

66330-47

10/21/2002

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U. S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Registration Division (7505C)  
1277 Pennsylvania, N.E.  
Washington, D.C. 20460

EPA Reg. Number:

66330-47

Date of Issuance:

OCT 21 2002

Term of Issuance:

Conditional

Name of Pesticide Product:

TM-442

NOTICE OF PESTICIDE:

Registration  
 Reregistration  
under FIFRA, as amended:

Name and Address of Registrant (include ZIP Code):

Arvesta Corporation  
100 First Street, Suite 1700  
San Francisco, CA 94105

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA Section 3(c)(7)(A) provided that you:

1. Submit and/or cite all data required for registration of your product under FIFRA Section 3(c)(5) when the Agency requires all registrants of similar products to submit such data; and submit acceptable responses required for reregistration of your product under FIFRA Section 4.
2. Make the following label changes before you release the product for shipment:
  - a. Revise the EPA Registration Number to read, "EPA Reg. No.66330-47."
  - b. Insert "Irrigation System" after "Application of TM-442 Through Drip Line" on page 8.
  - c. Move the "Storage and Disposal" section of the label to below the Ag Use Requirement box or to the end of the Directions for Use section of the label.
  - d. On the last page under "Warning Agent" the word "cleaning" should read "clearing" and must be revised.
3. Submit one copy of the revised final printed label before releasing the product for shipment.

Signature of Approving Official:

*Mary J. Waller*  
Mary Waller  
Product Manager (21)  
Fungicide Branch  
Registration Division

Date:

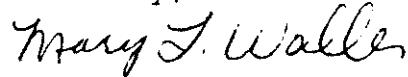
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4. If the conditions enumerated above are not complied with, the registration will be subject to cancellation in accordance with FIFRA Section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.
5. A stamped copy of the label is enclosed for your records.

Sincerely,



Mary L. Waller  
Product Manager (21)  
Fungicide Branch  
Registration Division (7505C)

Enclosure: stamped label

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**RESTRICTED USE PESTICIDE**

Due to Acute Toxicity. For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified Applicator's certification.

**ARVESTA  
TM-442  
FUMIGANT**

ACTIVE INGREDIENT:	
CHLOROPICRIN	99%
INERT INGREDIENTS:	<u>1%</u>
TOTAL	100%

This product weighs 13.7 pounds per gallon.

ACCEPTED  
with COMMENTS  
In EPA Letter Dated

**OCT 21 2002**

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

66330-47

**ARVESTA CORPORATION**  
100 First Street, Suite 1700, San Francisco, CA 94105

EPA Est. -  
EPA Reg. No. 66330-

NET CONTENTS.....LBS.

KEEP OUT OF REACH OF CHILDREN

DANGER



PELIGRO

POISON

PELIGRO: Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

IN ALL CASES OF OVEREXPOSURE GET MEDICAL ATTENTION IMMEDIATELY.  
TAKE PERSON TO A DOCTOR OR AN EMERGENCY TREATMENT FACILITY.

## FIRST AID

IF INHALED	<ul style="list-style-type: none"> <li>▪ Move person to fresh air.</li> <li>▪ If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth (if possible).</li> <li>▪ Call a poison control center or doctor for further treatment advice.</li> </ul>
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> <li>▪ Take off contaminated clothing, shoes, and other items covering the skin.</li> <li>▪ Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>▪ Call a poison control center or doctor for further treatment advice.</li> </ul>
IF IN EYES	<ul style="list-style-type: none"> <li>▪ Hold eyelids open and rinse slowly and gently with water for 15 – 20 minutes.</li> <li>▪ Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes.</li> <li>▪ Call a poison control center or doctor for further treatment advice.</li> </ul>
IF SWALLOWED	<ul style="list-style-type: none"> <li>▪ Call a poison control center or doctor immediately for treatment advice.</li> <li>▪ Have the person sip a glass of water if able to swallow.</li> <li>▪ Do not induce vomiting unless told to do so by a doctor or poison control center.</li> <li>▪ Do not give anything by mouth to an unconscious person.</li> </ul>

## HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-228-5635 Extension 174 for emergency medical treatment information.

