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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

CERTIFIED MAIL

MAY 7 2010

W.A. Hawkins, Jr., Ph.D.
Arysta LifeScience North America
15401 Weston Parkway, Suite 150
Cary, NC 27513

Subject: TM-442 Fumigant
EPA Reg. No. 66330-47
Pre-RED Mitigation Amendment – Label Dated January 15, 2010
EPA Decision Number 432892

Dear Dr. Hawkins:

The amended label referred to above, submitted in connection with reregistration of chloropicrin under the Federal Insecticide, Fungicide and Rodenticide Act as amended is acceptable provided the following label revisions are made and the following conditions are met:

LABEL REVISIONS

1. On pages 3 and 4 under the PPE section, revise the second and third sections to read, **“When not performing tasks with liquid contact potential, all handlers (including applicators) must wear:**

- Long-sleeved shirt and long pants, and
- Shoes and socks.
- 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.

When performing tasks with liquid contact potential, all handlers (including applicators) must wear:

- Long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant apron,
- Protective eyewear (Do NOT wear goggles), and
- Chemical-resistant footwear and socks.”

2. On page 4, revise the language after the subheading **“IMPORTANT”** to read, **“A self-contained breathing apparatus (SCBA) is not permitted for routine handler tasks. Wear**

an SCBA and PPE required for liquid contact potential in emergencies such as a spill or leak or when corrective action is needed to reduce air levels to acceptable levels.”

3. On page 5 under the Physical or Chemical Hazards section, after the third sentence revise the following to read, “(see the Calibration, Set-Up, Repair and Maintenance for Application Rigs and System Controls and Integrity sections of this labeling for further requirements for application equipment)”.
4. On page 5 in the Agricultural Use Requirements box, add the following sentence after the last sentence, “PPE for Entry During the 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.”
5. On page 6 in the Entry Restricted Period, delete “until” in the fourth bullet.
6. Placeholder on page 8, revise the Fumigant Safe Handling paragraph to read, “The certified applicator must provide **Fumigant Safe Handling** information to each handler involved in the application or confirm that each handler participating in the application has received **Fumigant Safe Handling** information in a manner they can understand within the past twelve months. **Fumigant Safe Handling** information will be provided where this product is purchased, or at <http://www.epa.gov/fumigantraining>.”
7. On page 8, revise the subheading and text under “Air-Rescue Device Availability. . .” to read “AVAILABILITY OF RESPIRATORS FOR EMERGENCIES
The employer of any handler must confirm that at least one self-contained breathing apparatus (SCBA) is on-site and is ready for use in case of an emergency. This must be documented in the FMP.”
8. On page 12 under Soil Preparation revise the first bullet to read, “Soil must be properly prepared and at the surface generally be free of large clods. The area to be fumigated must be tilled to a depth of 5 to 8 inches.”
9. On page 13 under Soil Moisture Determination Using the USDA Feel and Appearance Method in the second bullet, change “sand” to “sandy”.
10. On page 14 in the Calibration, Set-up, Repair, and Maintenance for Application Rigs section in the fourth bullet, revise the first sentence of the first sub-bullet to read, “Ensure that positive pressure is maintained in the cylinder between 80 and 140 psi during the entire time it is connected to the application rig, if a compressed gas cylinder is used.”
11. On page 16 in the Product and Dosage section in the fifth bullet, delete “desired.”
12. On page 19, revise the bullet that begins “Air-purifying respirators...” to say, “Air purifying respirators, SCBAs, and other personal protective equipment (PPE) for handlers

(handler task; protective clothing; respirator make, model, type, style, and size; respirator cartridge type; respirator cartridge replacement schedule; eye protection; gloves; and other PPE)".

13. On page 19, revise the text "For handlers designated to wear air-purifying respirators. . ." to read "For handlers designated to wear respirators (air-purifying respirator or SCBA):"
 - Date of medical qualification for respirator(s) that each handler is designated to wear,
 - Date of training for respirator(s) that each handler is designated to wear, and
 - Date of fit-testing for respirator(s) that each handler is designated to wear."

14. On page 23, make the following revisions to the PREPLANT SOIL FUMIGATION USES MAXIMUM DOSES table:
 - a. Add, "Table 1" before the title.
 - b. Revise the title of the second column to read, "Broadcast equivalent (pounds product/acre)¹ shank injection for non-tarped applications"
 - c. Revise the title of the third column to read, "Broadcast equivalent (pounds product/acre)¹ shank injection for tarped or deep injection (18 inch minimum) non-tarped applications"
 - d. Revise the title of the fourth column to read, "Broadcast equivalent (pounds product/acre)¹ drip irrigation applications"
 - e. Delete the "Miscellaneous Uses" of potting soil, seed beds, and mushroom casing soil and their application rates.
 - f. Add the following sentence to footnote 1 of Table 1, "Do not exceed specified maximum application rates in Table 1." This sentence should be placed before the sentence that begins, "Row, bed or strip..."
 - g. Delete the following bullet, "In the case of mushroom soil, seal with water plus plastic or wet newspapers."

15. On page 25, revise the Storage and Disposal section as follows:
 - a. Revise the Storage section by changing the heading to "Pesticide Storage" and revising third sentence to read "Persons moving, handling, or opening containers must wear the personal protective equipment specified in the Hazards to Human and Domestic Animals section of this labeling."
 - b. Revise the Disposal section by changing the heading to "Pesticide Disposal" and moving the section so that it follows the Pesticide Storage section.
 - c. Under the "Return Cylinders To:" section, revise the item number one to read "(1) When a cylinder is empty, close the valve, screw the safety cap onto the valve outlet, and replace the valve protection bonnet prior to return shipment."
 - d. Under the "Return Cylinders To:" section, revise the item number four to read "(4) Do not refill this container or use it for any other product or purpose."
 - e. Revise the Handling section to read "(1) Remove the valve protection bonnet and safety cap 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) Do not subject cylinders to rough handling, or to abnormal mechanical

shock such as dropping, bumping, dragging, or sliding. (3) Do not use ropes, slings, hooks, tongs and similar handling devices for unloading cylinders. (4) Use a suitable hand truck, fork truck, or similar device to which cylinders can be firmly secured when transporting heavier cylinders.”

