1/3=5; redness in 2/3=1, 1/3=1; chemosis in 1/3=1; discharge in 1/3=1 at 24 hours. All irritation had subsided in the washed group by day 4.

Study Classification: Core Guideline Data.

Toxicity Category: III - CAUTION

5. Primary Skin Irritation; Warf # 6051095; July 22, 1976; Acc. No. 245707

Procedure: Six albino rabbits each received 0.5 g of Merpan 50 WP at 2 dermal sites, 1 abraded and 1 intact. Exposure was for 24 hours under occlusive wrap. Exposure sites were scored at 24 and 72 hours.

Results: All scores were zero.

Study Classification: Core Minimum Data. Solid substances must be made moist with physiological saline. Only 2 sites were tested.

Toxicity Category: IV - CAUTION

CAPTAN 50-W

A FUNGICIDE FOR PLANT DISEASE CONTROL

ACTIVE INGREDIENT:	
Captan (N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide)	50%
INERT INGREDIENTS:	50%
Total	100%

CAUTION **KEEP OUT OF REACH OF CHILDREN**

PROTECT FROM EXCESSIVE HEAT

STORE IN A COOL, DRY PLACE

EPA Reg. No. 3770-140
EPA Est. 3770-NB-1

4132B-MBEPCO

NET CONTENTS POUNDS

Manufactured by:

ECONOMY PRODUCTS COMPANY, INC.
Shenandoah, Iowa 51601

ACCEPTED
JAN 4 1977
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 3770-140

11678-40

oid inhaling dust. Wear respirator. Avoid contact with in. Wash with soap and water after handling. Do not ntaminate feed, foodstuffs, or water.

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

Do not reuse empty container. Destroy it by perforating or crushing. Bury or discard in a safe place, away from water supplies.

COMPATIBILITY

n 50-W can be used at recommended dosages in dance with spray schedules or recommendations by or Experiment Station personnel. Do not combine oil and strongly alkaline materials such as Hydrated which reduces the fungicidal activity. Do not use roduct in combination with, immediately before or ly following an oil spray, or with solvent formulations athion products.

GRAPE—*downy mildew, black rot:* Use 2 lbs/100 gallons just before bloom, just after bloom and 7 to 10-days after bloom. Make an additional application 2 to 3-weeks later for downy mildew. *Dead arm:* (current season infections) Use 4 lbs/100 gallons diluted spray. Apply 50 gallons per acre when shoots are 1 to 2 inches long. Repeat application when shoots are 4 to 6 inches long.

PEACH—(preharvest) *brown rot, rhizopus, scab*: 2 lbs/100 gallons. Apply in pink, full bloom, shuck shed, cover and

TOMATO—*anthracnose, early and late blight, gray leaf spot, septoria leaf spot*: Use 4 to 6 lbs per acre in sufficient water for thorough coverage. Under infection conditions use 6 to 8 lbs per acre in sufficient water for thorough coverage. Apply at first signs of infection and repeat at 5 to 7-day intervals or as needed to maintain control.

OTHER USES

r as a spray for the control of certain fungus diseases uit, vegetables and ornamental crops, and as a soil ment for the control of certain seed rots and damping- liseases. Spray injury may result if captan is used immediately before or closely following an oil spray.

DIRECTIONS FOR USE

recommended amount of this material on surface of r in nearly-filled spray tank or pre-mix in a bucket half l with water and pour mixture through screen into y filled spray tank. Add balance of water to fill tank.) agitator running during filling and spraying opera- . Do not allow mixture to stand.

sult state Agricultural Extension Service authorities pecific information as the timing, number and rate of cations needed will vary with local conditions.

RECOMMENDATIONS

dosage rates on this label indicate pounds of Captan per 100 gallons of dilute spray unless otherwise d.

LES—*scab:* For primary infection use 1.5 to 2 lbs/100 ns. Apply in prebloom, blossom, petal fall and first r periods. For secondary infection use 0.5 lb./100 ns. Apply in cover periods. *Bitter rot, black rot, frog- eaf spot, black pox, botryosphaeria* (white rot): 2 lbs/100 ns. Apply in late cover and preharvest periods. *Botrytis bullseye rot*: 2 lbs/100 gallons. Apply in first and nd cover sprays and in 1 or 2 preharvest sprays or as led at 5 to 7-day intervals from prebloom through early r periods. *Brooks fruit spot, flyspeck*: 0.5 to 2 lbs/100 ns. Apply in cover periods. *Sooty blotch*: 2 lbs/100 ns. Apply in cover periods. Captan 50-W should not sed in combination with or closely following or in nation with wettable sulfur products on sulfur-sensitive ties of apples such as Red Delicious, Stayman, Bald- King, etc., as severe foliage injury and defoliation may r.

: Red Delicious and other sensitive varieties may be ed by early season applications.