## NOTE TO PHYSICIAN

Chloropicrin is a volatile liquid that is the active ingredient in tear gas. As a gas it is a powerful lachrymator. Early symptoms of overexposure are lachrymation, respiratory distress, and vomiting. Pulmonary edema may develop later. Treatment is symptomatic.

See side panel for additional precautionary statements.

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
AND DOMESTIC ANIMALS:  
DANGER**

THIS FUMIGANT IS A HIGHLY HAZARDOUS MATERIAL AND MUST BE HANDLED WITH CARE ONLY BY THOSE INDIVIDUALS EXPERIENCED WITH ITS PROPER USE. CONSULT YOUR DEALER REPRESENTATIVE OR THE DISTRIBUTOR FOR CORRECT PROCEDURE BEFORE USING. READ AND FOLLOW ALL LABEL DIRECTIONS AND PRODUCT LITERATURE SPECIFIC TO YOUR REQUIREMENTS.

POISONOUS LIQUID AND VAPOR. INHALATION MAY BE FATAL. CHLOROPICRIN IS READILY IDENTIFIABLE BY SMELL. EXPOSURE TO VERY LOW CONCENTRATIONS OF VAPOR WILL CAUSE IRRITATION OF EYES, NOSE AND THROAT. CONTINUED EXPOSURES AFTER IRRITATION IS EVIDENT, OR HIGHER CONCENTRATIONS, MAY CAUSE PAINFUL IRRITATION TO EYES OR TEMPORARY BLINDNESS. LIQUID WILL CAUSE CHEMICAL BURNS TO SKIN OR EYES. DO NOT GET ON SKIN, IN EYES, OR ON CLOTHING. HARMFUL OR FATAL IF SWALLOWED. CHLOROPICRIN FUMIGANT HAS THE CAPACITY TO CAUSE MARKED IRRITATION TO THE UPPER RESPIRATORY TRACT, AND IS A STRONG LACHRYMATOR (TEAR PRODUCING EYE IRRITANT). LOW CONCENTRATIONS, BELOW THOSE NECESSARY TO CAUSE SERIOUS SYSTEMIC INTOXICATION, ARE CAPABLE OF CAUSING SEVERELY PAINFUL EYE IRRITATION, HENCE WILL NOT BE VOLUNTARILY TOLERATED. HOWEVER, THE EFFECT MAY BE SO POWERFUL THAT A PERSON MAY BECOME TEMPORARILY BLINDED AND PANIC-STRICKEN AND THAT IN TURN MAY LEAD TO ACCIDENTS.

**AIR CONCENTRATION LEVEL**

The acceptable air concentration level for persons exposed to chloropicrin is 0.1 ppm (0.7 mg/m<sup>3</sup>). If the air concentration level exceeds 0.1 ppm, an air-purifying respirator must be worn. If the air concentration level exceeds 4 ppm, an air-supplying respirator must be worn. The air concentration level is measured by a direct reading detection device, such as a Matheson-Kitagawa.

**PERSONAL PROTECTIVE EQUIPMENT**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category H on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Loose-fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- Full-face shield or safety glasses with brow and temple shields (Do NOT wear goggles.)
- When the acceptable air concentration level is above 0.1 ppm and a respirator is required, protect the eyes by wearing a full-face respirator.
- No respirator is required, if the air concentration level of chloropicrin in the working area is measured to be less than 0.1 ppm.
- A respirator is required, if the air concentration level of chloropicrin in the working area is measured to be greater than 0.1 ppm.
- A respirator is required under the following circumstances:
  - If the air concentration level exceeds 0.1 ppm at any time, applicators and other handlers must wear (a) a respirator with an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), OR (b) a respirator with a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any N, R, P, or HE prefilter.

If the air concentration level exceeds 4 ppm at any time, applicators and other handlers must wear (a) a supplied-air respirator (MSHA/NIOSH approval number prefix TC-19C) OR (b) a self-contained breathing apparatus (SCBA) (MSHA/NIOSH approval number prefix TC-13F).

### WORKER SAFETY REQUIREMENTS

- Do not wear jewelry, gloves, goggles, tight clothing, rubber protective clothing, or rubber boots when handling. Chloropicrin is heavier than air and can be trapped inside clothing and cause skin injury.
- Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product. Do not reuse them.
- Clean Personal Protective Equipment (PPE) after each day's use. Immediately after contamination remove outer clothing, shoes and socks and do not reuse until thoroughly aerated or ventilated. Keep such clothing and shoes outdoors until thoroughly aerated. Then follow the PPE manufacturer's instructions for cleaning/maintaining PPE. If there are no such instructions for washables, use detergent and hot water. Keep and wash PPE and work clothing separately from other laundry.
- Follow PPE manufacturer's instructions for cleaning/maintaining protective eyewear, face shields and respirators.