16. On page 25, revise the Spill and leak section as follows:
 - a. Move the Spill and Leak section out of the Storage and Disposal box so that it precedes the Storage and Disposal section
 - b. Revise the second sentence to read “Entering into the affected area requires that workers wear the personal protective equipment specified in the Hazards to Humans and Domestic Animals section of this labeling.”
 - c. Revise the seventh sentence to read “Dispose of contaminated material on site or at an approved waste disposal facility.”

17. On page 26 revise the Warning Agent paragraph to read, “TM-442 may be used as a warning agent prior to fumigating with an EPA registered sulfuryl fluoride product. When used as a warning agent prior to sulfuryl fluoride fumigations, users must follow requirements on the EPA registered sulfuryl fluoride product.”

CONDITIONS

1. EPA has determined that the risk mitigation measures on the revised label for this product are necessary to adequately protect human health and the environment. Therefore, pursuant to 40 CFR § 152.130(d), EPA has decided that no product bearing previously approved labeling may be sold or distributed (release for shipment) by its registrant after December 1, 2010. Wherever state approval is required for sale or distribution of this product with this new labeling, EPA strongly encourages you to submit an application to the state authority as soon as possible. You should be aware that the Agency does not intend to modify the December 1, 2010, deadline because of any failure to obtain necessary state approvals.

2. Submit one copy of the final printed label that incorporates the required changes before the product is released for shipment.

One copy of the label stamped "Accepted with comments" is enclosed for your records. If you have any questions, please contact Andrea Carone by phone at (703) 308-0122 or via email at carone.andrea@epa.gov or Mary Waller by phone at (703) 308-9354 or via email at waller.mary@epa.gov.

Sincerely,



Mary L. Waller
Product Manager (21)
Fungicide Branch
Registration Division (7504P)

Enclosure

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

TM-442 FUMIGANT

ACTIVE INGREDIENT:
CHLOROPICRIN.....99.5%
Inert Ingredients.....0.5%
TOTAL.....100.0%

This product weighs 13.7 pounds per gallon

ARYSTA LIFESCIENCE
NORTH AMERICA, LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513

EPA Est. No. _____
EPA Reg. No. 66330-47

NET CONTENT: _____ 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

ACCEPTED
with COMMENTS
In EPA Letter Dated

MAY 7 2010

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

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FIRST AID	
IF INHALED	<ul style="list-style-type: none"> ▪ Move person to fresh air. ▪ If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth (if possible). ▪ Call a poison control center or doctor for further treatment advice.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> ▪ Take off contaminated clothing, shoes, and other items covering the skin. ▪ Rinse skin immediately with plenty of water for 15-20 minutes. ▪ Call a poison control center or doctor for further treatment advice.
IF IN EYES	<ul style="list-style-type: none"> ▪ Hold eyelids open and rinse slowly and gently with water for 15 – 20 minutes. ▪ Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. ▪ Call a poison control center or doctor for further treatment advice.
IF SWALLOWED	<ul style="list-style-type: none"> ▪ Call a poison control center or doctor immediately for treatment advice. ▪ Have the person sip a glass of water if able to swallow. ▪ Do not induce vomiting unless told to do so by a doctor or poison control center. ▪ Do not give anything by mouth to an unconscious person.
HOT LINE NUMBER	
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-866-303-6952 for emergency medical treatment information.</p>	
NOTE TO PHYSICIAN	
<p>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.</p>	

**FOR 24-HOUR CHEMICAL EMERGENCY
(Spill, Leak, Fire or Accident) ASSISTANCE:
CALL CHEMTREC 1-800-424-9300**

For Product Use Information call 1-866-761-9397

See side panel for additional precautionary statements

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PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

THIS FUMIGANT IS A HIGHLY HAZARDOUS MATERIAL AND MUST BE HANDLED WITH CARE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION WHO ARE TRAINED IN 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.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are barrier laminate or viton \geq 14 mils. For more options, follow the instructions for category H on an EPA chemical-resistance category selection chart.

All handlers (including applicators) must wear:

- Long-sleeved shirt and long pants and
- Shoes and socks
- 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.

When performing tasks with liquid contact potential, all handlers (including applicators) must wear:

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- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant apron
- Protective eyewear. (Do NOT wear goggles), and
- Chemical-resistant footwear and socks

In addition, when an air-purifying respirator is required, handlers must wear at minimum either:

- a full-face respirator with an organic-vapor-removing cartridge with a prefilter approved for pesticides (NIOSH approval number prefix TC-23C), or
- a full-face respirator with a canister approved for pesticides (NIOSH approval number prefix TC-14G).

See Directions for Use, Protection for Handlers, Respiratory Protection and Stop Work Triggers for when a full-face respirator is required.

IMPORTANT: an air-supplying respirator [i.e., a respirator connected directly to a clean air source or a self-contained breathing apparatus (SCBA) is not permitted for routine handler tasks. Such respirators are only permitted in emergencies such as spill or leak or when corrective action is needed to reduce air levels to acceptable levels.

USER SAFETY REQUIREMENTS

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing and other absorbant materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

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 HAZARDS

This pesticide is toxic to mammals and birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

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Chloropicrin has certain properties and characteristics in common with chemicals that have been detected in groundwater (chloropicrin is highly soluble in water and has low adsorption to soil).

For untarped applications of chloropicrin, leaching and runoff may occur if there is heavy rainfall after soil fumigation.

CHEMICAL HAZARDS

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 (see the Calibration, Set-up, Repair and Maintenance for Application Rigs section of this labeling for further requirements for application equipment.) Do not permit water to be used to clean the fumigant delivery system, as corrosion will result. Diesel oil is satisfactory for this purpose.

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.

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.

For the entry restricted period and notification requirements, see the *Entry Restricted Period* and *Notification* sections of this labeling.

ENTRY RESTRICTED PERIOD AND NOTIFICATION

ENTRY RESTRICTED PERIOD: Entry (including early entry that would otherwise be permitted under the WPS) by any person – other than a correctly trained and PPE-equipped handler who is performing a handling task listed on this labeling – IS PROHIBITED – from the start of the application until:

- 5 days (120 hours) after the application is complete for untarped applications, or

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- 5 days (120 hours) after the application is complete if tarps are not perforated and removed for at least 14 days following application. Note: persons installing, repairing or monitoring tarps are handlers until 14 days after the application is complete if tarps are not perforated and removed during these 14 days, or
- 48 hours after tarp perforation is complete if tarps will not be removed for at least 14 days following application, or
- until tarp removal is completed if tarps are both perforated and removed less than 14 days after application.