RRY—*brown rot, leaf spot:* 2 lbs/100 gallons. Apply in ull pink, bloom, petal fall, shuck, cover and preharvest ys. Applications at 3 to 4-day intervals may be neces- during bloom to control blossom blight. Repeat appli- ns at 7 to 10-day intervals as needed to maintain r up to start of harvest. Post harvest sprays—Use s/100 gallons immediately after harvest for leaf spot. eat applications in 10 to 14 days.

Corynaum blight: 2 lbs/100 gallons. Apply in pink bud, full bloom, petal fall and cover periods as necessary and as a fall foliage spray.

PEAR—(preharvest)—*fruit spot, scab* (primary infections): 2 lbs/100 gallons. Apply in pink, petal fall and first two cover periods. *Scab* (secondary infection): 2 lbs/100 gallons. Apply in cover periods. Notes: Do not use on D'Anjou pears. Russetting may be produced on Bosc pears.

PLUMS, PRUNES—*brown rot*: 2 lbs/100 gallons. Apply at red bud, 75 percent bloom, petal fall and in cover sprays as necessary. *Russet or lacy scab*: 2 lbs/100 gallons using 400 gallons/acre. Apply at full bloom.

RASPBERRIES—*anthracnose, botrytis, spur blight*: 2 lbs/ 100 gallons. Apply at bloom or when new shoots are 8 to 10 inches long. Repeat 2 weeks later. Apply fall spray after canes are removed. *Fruit rot*: 2 lbs/100 gallons. Apply 3 to 5 days before harvest starts. Repeat at midharvest and 8 to 10 days later.

STRAWBERRIES—*botrytis rot (gray mold) leaf spots*: 3 lbs/ 100 gallons, using 200 gallons per acre. Begin at new growth. Repeat at 7-day intervals through picking and after harvest.

VEGETABLE CROP USES

ASPARAGUS—*botrytis, root rots, phoma rot, penicillium rot, fusarium*: 3 lbs/100 gallons. Preplanting root dip for 1 minute, drain, plant. For smaller amounts mix 4 table- spoonsful per gallon.

CANTALOUPE, CUCUMBER, PUMPKIN, SUMMER and **WINTER SQUASH, WATERMELON**—*angular leaf spot, anthracnose, downy mildew*: Use 4 lbs per acre in sufficient water for thorough coverage. Begin applications at first signs of infection and repeat at 5 to 7-day intervals or as needed to maintain control.

POTATOES (preharvest)—*early and late blights*: 4 lbs/100 gallons. Begin when plants are 2 to 4 inches high. Repeat at 5 to 7-day intervals throughout season.

POTATO SEED-PIECE TREATMENT—*seed rot, damping- off*: Use 2 to 3 lbs per 100 gallons water. Dip seed pieces in the solution before planting. Cut pieces should be treated within 6 hours of cutting. If planting is to be delayed more than 1 to 2 days, treated pieces should be stored for 2 days in open crates to allow air drying before bagging.

POTATO STORAGE ROT CONTROL: Dip washed and rinsed potatoes prior to storage in a slurry of 2 lbs per 100 gallons of water. Dry and store.

storage rots, molds due to Rhizopus, Botrytis, Cloeospo- ium: 2 lbs/100 gallons. Spray or dip boxes prior to packing If applied as a dip, keep solution agitated continuously Change dip tank solution after each 8-hour shift.

SOIL AND GREENHOUSE BENCH PREPLANTING TREAT MENT (ornamentals and vegetables)—*damping-off, root rots (on seedlings and transplants)*: 0.2 to 0.4 lb as a dust 1000 square feet (10 to 12 lbs/acre). Work into upper 3 to 4 inches of soil before planting.

AZALEAS, CARNATIONS, CHRYSANTHEMUM—*damping off of cuttings*: 4 lbs/100 gallons. Dip cuttings before bedding

CARNATION—*alternaria leaf spot, rust*: **CHRYSANTHE MUM**—*Botrytis flower blight, septoria lead spot*: **ROSES**— *black spot, botrytis blossom blight*: 2 lbs/100 gallons Begin at first growth or first sign of disease. Repeat at 7 t 10-day intervals, and more frequently during frequent rain and heavy dews.

GRASSES (ornamental in nonpastured areas only)—*lea spot, damping-off, brown patch, copper spot, melt out seedling blights and brown spot on St. Augustine grass* 2 lbs/100 gallons applying 10 gallons per 1000 square feet (For smaller amounts, mix 8 teaspoonfuls per gallon of water and apply 1 gallon per 100 sq. feet of turf). Begin when growth starts in spring. Repeat at 7 to 14-day inter vals throughout season. Limit: Do not graze treated areas Do not feed clippings to livestock.

SEED TREATMENT

BEANS, CABBAGE, CORN, MELONS, PEAS, SQUASH *(seed rot, damping-off)*: ½ to 1 teaspoonful per pound of dry seed.

BEETS, CHARD, SPINACH, GRASS *(seed rot, damping-off)* 1½ to 2 teaspoonsful per pound of dry seed. Mix thoroughly in paper bag or glass jar.

WARRANTY:

Our recommendations for use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage, resulting from its mis-use as such, or in combination with other materials.