### USER SAFETY RECOMMENDATIONS

Users should:

- 1) Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- 2) Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 3) Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.
- 4) Supply your physician with information on Chloropicrin, which is available from your Dealer Representative or the Distributor.

### ENVIRONMENTAL HAZARD

This fumigant is toxic to fish and aquatic organisms. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

### CHEMICAL HAZARD

Do not use containers or application equipment made of magnesium, aluminum, or their alloys, as under certain conditions this fumigant may be severely corrosive to such metals. Do not permit water to be used to clean the fumigant delivery system, as corrosion will result. Diesel oil is satisfactory for this purpose.

### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

**STORAGE:** Store in a dry, well-ventilated area under lock and key. Post as a pesticide storage area. Persons moving, handling or opening containers must wear the personal protective equipment (including prescribed respirator) specified in the Hazards to Humans section of this labeling. Open container only in a well-ventilated area.

**RETURN CYLINDERS TO:** Return cylinders to the place of purchase as designated on the Bill of Sale. Cylinders are the property of Arvesta Corporation and should be returned promptly by collect auto freight. (1) When a cylinder is empty, the valve should be closed, the safety cap screwed on the valve outlet, and the protection bonnet replaced prior to its return to the shipper. (2) Do not ship cylinders without safety caps or valve protection bonnets. (3) When a cylinder is partially full and there is no further requirement for the product, contact the distributor or dealer representative for return instructions (4) Containers should never be refilled by the consumer or used for any other product or purpose.

**SHIPPING:** This fumigant is classified in the U.S. Department of Transportation Hazardous Materials Regulations as Chloropicrin, 6.1, UN 1580, PG1, Poison-Inhalation Hazard, Hazard Zone B and no exemptions from specifications, packing, marking or labeling are allowed. Describe empty cylinders as having last contained Chloropicrin (Inhalation Hazard). Do not ship with foods, feeds, or clothing.

**HANDLING:** (1) The valve protection bonnet and safety cap should be removed only when fumigant is about to be removed from the cylinder. The safety cap and valve protection bonnet must be replaced when the cylinder is not in use. (2) Cylinders should never be subjected to rough handling or to abnormal mechanical shock such as dropping, bumping, dragging, or sliding. (3) Ropes, slings, hooks, tongs and similar handling devices should not be used for unloading cylinders. (4) A suitable hand truck, fork truck, or similar device to which the cylinders can be firmly secured should be used for transporting the heavier cylinders.

**SPILL AND LEAK PROCEDURES:** Evacuate everyone from the immediate areas of the spill or leak. Entering into the affected area requires that workers wear the personal protective equipment (including prescribed respirator) specified in the Hazards to Humans section of the labeling. Move leaking or damaged containers outdoors or to an isolated location. Observe strict safety precautions. Work upwind, if possible. Allow spilled fumigant to evaporate or to absorb onto vermiculite, dry sand, earth, or similar absorbent material. Such material should be disposed of on site or at an approved disposal facility. Only correctly trained and PPE-equipment handlers are permitted to perform such cleanup. Do not permit entry into the spill or leak area by any other person until the concentration of chloropicrin is measured to be less than 0.1 ppm.

**DISPOSAL:** Do not contaminate water, food, or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsates is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

### DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### PLACARDING OF FUMIGATED AREAS

The applicator (or supervisor of the application) must placard all entrances to the fumigated area with signs bearing:

- Skull and crossbones symbol
- DANGER/PELIGRO
- Area under fumigation. DO NOT ENTER/NO ENTRE
- Chloropicrin Fumigant in use
- The date and time of fumigation
- Name, address, and telephone number of the applicator

Do not allow entry by unprotected persons into the fumigated area until the signs are removed. Such signs must only be removed when the air concentration level of chloropicrin is measured to be less than 0.1 ppm. Signs must remain legible during the entire posting period. Only a certified applicator (or someone under his/her supervision) may remove warning signs at entrances to fumigated structures.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements in this labeling about personal protective equipment, restricted-entry intervals, and notification to workers. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS). No instructions elsewhere on this labeling relieve users from complying with the requirements of the WPS.