NOTE: See Tarp Perforation and/or Removal section on this labeling for requirements about when tarps are allowed to be perforated.

NOTIFICATION: Notify workers of the application by warning them orally and by posting Fumigant Treated Area signs. The Fumigant Treated Area signs must bear the skull and crossbones symbol and state:

- DANGER/PELIGRO,
- Area under fumigation, DO NOT ENTER/NO ENTRE,
- Chloropicrin Fumigant in USE,
- the date and time of fumigation,
- the date and time entry restricted period is over,
- TM-442 Fumigant, and
- Name, address, and telephone number of the certified applicator in charge of the fumigation.

Post the Fumigant Treated Area 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.

Post the Fumigant Treated Area signs at all entrances to the application block (i.e., the greenhouse or field or portion of a field treated with a fumigant in any 24-hour period).

HANDLERS

The following activities are prohibited from being performed in the application block (i.e., the greenhouse or field or portion of a field treated with a fumigant in any 24-hour period) by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in the Worker Protection Standard (40 CFR Part 170), from the start of the application until the entry restricted period ends (NOTE: persons installing, perforating, removing, repairing, and monitoring tarps are considered handlers for the durations listed below). Those activities include those persons:

- Participating in the application as supervisors, loaders, drivers, tractor co-pilots, shovelers, cross ditchers, or as other direct application participants (the application starts when the fumigant is first introduced into the soil and ends after the fumigant has stopped being delivered/dispensed to the soil);
- Using devices to take air samples to monitor fumigant air concentrations;
- Cleaning up fumigant spills (this does not include emergency personnel not associated with the fumigation application);

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- Handling or disposing of fumigant containers;
- Cleaning, handling, adjusting, or repairing the parts of fumigation equipment that may contain fumigant residues;
- Installing, repairing, operating, or removing irrigation equipment in the fumigant application block;
- Entering the application site to perform scouting, crop advising, or monitoring tasks;
- Installing, perforating (cutting, punching, slicing, poking), removing, repairing, or monitoring tarps:
 - until 14 days after application is complete if tarps are not perforated and removed during those 14 days, or
 - until tarp removal is complete if tarps are **both** perforated **and** removed less than 14 days after application, or
 - until 48 hours after tarp perforation is complete if they will not be removed within 14 days after application.

NOTE: See Tarp Perforation and/or Removal section on this labeling for requirements about when tarps are allowed to be perforated.

- Performing any handling tasks as defined by the WPS.

PROTECTIONS FOR HANDLERS

SUPERVISION OF HANDLERS:

For all applications except water run: from the start of the application until the fumigant has stopped being delivered/dispensed into the soil, i.e., after the soil is sealed, the certified applicator must be at the fumigation site in the line of sight of the application and must directly supervise all persons performing handling activities.

For water-run applications (e.g. drip), the certified applicator must be at the fumigation site to start the application including set-up, calibration, and initiation of the application. The certified applicator may leave the site but must return at least every two hours to visually inspect the equipment to ensure proper functioning and must directly supervise all WPS-trained handlers on-site until the fumigation has stopped being delivered/dispensed into the soil. WPS-trained handlers may perform the monitoring functions in place of the certified applicator, but must be under the supervision of the certified applicator and be able to communicate with the certified applicator at all times during monitoring activities via cell phone or other means.

The results of monitoring activities must be captured in the Fumigant Management Plan's (FMP) post-application summary.

For handling activities that take place after the fumigant has been delivered/dispensed into the soil until the entry restricted period expires, the certified applicator does not have to be on-site, but must have communicated, in a manner that can be understood, to the site owner/operator and handlers responsible for carrying out those activities the information necessary to comply with the label and procedures described in the FMP (e.g., emergency response plans and procedures).

Communication activities must be captured in the FMP.

IMPORTANT: This requirement does not override the requirements in the Worker Protection Standard for Agricultural Pesticides for information exchange between owners/operators of agricultural establishments and commercial pesticide applicators.

The certified applicator must provide **Fumigant Safe Handling** information to each handler involved in the application or confirm that each handler participating in the application has received **Fumigant Safe Handling** information in the past 12 months. **Fumigant Safe Handling** information will be provided where this product is purchased.

For all handling tasks at least two handlers trained under the provisions of the WPS 40 CFR 170.230 must be present.

EXCLUSION OF NON HANDLERS FROM APPLICATION BLOCK:

The certified applicator supervising the application and the owner/operator of the establishment where the fumigation is taking place must make sure that all persons who are not trained and PPE-equipped and who are not performing one of the handling tasks as stated in this labeling are excluded from the application block during the entry restricted period.

PROVIDING, CLEANING, AND MAINTAINING PPE:

The employer of any handler (as stated in this label) must make sure that all handlers are provided and correctly wear the required PPE. The PPE must be cleaned and maintained as required by the Worker Protection Standard for Agricultural Pesticides.

AIR-PURIFYING RESPIRATOR AVAILABILITY FOR PRE-PLANT SOIL USES:

At a minimum two handlers must have the appropriate air-purifying respirator and cartridges available and these handlers must be fit-tested, trained, and medically examined.

The employer of any handler must confirm that an air-purifying respirator and appropriate cartridges of the type specified in the PPE section of this labeling are immediately available for each handler who will wear one. This must be documented in the FMP.

AIR-RESCUE DEVICE AVAILABILITY FOR PRE-PLANT SOIL USES:

The employer of any handler must confirm that at least one air-rescue device (e.g., SCBA) is on-site and is ready for use in case of an emergency. This must be documented in the FMP.

RESPIRATOR FIT TESTING, MEDICAL QUALIFICATION, AND TRAINING

Employers must verify that any handler who uses a respirator is:

- Fit-tested and fit-checked using a program that conforms to OSHA's requirements (see 29 CFR Part 1910.134)
- Trained using a program that conforms to OSHA's requirements (see 29 CFR Part 1910.134)
- Examined by a qualified medical practitioner to ensure physical ability to safely wear the style of respirator to be worn. A qualified medical practitioner is a physician or other licensed health care professional who will evaluate the ability of a worker to

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wear a respirator. The initial evaluation consists of a questionnaire that asks about medical conditions (such as a heart condition) that would be problematic for respirator use. If concerns are identified, then additional evaluations, such as a physical exam, might be necessary. The initial evaluation must be done before respirator use begins. Handlers must be reexamined by a qualified medical practitioner if their health status or respirator style or use-conditions change. Upon request by local/state/federal/tribal enforcement personnel, employers must provide documentation demonstrating how they have complied with these requirements.