**ENTRY RESTRICTIONS:** Greenhouse Space Fumigation: Entry (including early entry that would otherwise be permitted under the WPS) by any person – other than a correctly trained and equipped handler who is performing a handling task permitted by the WPS – is PROHIBITED in the entire greenhouse (entire enclosed structure/building) from the start of application until aeration reduces the air concentration level of chloropicrin in the working area to less than 0.1 ppm. Greenhouse Soil Fumigation: Entry (including early entry that would otherwise be permitted under the WPS) by any person – other than a correctly trained and equipped handler who is performing a handling task permitted by the WPS – is PROHIBITED in the entire greenhouse (entire enclosed building/structure) from the start of application until 48 hours after application AND until the air concentration level of chloropicrin in the working area is measured to be less than 0.1 ppm. Until the aeration of the soil is complete (usually 10-14 days), non-handlers are permitted in the greenhouse ONLY if the air concentration level of chloropicrin in the working area remains less than 0.1 ppm. If tarps are used for the application, non-handler entry is prohibited during tarp removal and until the air level is measured to be less than 0.1 ppm. Outdoor Soil Fumigation: Entry (including early entry that would otherwise be permitted under the WPS) by any person – other than a correctly trained and equipped handler who is performing a handling task permitted on this labeling – is PROHIBITED from the start of application until 48 hours after application. In addition, if tarps are used for the application, non-handler entry is prohibited while tarps are being removed.

**NOTIFICATION:** notify workers of the application by warning them orally and by posting fumigant warning signs as described in the "Placarding of Fumigated Areas" section of this labeling. Post the fumigant warning sign instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, size, and timing of posting and removal. Greenhouses – Soil or Space Fumigation: Post the fumigant warning signs outside all entrances to the entire greenhouse (entire enclosed building/structure).

Outdoor Soil Fumigation: Post the fumigant warning signs at entrances to treated areas.

**PPE FOR ENTRY DURING ENTRY-RESTRICTED PERIOD:** PPE for entry that is permitted by this labeling is listed in the "Hazards to Humans and Domestic Animals" section of this labeling.

### PRECAUTIONS TO FOLLOW

#### PRIOR TO FUMIGATION:

- (1) Before using fumigant, read and follow all directions on the label and in the product literature.
- (2) Comply with all local regulations and ordinances. Obtain an application permit from Agricultural Regulatory agencies as required.
- (3) It is advisable to supply your physician with information on chloropicrin, which is available from the company.
- (4) Obtain medical assistance at once in case of illness after exposure, and do not allow conditions which could accidentally cause further exposure.
- (5) Never fumigate alone. It is imperative to always have an assistant trained in handling fumigants with proper protection equipment, as listed below, to aid in case of accidents.
- (6) Drivers of application equipment must advise other workers of all precautions and procedures. In addition, drivers must instruct their helpers in the mechanical operation of the tractor and how to work with the tractor and driver while fumigating.
- (7) Handle this fumigant in the open, when possible, with the operator "upwind" from the container where there is good ventilation.



(8) Check the fumigant pressure system, when used, for leaks before beginning application. (9) A gas mask must be carried in each service vehicle. (10) Do not spill. If liquid fumigant splashes or spills on shoes or clothing, remove them at once, as fumes from the contaminated area will be an intolerable source of irritation. If the liquid contacts skin where rings or bandages are worn, remove them and wash the exposed skin with soap and water. Air expose shoes or clothing outside and do not wear until free of all traces of fumigant. (11) Always have adequate clean water available to wash the skin.

**DURING FIELD FUMIGATION:**

(1) This fumigant must not be applied when there is an atmospheric inversion, since uncomfortable concentrations of chloropicrin may drift to nearby areas. (2) Do not lift injection shanks to turn at end of a pass until the fumigant has drained from the system following closure of the shutoff valve. (3) Trash pulled by the shanks to the ends of the field when fumigating must be covered by lifting the shanks, then covering the trash with polyethylene film before making the turn for the next pass. (4) In case of the rupture of a hose or fitting while applying the fumigant, immediately stop the tractor and motor. Get off the tractor and get to a place where the problem can be observed without exposure to the fumes. Approach from upwind, with respiratory protection if required and make necessary repairs. (5) When changing the cylinders, be certain they are turned off and the fumigant system is not under pressure.

**AFTER FIELD FUMIGATION:** Do not feed domestic animals on crop residues unless an EPA tolerance exists for such use. Examples are, but not limited to, seeded or volunteer cover crops growing on soil which has been fumigated as a preplant treatment for a registered crop use.

**NOTE CAREFULLY:** Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertilizer and fumigant are applied to soils that are either cold, wet, acid, or high in organic matter. To avoid injury to plant roots, fertilize as indicated by soil tests made after fumigation. To avoid ammonia injury and/or nitrate starvation to crops, avoid using fertilizers containing ammonia salts and use only fertilizers containing nitrates until after the crop is well established and the soil temperature is about 65 degrees F. Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

**GENERAL INSTRUCTIONS**

THIS FUMIGANT IS A HIGHLY HAZARDOUS MATERIAL AND SHOULD BE USED ONLY BY PERSONS TRAINED IN ITS PROPER USE. BEFORE USING, READ AND FOLLOW ALL LABEL PRECAUTIONS AND DIRECTIONS. ALL PERSONS WORKING WITH THIS FUMIGANT SHOULD BE TRAINED IN THE HAZARDS, THE USE OF REQUIRED RESPIRATOR EQUIPMENT, DETECTOR DEVICES, EMERGENCY PROCEDURES, AND THE PROPER USE OF THE FUMIGANT.

**SOIL FUMIGATION**

TM-442 is a preplant fumigant for the control of soil-borne pests as listed: such as: wireworms and nematodes and diseases caused by certain species of *Phythium*, *Phytophthora*, *Fusarium*, and *Verticillium*. It is to be used in soil to be planted to the crops listed below. Prior to application, the soil should be in condition for planting and with sufficient moisture that would imbibe seeds prior to germination. Keep pets, livestock, and other domestic animals out of the treated area during application, during the exposure period as specified for applications in Directions for Use, and during removal of tarpaulin, if used.

**BROADCAST APPLICATION**

Apply TM-442 by means of chisels spaced no more than 12 inches apart and at a depth of 8 inches below soil surface. To seal in fumigant after application, drag or cultipack immediately behind chisels, or wet down treated area to a depth of 1 inch, or cover treated area with a plastic tarpaulin. If plastic tarpaulin is used, it should remain, for a minimum of 48 hours. Do not apply to areas adjacent to fields where valuable crops are growing nor adjacent to buildings inhabited by humans or livestock. Fumigation of small volumes of soil or mushroom casing soil may be made by injecting chloropicrin 6-8 inches deep in a grid pattern not to exceed 12 inch spacing.

**RECOMMENDED DOSAGES – PREPLANT SOIL FUMIGATION**

<b>LAND TO BE PLANTED TO</b>	<b>POUNDS PER ACRE</b>
Floral Crops, Nursery Crops	500
Plant & Seed Beds	300 – 500
Eggplant, Tomatoes, Hot and Sweet Peppers	300 – 500
Cucumbers, Melons, Cantaloupes	300 – 500
Sweet Potatoes, Yams	150 – 400
Onions	200 – 400
Strawberries	150 – 500
Stone Fruit	150 – 500
Lettuce	150 – 500
Beets, Carrots	150 – 500
All Other Crops	150 – 500
Mushrooms Casing Soil	5 – 10 cc/cu. ft.
Tobacco	60-100 lbs.
Potting Soil	3 – 4 cc/sq. ft.
Seed Beds	3 - 8 cc/sq. ft.

If treated area is covered with a plastic tarpaulin immediately after application, dosage may be reduced by 33%

Not to be used with aquatic crops or for forestry uses.

In the case of Mushroom soil, seal with water plus plastic or wet newspapers

To facilitate application of this product when applying in low dosages, dilution with an acceptable solvent is allowed. If the solvent is to be used in pre-plant soil fumigations for the production of food crops, then the solvent must be approved for such use.