RESPIRATORY PROTECTION AND STOP WORK TRIGGERS:

The following procedures must be followed to determine whether an air-purifying respirator is required or if operations must cease for any person performing a handling task as stated in this label.

- If at any time any handler experiences sensory irritation (tearing, burning of the eyes or nose) then either:
 - An air-purifying respirator must be worn by all handlers who remain in the application block, or
 - Operations must cease and handlers not wearing air-purifying respirators must leave the application block.
- Handlers can remove air-purifying respirators or resume operations if two consecutive breathing zone samples taken at the handling site at least 15 minutes apart show that levels of chloropicrin have decreased to less than 0.15 ppm, provided that handlers do not experience sensory irritation. During the collection of air samples, a full-face air-purifying respirator must be worn by the handler taking the air samples. Samples must be taken where the irritation is first experienced.
- When breathing zone samples are required, they must be taken outside respiratory protection equipment and within a ten inch radius of the handler's nose and mouth.
- When using monitoring devices to monitor air concentration levels, a direct reading detection device, such as a Matheson-Kitagawa, Dräger, or Sensidyne device must be used. The devices must have a sensitivity of at least 0.15 ppm for chloropicrin.
- When air-purifying respirators are worn, then air monitoring samples must be collected at least every 2 hours in the breathing zone of a handler performing a representative handling task.
- If at any time: (1) a handler experiences any sensory irritation when wearing an air-purifying respirator, or (2) an air sample is greater than or equal to 1.5 ppm, then all handler activities must cease and handlers must be removed from the application block. If operations cease the emergency plan detailed in the FMP must be implemented.
- Handlers can resume work activities without air-purifying respirators, if two consecutive breathing zone samples taken at the handling site at least 15 minutes apart show levels of chloropicrin have decreased to less than 0.15 ppm, provided that handlers do not experience sensory irritation. During the collection of air samples an air-purifying respirator must be worn by the handler taking the air samples. Samples must be taken where the irritation is first experienced.
- Work activities can resume if all of the following conditions exist, provided that the appropriate air-purifying respirator is worn:

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- Two consecutive breathing zone samples for chloropicrin taken at the handling site at least 15 minutes apart must be less than 1.5 ppm but are greater than 0.15 ppm,
- Handlers do not experience sensory irritation while wearing the air-purifying respirator, and
- Cartridges have been changed.
- During the collection of air samples an air-purifying respirator must be worn by the handler taking the air samples. Samples must be taken where the irritation is first experienced.

TARP PERFORATION AND/OR REMOVAL

IMPORTANT: Persons perforating, repairing, removing, and/or monitoring tarps are defined, within certain time limitations, as handlers (see handlers as stated in this labeling) and must be provided the PPE and other protections for handlers as required on this labeling and in the Worker Protection Standard for Agricultural Pesticides.

- Tarps must not be perforated until a minimum of 5 days (120 hours) have elapsed after the fumigant injection into the soil is complete (e.g., after injection of the fumigant product and tarps have been laid or after drip lines have been purged and tarps have been laid), unless a weather condition exists which necessitates the need for early perforation or removal, see *Early Tarp Removal for Broadcast Applications Only* and *Early Tarp Perforation for Flood Prevention Activities* sections.
- If tarps will be removed before planting, tarp removal must not begin until at least 2 hours after tarp perforation is complete.
- If tarps will not be removed before planting, planting or transplanting must not begin until at least 48 hours after the tarp perforation is complete.
- If tarps are left intact for a minimum of 14 days after fumigant injection into the soil is complete, planting or transplanting may take place while the tarps are being perforated.
- Each tarp panel used for broadcast fumigation must be perforated.
- Tarps used for fumigations may be perforated manually **ONLY** for the following situations:
 - At the beginning of each row when a coulter blade (or other device which performs similarly) is used on a motorized vehicle such as an ATV.
 - In fields that are 1 acre or less.
 - During flood prevention activities.
- In all other instances tarps must be perforated (cut, punched, poked, or sliced) only by mechanical methods.
- Tarp perforation for broadcast fumigations must be completed before noon.
- For broadcast fumigations, tarps must not be perforated if rainfall is expected within 12 hours.
- Early Tarp Removal for Broadcast Applications Only:
 - Tarps may be removed before the required 5 days (120 hours) if adverse weather conditions have compromised the integrity of the tarp, provided that the compromised tarp poses a safety hazard. *Adverse weather* includes high wind, hail, or storms that blow tarps off the field and create a hazard, e.g., tarps blowing into power lines and onto roads. A *compromised tarp* is a tarp

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that due to an adverse weather condition is no longer performing its intended function and is creating a hazard.

- If tarps are removed before the required 5 days have elapsed due to adverse weather, the events must be documented in the post-application summary.
- **Early Tarp Perforation for Flood Prevention Activities**
 - Tarp perforation is allowed before the 5 days (120 hours) have elapsed.
 - Tarps must be immediately retucked and packed after soil removal.

Mandatory Good Agricultural Practices (GAPs)

The following GAPs must be followed during all fumigant applications. All measurements and other documentation planned to ensure that the mandatory GAPs are achieved must be recorded in the FMP and/or post-application summary.

Tarps (when tarps are used in TM-442 applications)

- A written tarp plan must be developed and included in the FMP. The plan must include:
 - schedule and procedures for checking tarps for damage, tears, and other problems
 - plans for determining when and how repairs to tarps will be made, and by whom
 - minimum time following injection that tarp will be repaired
 - minimum size of tarp damage that will be repaired
 - other factors used to determine how and when tarp repair will be conducted
- schedule, equipment, and methods used to perforate tarps
- aeration plans and procedures following perforation of tarp, but prior to tarp removal or planting/transplanting
- schedule, equipment, and procedures for tarp removal

Weather Conditions

- Prior to fumigation the weather forecast for the day of the application and the 48-hour period following the fumigation must be checked to determine if unfavorable weather conditions exist (see *Identifying Unfavorable Weather Conditions* section) or are predicted and whether fumigation should begin.
- Wind speed at the application site must be a minimum of 2 mph at the start of the application or forecasted to reach at least 5 mph during the application.
- Do not apply if a shallow, compressed (low-level) temperature inversion is forecast to persist for more than 18 consecutive hours for the 48-hour period after the start of application, or if there is an air stagnation advisory issued by the National Weather Service in effect for the area in which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained on-line at: <http://www.nws.noaa.gov> or by contacting your local National Weather Service Forecasting Office.