**ROW OR BED APPLCIATIONS** may be made at the broadcast rates but the amount used will be proportionately less per acre depending on the row spacing and width of treatment in the row or bed

**EXPOSURE AND AERATION:** After application, leave the soil undisturbed for 10 to 14 days. Wet soil retards diffusion of the fumigant, thus requiring a longer exposure period. At the end of the exposure period, aerate the soil by plowing or deep cultivation. If heavy rains accompanied by low temperatures occur during the exposure period working the soil several times is essential for thorough aeration. Aeration is usually complete when the odor of the fumigant is no longer evident.

**APPLICATION OF TM-442 THROUGH DRIP LINE****PLACARDING OF CHEMIGATED AREAS:**

Placarding of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds or other public facilities, not including public roads or 2) when the chemigated area is open to the public such as golf courses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The sign shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letters at least 2½ inches tall, and all letters and the symbol shall be a color that sharply contrasts with their immediate background. At the top of the sign shall be the words **KEEP OUT**, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the work **STOP**. Below the symbol shall be the words **PESTICIDES IN IRRIGATION WATER**.

**DOSAGE:** 100 - 300 pounds per acre. See crops listed in dosage table above

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**DILUTION RATE:** Pre-mix with a suitable surfactant prior to application through drip system at a rate of 1:20 surfactant to TM-442. Information regarding suitable surfactants can be obtained from your area representative or distributor.

**GENERAL PREPARATION AND INSTRUCTIONS:**

1. Plan the application by calculating the amount of TM-442 required at the appropriate rate for the crop acreage and target pest.
2. TM-442 must be applied through a drip irrigation system to wet the soil thoroughly in the areas being treated. DRIP emitters should be spaced 6-12" apart.
3. Surfactants may be metered into the supply line for TM-442 and then passed through a mixing device, such as a centrifugal pump or static mixer, to assure proper agitation. The mixture of TM-442 and surfactant must then be metered into the water supply and passed through a similar mixing device to assure proper agitation before it is distributed into the drip irrigation system.
4. Meter TM-442 into the drip system according to the dosage desired. An adequate concentration of TM-442 must be present in order to be effective. At no time should the concentration of active ingredient exceed 1,000 ppm in the drip line.
5. Soil conditions prior to application are as follows:
  - A. Ground must be in seedbed condition, no clods larger than 1/2" in diameter.
  - B. Beds must be listed, shaped and ready for planting.
  - C. Soil moisture must be at 50% of field capacity in the top 2-3" at time of TM-442 application.
6. After application of TM-442 you should continue to irrigate the area with untreated water to flush the irrigation system. Do not permit chloropicrin to remain in the irrigation system after the application is complete.

**USE PRECAUTIONS:**

1. Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
3. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
5. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.
6. The system must contain a functional check valve, vacuum-relief valve, and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
8. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
11. Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) or a Venturi system which is **effectively designed and constructed of materials that are compatible with pesticides** and capable of being filled with a system interlock.

**AERATION:** Do not disturb treated soil for at least 2 weeks. Wet soil retards diffusion of the fumigant, thus requiring a longer exposure period. Aeration is usually complete when the odor of the fumigant is no longer evident.

### FUMIGATION OF ENCLOSED SPACES (NOT FOR USE IN CALIFORNIA)

When used for fumigation of enclosed spaces (houses and other structure, warehouses, vaults, chambers, greenhouses, trucks, vans, boxcars, ships, or other transport vehicles) two persons trained in the use of this product must be present at all times during introduction of the fumigant, testing and aeration periods. Do not fumigate sites that may be used for the storage or transport of raw agricultural commodities. After fumigation, fumigated areas must be aerated until the air concentration level of chloropicrin is measured to be less than 0.1 ppm. Until the acceptable air concentration level is reached, do not allow any person to enter into the fumigated area unless he/she is wearing the specified personal protective equipment (including prescribed respirator) specified in the Hazards to Humans section of this labeling. In greenhouses, additional Worker Protection Standard restrictions apply.

**SPACE FUMIGATION:** (Not containing raw agricultural commodities): For control of mites, cockroaches, silverfish and fungi use 1 pound of TM-442 per 1000 cubic feet. Increase dosage 1-1/4 to 1-1/2 pounds per 1000 cubic feet when absorbent materials are present.