Identifying Unfavorable Weather Conditions

- Unfavorable weather conditions block upward movement of air, which results in trapping fumigant vapors near the ground. The resulting air mass can move off-site

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in unpredictable directions. These conditions typically exist prior to sunset and continue past sunrise and persist as late as noontime. Unfavorable conditions are common on nights with limited cloud cover and light to no wind and their presence can be indicated by ground fog or smog and can also be identified by smoke from a ground source that flattens out below a ceiling layer and moves laterally in a concentrated cloud.

Soil Preparation

- Soil must be properly prepared and at the surface generally be free of clods that are golf ball size or larger. The area to be fumigated must be tilled to a depth of 5 to 8 inches.
- Field trash must be properly managed. Residue from a previous crop must be worked into the soil to allow for decomposition prior to fumigation. Little or no crop residue shall be present on the soil surface. Crop residue that is present must not interfere with the soil seal. Removing the crop residue prior to fumigation is important to limit the natural "chimneys" that occur in the soil when crop residue is present. These "chimneys" allow the soil fumigants to move through the soil quickly and escape into the atmosphere. This may create potentially harmful conditions for workers and bystanders and limit the efficacy of the fumigant. However, crop residue on the field serves to prevent soil erosion from both wind and water and is an important consideration. To accommodate erosion control, fumigant efficacy, and human health protection, clear fields of crop residue as close to the timing of the fumigation as possible to limit the length of time that the soil would be exposed to potentially erosive weather conditions.

TM-442 Bedded and Broadcast Shank Applications: Additional GAPS

In addition to the GAPS required for all TM-442 soil fumigation applications, the following GAPS apply for injection applications:

Tarps (when tarps are used in TM-442 applications)

- Tarps must be installed immediately after the fumigant is applied to the soil.

Soil Preparation

- Trash pulled by the shanks to the ends of the field must be covered with tarp, or soil, depending on the application method before making the turn for the next pass.

Soil Temperature

- The maximum soil temperature at the depth of injection must not exceed 90 degrees F at the beginning of the application.
 - If air temperatures have been above 100 degrees F in any of the three days prior to application, then soil temperature must be measured and recorded in the FMP.

Soil Moisture

- The soil must be moist 9 inches below the surface. The amount of moisture needed will vary according to the soil type. Surface soil generally dries rapidly and must not be considered in this determination.
- Soil moisture must be determined by one of the following methods:

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- The USDA Feel and Appearance Method for testing, or
- An instrument, such as a tensiometer.
- If there is insufficient moisture 9 inches below the surface, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 9 inches, soil moisture can be adjusted by discing or plowing before fumigant injection. To conserve existing soil moisture, pretreatment irrigation or pretreatment tillage should be done as close to the time of application as possible.
- Measure soil moisture at a depth of 9 inches at either end of the field, no more than 48 hours prior to application.

Soil moisture determination using the USDA Feel and Appearance Method

- For **coarse** textured soils (fine sand and loamy fine sand) there must be enough moisture (50 to 75 percent available soil water moisture) so the soil is moist, forms a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers; will not ribbon.
- For **moderately coarse** textured soils (sand loam and fine sandy loam) there must be enough moisture (50 to 75 percent available soil water moisture) so the soil is moist, forms a ball with defined finger marks, very light soil/water staining on fingers, darkened color will not stick.
- For **medium** textured soils (sandy clay loam, loam, and silt loam) there must be enough moisture (50 to 75 percent available soil water moisture) so the soil is moist, forms a ball, very light staining on fingers, darkened color, pliable, and forms a weak ribbon between the thumb and forefinger.
- For **fine** textured soils (clay, clay loam, and silty clay loam) there must be enough moisture (50 to 75 percent available soil water moisture) so the soil is moist, forms a smooth ball with defined finger marks, light soil/water staining on fingers, ribbons between thumb and forefinger.
- For **fields with more than one soil texture**, soil moisture content in the lightest textured (most sandy) areas must comply with this soil moisture requirement. Whenever possible, the field should be divided into areas of similar soil texture and the soil moisture of each area should be adjusted as needed. Coarser textured soils can be fumigated under conditions of higher soil moisture than finer textured soils; however, if the soil moisture is too high, fumigant movement will be retarded and effectiveness of the treatment will be reduced. Previous and/or local experience with the soil to be treated or the crop to be planted can often serve as a guide to conditions that will be acceptable. If there is uncertainty in determining the soil moisture content of the area to be treated, a local extension service agent, soil conservation service specialist, or pest control advisor (agriculture consultant) should be consulted for assistance.

Soil Sealing

- *For Broadcast Untarped Applications:* Use a disc or similar equipment to uniformly mix the soil to at least a depth of 3 to 4 inches to eliminate the chisel or plow traces. Following elimination of the chisel trace, the soil surface must be compacted with a cultipacker, ring roller, and roller in combination with tillage equipment.
- *For Bedded Applications:* Preformed beds must be sealed by disruption of the chisel trace using press sealers, bed shapers, cultipackers, or by re-shaping (e.g., relisting,

lifting, replacing) the beds immediately following injection. Beds formed at the time of application must be sealed by disrupting the chisel trace using press sealers, or bed shapers.

- *For Tarped Applications:* The use of a tarp does not eliminate the need to minimize chisel traces prior to application of the tarp, such as by using a Nobel plow or other injection shank that disrupts the chisel traces.

Application Depth

- *For Tarped-Broadcast and Tarped-Bedded Applications:* The injection point must be a minimum of 8 inches from the nearest final soil/air interface.
- *For Untarped-Bedded Applications:* The injection point must be a minimum of 12 inches from the nearest final soil/air interface.
- *For Untarped-Broadcast Applications:* The injection point must be a minimum of 10 inches from the nearest final soil/air interface.
- *For Untarped-Broadcast Deep Applications:* The injection point must be a minimum of 18 inches from the nearest final soil/air interface.

Application Methods and Equipment

Apply TM-442 by means of chisels spaced no more than 12 inches apart.

Planting Interval

After application leave the soil undisturbed for 10-14 days. Wet soils retard diffusion of the fumigant thus requiring a longer soil exposure period. At the end of the soil exposure period, aerate the soil by plowing or deep cultivation. If heavy rains accompanied by low temperatures occur during the soil 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.

Prevention of End Row Spillage

- Do not apply or allow fumigant to spill onto the soil surface. For each injection line either have a check valve located as close as possible to the final injection point, or drain/purge the line of any remaining fumigant prior to lifting injection shanks from the ground.
- Do not lift injection shanks from the soil until the shut-off valve has been closed and the fumigant has been depressurized (passively drained) or purged (actively forced out via air compressor) from the system.

Calibration, Set-up, Repair, and Maintenance for Application Rigs

- Brass, carbon steel or stainless steel fittings must be used throughout. Polyethylene tubing, polypropylene tubing, Teflon® tubing or Teflon® -lined steel braided tubing must be used for all low pressure lines, drain lines, and compressed gas or air pressure lines. All other tubing must be Teflon® -lined steel braided.
- Galvanized, PVC, nylon or aluminum pipe fittings must not be used.
- All rigs must include a filter to remove any particulates from the fumigant, and for pressurized systems, a check valve to prevent backflow of the fumigant into the pressurized cylinder or the compressed air system.

- Rigs must include a flowmeter or a constant pressure system with orifice plates to insure the proper amount of fumigant is applied.
- To prevent the backflow of fumigant into the compressed gas cylinder (e.g., nitrogen, other inert gas, compressed air), if used, applicators must:
 - Ensure that positive pressure is maintained in the cylinder at not less than 100 psi during the entire time it is connected to the application rig, if a compressed gas cylinder is used. (*This is not required for a compressed air system that is part of the application rig because if the compressor system fails the application rig will not be operable*).
 - Ensure that application rigs are equipped with properly functioning check valves between the compressed gas cylinder or compressed air system and the fumigant cylinder. The check valve is best placed on the outlet side of the pressure regulator, and is oriented to only allow compressed gas to flow out of the cylinder or compressed air out of the compressed air system.
 - Always pressurize the system with compressed gas or by use of a compressed air system before opening the fumigant cylinder valve.
- Before using a fumigation rig for the first time, or when preparing it for use after storage, the operator must check the following items carefully:
 - Check the filter, and clean or replace the filter element as required.
 - Check all tubes and chisels to make sure they are free of debris and obstructions.
 - Check and clean the orifice plates and screen checks, if installed.
 - Pressurize the system with compressed gas or compressed air, and check all fittings, valves, and connections for leaks using soap solution.
- Install the fumigant cylinder, and connect and secure all tubing. Slowly open the compressed gas or compressed air valve, and increase the pressure to the desired level. Slowly open the fumigant cylinder valve, always watching for leaks.
- 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.
- When changing the cylinders, be certain they are turned off and the fumigant system is not under pressure.
- When the application is complete, close the fumigant cylinder valve and blow residual fumigant out of the fumigant lines into the soil using compressed gas or compressed air. At the end of the application, disconnect all fumigant cylinders from the application rig. At the end of the season, seal all tubing openings with tape to prevent the entry of insects and dirt.

Application equipment must be calibrated and all control systems must be working properly. Proper calibration is essential for application equipment to deliver the correct amount of fumigant uniformly to the soil. Refer to the manufacturer's instructions on how to calibrate your equipment, usually the equipment manufacturer, fumigant dealer, or Cooperative Extension Service can provide assistance.

TM-442 Drip Application: Additional GAPs

In addition to the GAPs required for all TM-442 soil fumigation applications, the following GAPs apply for drip applications:

Use Precautions

- Apply this product only through drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
- Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- Do not connect an irrigation system (including greenhouse systems) used for pesticide applications to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- The certified applicator or WPS trained handlers under the supervision of and in communication with the certified applicator shall shut the system down and make necessary adjustments should the need arise.

Soil Preparation

- Till fields with known plowpans because they can lead to puddling of the fumigant due to inadequate soil drainage.
- Ground must be in good seed bed condition.
- Beds should be listed, shaped, and ready for planting.
- Soil moisture must be at 50% of field capacity in the top 2-3 inches at time of TM-442 application.

Product and Dosage

- Plan the application by calculating the amount of TM-442 required at the appropriate rate for the crop, treated area, and target pest.
- 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 inches apart.
- 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.
- Surfactant 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 be metered into the water supply line and passed through a mixing device such as a centrifugal pump or static mixer, to assure proper agitation before it is distributed into the drip irrigation system.
- 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 TM-442 exceed 1,000 ppm in the drip line.

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System Controls and Integrity

- The irrigation system (main lines, headers, drip tape) must be thoroughly checked for leaks before the start of application. Leak detection requires that the irrigation system be at full operating pressure. The amount of time needed at full operating pressure will vary by irrigation system design. Look for puddling along major pipes (holes in pipes or leaky joints), at the top and ends of rows (leaky connection, open drip tape), and on the bed surface (damaged drip tape, malfunctioning emitters). Any leaks discovered during the pre-application check must be repaired prior to fumigant application.
- To inject fumigant, use a metering system (such as a positive pressure system, positive displacement injection pump, diaphragm pump, or a Venturi system) effectively designed and constructed of materials that are compatible with the fumigant and capable of being fitted with system interlocking controls. Do not use containers pumps or other equipment made of aluminum, magnesium or their alloys as chloropicrin can be corrosive to such metals.
- 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 and backflow;
 - A functional, automatic, quick-closing check valve to prevent the flow of fluids back toward the fumigant container;
 - A functional, normally closed, solenoid-operated valve located on the intake side of the injection point and connected to the system interlock to prevent the fumigant from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down;
 - Functional interlocking controls to automatically shut off the fumigant injection when the irrigation water flow stops or decreases to the point where fumigant distribution is adversely affected.

Site of Injection and Irrigation System Layout

- Site of injection must be as close as practical to the area being treated (such as direct injection of fumigant into the header pipe/manifold or into an aboveground delivery pipe attached to the header). If the fumigant is injected into a main line, make sure the irrigation pipe is able to be cleared of all fumigant as the fumigant may pool in low sections of the pipe. Also make sure that valves on lateral lines of the main line are closed, if these lateral lines lead to areas not being fumigated at the time of the application.