**APPLICATION INFORMATION:** Prior to application, all windows doors, and other openings should be sealed to make the building gas tight. Temperature at time of application should be 60 degrees F or higher. Introduce TM-442 into a shallow pan, or onto burlap sacks, or similar absorbent material located inside the structure. Use fans to hasten evaporation of TM-442 and to keep fumigant in circulation. Ventilate area thoroughly for 12 to 24 hours. Fans, dryness and high temperatures speed aeration.

**VAULT FUMIGATION:** For the control of fleas, mites, silverfish, cockroaches and moths in furniture and clothing use 1 to 2 pounds of TM-442. In heavily loaded vaults, increase dosage rates by an additional 1 pound/1000 cubic feet.

**APPLICATION INFORMATION:** Introduce the desired amount of TM-442 into a shallow pan or onto burlap sacks or similar absorbent material located inside the structure or vault. Use fans to hasten evaporation of chloropicrin and to keep fumigant in circulation. Exposure time is 24 hours. Ventilate by opening doors and using fans for 12 to 24 hours prior to re-entry.

### TREATMENT OF WOOD, TIMBERS, POLES, PILES AND GLUE-LAMINATED BEAMS FOR CONTROL OF INTERNAL WOOD DECAY BY FUNGI AND INSECTS (FOR NOT USE IN CALIFORNIA)

Carefully pour or inject TM-442 into drilled holes, then plug the holes with a 2-1/2 inch to 3 inch treated wood plug. When pouring or injecting fumigant and plugging holes, wear safety goggles to avoid splashing any liquid into the eyes. Holes in poles and piles should be positioned in a spiral pattern by drilling each hole 6 inches to 12 inches vertically from the preceding hole and rotating it by 90 degrees. Drill holes at a steep downward angle and avoid drilling through seasoning checks. If a treating hole intersects an internal rot pocket plug that hole and drill new hole into solid wood above and, if possible, below the rot. For in-ground poles the first hole should be drilled at the ground level. Fill and plug the lowest before filling next higher hole. The suggested number of holes per treated structural timber and dosage are indicated in the following table:

Pole Circumference	Hole Diameter	Length of Hole	Holes Per Pole	Pints of Fumigant/Pole
Less than 32"	5/8"	15"	6	3/4
	5/8"	18"	5	3/4
	3/4"	15"	4	3/4
32"-45"	3/4"	15"	6	1
	3/4"	18"	5	1
	3/4"	21"	4	1
	3/4"	24"	3	1
	7/8"	21"	3	1
More than 45"	3/4"	24"	6	2
	7/8"	21"	5	2
	7/8"	24"	4	2

For piles treated near the cutoff tops, cap the cutoff as recommended by the American Wood Preserver's Assn. Standard MA to contain the chemical and prevent reinfection. To treat glue-laminated beams, use at least 0.06 pints of chemical per cubic foot of wood to be treated. Drill treating holes into the top laminate through all glue lines when treatment is necessary. Stagger holes to minimize strength reductions of timbers. A vapor barrier wrap may be needed to confine chemical vapor. Do not treat inside an inhabited building. Have at least one gas mask with appropriate canisters available at the treating site. Wear protective gear and stand upwind when injecting the fumigant.

**WARNING AGENT**

TM-442 may be used for cleaning structures prior to fumigating with methyl bromide or sulfuryl fluoride. Prepare structure for fumigation and seal all except one entrance. Use 1 ounce per 10,000-15,000 cubic feet of space to be fumigated. When building is evacuated, seal the entrance and start the fans. Check seals for tightness. Five to ten minutes later, introduce methyl bromide or sulfuryl fluoride. TM-442 is compatible when mixed with Chlorinated C<sup>3</sup> Hydrocarbons

**CONDITIONS OF SALE:** 1. Arvesta Corporation warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in accordance with the directions under normal conditions of use.

2. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal use conditions, or under conditions not reasonably foreseeable to Arvesta.

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3. Critical and unforeseeable factors beyond Arvesta's control prevent it from eliminating all risks in connection with the use of this product. Such risks include, but are not limited to, damage to plants and crops to which the product is applied, lack of complete control, and damage caused by drift to other plants or crops. Such risks occur even though the product is reasonably fit for the uses stated on the label and even though label directions are followed. Except as stated in 1 above, Buyer and User acknowledge and assume all risks and liability resulting from handling, storage, and use of this product.