System Flush

- After application of TM-442, continue to drip-irrigate the area with water to flush the irrigation system. Do not allow TM-442 to remain in the irrigation system after the application is complete. The total volume of water, including the amount used for flushing the irrigation system, must be adequate to completely remove the fumigant from the lines, but should be less than the amount that could over-saturate the beds (bed collapse can occur from over-saturation). If common lines are used for both the

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fumigant application and water seal (if a water seal is applied) these lines must be adequately flushed before starting the water seal and/or normal irrigation practices.

Soil Sealing

- If tarps are used they must be put in place before the fumigation begins.
- Tarp edges must be buried along the furrow and at the ends of rows.

Application Depth

- *For Untarped Applications:* The drip tape must be buried at a minimum 5 inches.

Planting Interval

Do not disturb treated soil for 2 weeks. Wet soil retards diffusion of TM-442, thus requiring a longer exposure period. Aeration is usually complete when the odor of TM-442 is no longer evident.

Requirements for Pre-Plant Greenhouse Soil Fumigation

- The maximum area that can be treated is 50,000 square feet.
- All applications must be tarped.
- During the application keep doors, vents and windows to the outside open and fans or other mechanical ventilation systems running within the application block.
- Leaks through which gases could enter adjacent enclosed areas must be sealed.

Site-Specific Fumigation Management Plan (FMP)

Prior to the start of fumigation, the certified applicator supervising the application must verify that a site-specific FMP exists for each application block (i.e. a greenhouse or field or portion of a field treated with a fumigant in any 24-hour period). In addition, an agricultural operation fumigating multiple application blocks may format the FMP in a manner whereby all of the information that is common to all the application blocks is captured once, and any information unique to a particular application block or blocks is captured in subsequent sections.

The FMP must be prepared by the certified applicator, the site owner/operator, registrant or other party.

The certified applicator must verify in writing (sign and date) that the site-specific FMP(s) reflects current site conditions before the start of fumigation.

Each site-specific FMP must contain the following elements:

- Applicator information (name, phone number, pesticide applicator license and/or certificate number, employer name, employer address)
- General site information
 - Application block location (e.g., county, township-range-section quadrant), address, or global positioning system (GPS) coordinates
 - Name, address, and phone number of owner/operator of the application block

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- General application information (target application date/window, brand name of fumigant, EPA registration number)
- Tarp information and procedures for repair, perforation, and removal (if tarp is used)
 - Brand name, lot number, thickness
 - Name and phone number of person responsible for repairing tarps
 - Schedule for checking tarps for damage, tears, and other problems
 - Maximum time following notification of damage that the person(s) responsible for tarp repair will respond
 - Minimum time following application that tarp will be repaired
 - Minimum size of damage that will be repaired
 - Other factors used to determine when tarp repair will be conducted
 - Name and phone number of person responsible for perforating and/or removing tarps (if other than certified applicator)
 - Equipment/methods used to perforate tarps
 - Schedule and target dates for perforating tarps
 - Schedule and target dates for removing tarps
- Soil conditions (description of soil texture in application block, method used to determine soil moisture)
- Weather conditions (summary of forecasted conditions for the day of the application and the 48-hour period following the fumigant application)
 - Wind speed
 - Inversion conditions (e.g., shallow, compressed (low-level) temperature inversion)
 - Air stagnation advisory
- Air-purifying respirators, air-rescue devices, and other personal protective equipment (PPE) for handlers (handler task, protective clothing, air-purifying respirator type, respirator cartridge type, respirator cartridge replacement schedule, air-rescue device type, eye protection, gloves, other PPE)
- Emergency procedures (evacuation routes, locations of telephones, contact information for first responders, local/state/federal/tribal contacts, key personnel and emergency procedures/responsibilities in case of an incident, equipment/tarp/seal failure or complaints, or other emergencies).
- Fumigant Treated Area posting procedures (person(s) who will post Fumigant Treated Area signs, location of Fumigant Treated Area signs, procedures for Fumigant Treated Area sign removal)
- Plan describing how communication will take place between the applicator, land owner/operator, and other on-site handlers (e.g., tarp perforators/removers, irrigators) for complying with label requirements (e.g., timing of tarp perforation and removal, PPE).
 - Name and phone number of persons contacted
 - Date contacted
- Authorized on-site personnel
 - Names, addresses and phone numbers of handlers
 - Names, addresses and phone numbers for employers of handlers
 - Tasks that each handler is authorized and trained to perform
 - For handlers designated to wear air-purifying respirators (an air-purifying respirator is required for a minimum of 2 handlers):

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- date of medical qualification to wear an air-purifying respirator
- date of air-purifying respirator training, and
- date of fit-testing for the air-purifying respirator.
- Air monitoring plan
 - If sensory irritation is experienced, indicate whether operations will be ceased or operations will continue with an air-purifying respirator
 - If the intention is to cease operations when sensory irritation is experienced, provide the name, address, and phone number of the handler that will perform monitoring activities prior to operations resuming
 - When air-purifying respirators are worn:
 - Representative handler tasks to be monitored
 - Monitoring equipment to be used and timing of monitoring
- Good Agricultural Practices (GAPs)
 - Description of applicable mandatory GAPs
 - Measurements and documentation to ensure GAPs are achieved (e.g., measurement of soil and other site conditions)
- Description of hazard communication. (The application block has been posted in accordance with the label. Pesticide product labels and material safety data sheets are on-site and readily available for employees to review.)
- Record-keeping procedures (the owner/operator of the application block as well as the certified applicator must keep a signed copy of the site-specific FMP for 2 years from the date of application).

For situations where an initial FMP is developed and certain elements do not change for multiple fumigation sites (e.g., applicator information, authorized on-site personnel; record-keeping procedures, emergency procedures) only elements that have changed need to be updated, in the site-specific FMP provided the following:

- The certified applicator supervising the application has verified that those elements are current and applicable to the application block before it is fumigated.
- Record-keeping requirements are followed for the entire FMP (including elements that do not change).

Once the application begins, the certified applicator must make a copy of the FMP available for viewing by handlers involved in the fumigation. The certified applicator or the owner operator of the application block must provide a copy of the FMP to any local/state/federal/tribal enforcement personnel who request the FMP. In the case of an emergency, the FMP must be made immediately available when requested by local/state/federal/tribal emergency response and enforcement personnel.

Within 30 days of completing the application portion of the fumigation process, the certified applicator supervising the application must complete a post-application summary that describes any deviations from FMP that have occurred, measurements taken to comply with GAPs, monitoring results as well as any complaints and/or incidents that have been reported to him/her.

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The Post-Application Summary must contain the following elements:

- Actual date of the application, application rate, and size of application block fumigated
- Summary of weather conditions on the day of the application and during the 48-hour period following the fumigant application
- Soil temperature measurement (if air temperatures were above 100 degrees F in any of the 3 days prior to the application)
- Tarp damage and repair information (if applicable)
 - Location and size of tarp damage
 - Description of tarp/tarp seal/tarp equipment failure
 - Date and time of tarp repair
- Tarp perforation/removal details (if applicable)
 - Description of tarp removal (if different than in the FMP)
 - Date tarps were perforated
 - Date tarps were removed
- Complaint details (if applicable)
 - Person filing complaint (e.g., on-site handler, person off-site)
 - If off-site person, name, address, and phone number of person filing complaint
 - Description of control measures or emergency procedures followed after complaint.
- Description of incidents, equipment failure, or other emergency and emergency procedures followed (if applicable).
- Details of elevated air concentrations monitored on-site (if applicable)
 - Location of elevated air concentration levels
 - Description of control measures or emergency procedures followed
 - Air monitoring results
 - When sensory irritation experienced:
 - Date and time of sensory irritation
 - Handler task/activity
 - Handler location where irritation was observed
 - Resulting action (e.g., cease operations, continue operations with air-purifying respirators)
 - When using a direct read instrument:
 - Sample date and time
 - Handler task/activity
 - Handler location
 - Air concentration
 - Sampling method
- Date of Fumigant Treated Area sign removal
- Any deviations from the FMP
- Record-keeping procedures (the owner/operator of the application block as well as the certified applicator must keep a signed copy of the post-application summary for 2 years from the date of application).

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PRECAUTIONS TO FOLLOW

PRIOR TO FUMIGATION

- (1) Comply with all local regulations and ordinances. Obtain an application permit from Agricultural Regulatory agencies as required.
- (2) Obtain medical assistance at once in case of illness after exposure, and do not allow conditions which could accidentally cause further exposure.
- (3) Never fumigate alone. It is imperative to always have an assistant trained in handling fumigants with proper protection equipment to aid in case of accidents.
- (4) 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.
- (5) Handle this fumigant in the open, when possible, with the operator "upwind" from the container where there is good ventilation.

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 MUST BE HANDLED WITH CARE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION WHO ARE TRAINED IN ITS PROPER USE.

SOIL FUMIGATION

TM-442 is a pre-plant 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.

Keep pets, livestock, and other domestic animals out of the treated area during application and during tarp perforation and/or removal if a tarp is used.

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PREPLANT SOIL FUMIGATION USES MAXIMUM DOSAGES

Field soils to be planted to	Pounds per acre overall ¹ for non-tarped applications	Pounds per acre overall ¹ for tarped or deep injection non-tarped applications	Pounds per acre overall ¹ for drip irrigation applications
Floral crops	175	200 - 350	100-300
Nursery crops	175	300 - 350	100-300
Plant and seed beds	175	300 - 350	100-300
Eggplant, tomatoes, peppers (hot & sweet)	175	300 - 350	100-300
Sweet potatoes, yams	175	200 - 350	100-300
Cucumbers, melons, cantalopes	150 - 175	150 - 350	100-300
Onions	150 - 175	150 - 350	100-300
Strawberries	150 - 175	150 - 350	100-300
Stone fruit	150 - 175	150 - 350	100-300
Lettuce	150 - 175	150 - 350	100-300
Beets, carrots	150 - 175	150 - 350	100-300
Tobacco	60-100	60-100	
All other crops	150 - 175	150 - 350	100-300
Miscellaneous uses	Application rates		
Mushroom Casing Soil	5-10 cc/cu.ft.		
Potting soil	3 - 4 cc/sq. ft.		
Seed beds	3 - 8 cc/sq. ft.		

- ¹Row or bed applications are made at overall broadcast rate but the amount used will be proportionately less per acre depending on row spacing and width of treatment in the row or bed. 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.

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TREATMENT OF WOOD, TIMBERS, POLES, PILES AND GLUE-LAMINATED BEAMS FOR CONTROL OF INTERNAL WOOD DECAY BY FUNGI AND INSECTS (NOT FOR 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
22 in to 29 in"	5/8"	15"	6	1/4
	5/8"	18"	5	1/4
	3/4"	15"	4	1/4
30 in to 38 in"	3/4"	15"	6	1/2
	3/4"	18"	5	1/2
	3/4"	21"	4	1/2
	3/4"	24"	3	1/2
	7/8"	21"	3	1/2
39 in to 56 in"	3/4"	24"	6	1
	7/8"	21"	5	1
	7/8"	24"	4	1
57 in to 65 in"	7/8"	24"	5	1 1/4

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.

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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.

CONTAINER HANDLING/CONTAINER DISPOSAL

Refillable Container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

RETURN CYLINDERS TO: Return cylinders to the place of purchase as designated on the Bill of Sale. Cylinders are the property of Arysta 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 TM-442 is measured to be less than 0.15 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.

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WARNING AGENT

TM-442 may be used for clearing structures prior to fumigating with methyl bromide or sulfuryl fluoride. See the Directions for Use section on the applicable methyl bromide or sulfuryl fluoride product label for details.

TM-442 is compatible when mixed with Chlorinated C³ Hydrocarbons.

Warranty and Disclaimer Statement

The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Such risks may arise from weather conditions, soil factors, off-target movement, unconventional farming techniques, the presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of Arysta LifeScience North America, LLC ("Arysta"), and can cause crop injury, injury to non-target crops or plants, ineffectiveness of the product, or other unintended consequences. To the extent consistent with applicable law, all such risks shall be assumed by the user or buyer.

Arysta warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions. This warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to Arysta, and is subject to the inherent risks described above.

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TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE TOTAL LIABILITY OF ARYSTA, MANUFACTURER, AND SELLER, SHALL BE LIMITED TO THE PURCHASE PRICE PAID, OR AT ARYSTA'S ELECTION, THE REPLACEMENT OF THE PRODUCT.