

8481-456

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

CERTIFIED MAIL

APR 30 2010

Ian Chart
AMVAC
4695 MacArthur Court
Suite 1250
Newport Beach, CA 92660

Subject: Metam 376
EPA Reg. No. 5481-456
RED Mitigation Amendment dated October 5, 2009
EPA Decision Number D432220

Dear Mr. Chart:

The amended label referred to above, submitted in connection with reregistration of metam-sodium 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. Page 1

- a. In the Restricted Use box, remove the parentheses around the phrase "Due to acute inhalation toxicity to humans"
- b. Under "Active Ingredient" revise Inert Ingredients to read as "Other Ingredients".
- c. Please note a company website is listed. Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance. As an alternative, you may refer consumers to the company's phone number or email address.
- d. Revise the Precautionary Statements as required in our letter dated November 13,

2001 to read “DANGER CORROSIVE: Causes skin damage. May be fatal if absorbed through skin. Do not get in eyes or on skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if swallowed or inhaled. Irritating to the eyes, nose and throat. Avoid breathing vapor or spray mist.”

2. Page 2

- a. at bottom of page 2, in the sentence beginning with, “All other handlers (except for fumigant handlers who set up...),” add the following before the parenthesis, “including handlers operating motorized ground equipment with closed cabs”
- b. remove the word “fumigant” from the sentence described just above.

3. Page 3

- a. In the bullet under Personal Protective Equipment for Respiratory Protection that specifies “a respirator with a canister approved for pesticides,” add the following phrase: “*or canister with any N, R, P or HE prefilter.*”
- b. In the User Safety Requirements section, add the following sentences found in the previously stamped label, “DO NOT transport contaminated clothing inside a closed vehicle. Store in a sealed container and wash or dispose as specified.”
- c. In the Environmental Hazards section:
 - the sentence beginning, “Metam sodium and metam potassium have certain properties...” – the words metam potassium should be removed.
 - Remove the second period after this sentence: “Apply this product only as specified on this label.”
- d. In the last full paragraph on page 3:
 - In the first sentence, remove the following portion of the text in the parentheses that states:
 1. “and not separated by a 12-hour interruption.”
 - after the sentence ending with the words, “from the start of application until the entry restricted period ends,” add the following:
 1. (NOTE: persons installing, perforating, removing, repairing, and monitoring tarps are considered handlers for the durations listed below).

4. Page 4

- a. In the NOTE section of the 2nd bullet, change “Tarp Perforation and Removal” to “Tarp Perforation and/or Removal”
- b. Revise the title Protection For Handlers to “Supervision of Handlers” on this page and, where applicable throughout the label.
- c. Remove the following text under the Supervision of Handlers section in sixth paragraph : *[the registrant provided]* and revise this paragraph to the following: “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 www.epa.gov/fumigantraining.”

- d. In the last paragraph on page 4, change the last phrase in the sentence to include the word “the”. The revised phrase should state:
 -are excluded from the application block during...

5. Page 5

- a. At the end of the ‘Protection for Handlers’ section, and above the ‘Respirator Fit Testing...’ section, add the following sentence to reflect what was on the previously stamped label in the User Safety Requirements section:
“Cartridges or canisters must be replaced when odor or irritation from this product becomes apparent, if the measured concentration of metam sodium is greater than 6000 ppb, or after 8 hours of use, whichever occurs first.”
- b. In the Respirator Fit Testing, Medical Qualification, and Training section, change the word “ensure” to “verify”
- c. In the Respirator Fit Testing, Medical Qualification, and Training section, add the following sentence to the end of the last bullet: *“Upon request by local/state/federal/tribal enforcement personnel, employers must provide documentation how they have complied with those these requirements.”*
- d. Add the following bullet underneath the second bullet in the Respiratory and Stop Work Triggers Section (this bullet should be indented like the bullets underneath the first bullet): *“During the collection of air samples, an air-purifying respirator must be worn by the handler taking the air samples.”*
- e. Add the following bullet underneath the third bullet in the Respiratory and Stop Work Triggers section: *“When breathing zone samples are required, they must be taken outside respiratory protection equipment and within a ten inch radius of handler’s nose and mouth.”*

6. Page 6

- a. In the first bullet on the page, change the sentence that begins, “Work activities can resume if....,” to read: “Work activities can resume if all of the following conditions exist provided that the appropriate air-purifying respirator is worn:”
- b. Move the last paragraph on this page that begins, “Do not apply this product...”, to page 3, following the paragraph that begins “It is a violation” in the heading “Directions for Use”

7. Page 7

- a. Add a box around the “Agricultural Use Requirements” section
- b. In the Agricultural Use Requirements, the following sentence must be removed:
 - *“It also contains specific instructions and exceptions pertaining to the statements in this label about personal protective equipment (PPE),*

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restricted entry interval and notification of workers.”

- c. In the second bullet of the Entry-Restricted Period section, before the comma and word “or,” add the following:
 - 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 those 14 days)
- d. In the NOTE section of the Entry-Restricted Period section, change “Tarp Perforation and Removal” to “Tarp Perforation and/or Removal”
- e. In the “Notification Requirement” section:
 - place quotes around the language in each of the first three bullets
 - Remove the words “Brand name of this product” in the 6th bullet, and place quotes around “METAM 376”
 - Delete the phrase “and not separated by a 12-hour interruption” from the last paragraph under the “Notification Requirements” section.

8. Pages 8-27

- a. Insert an “s” at the end of GAP in the parentheses in the heading Mandatory Good Agricultural Practices
- b. The word “must” must be italicized in the “*Wind Speed*” and “*Weather Conditions*” section of all application methods.
- c. Change the last bullet in the “Weather Conditions” section to read:
 - “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.”
- d. On page 8, under *Soil Condition, Injection Depth and Soil Sealing*, remove the words “For applications:” and begin that paragraph with “The injection point for bedded and broadcast applications....”
- e. In all of the “Tarps” sections, change the word in the first sub-bullet from “tarpaulins” to “tarps”.
- f. In the “*Soil Moisture*” section, delete the word “help” from the sentence beginning: “If appropriate measuring equipment is not used....”
- g. In the Soil Moisture section of all application methods:
 - indent the bullet that begins, “For fields with more than one soil texture...” and bold the words “**fields with more than one soil texture.**”
 - include “(field capacity)” following the term “soil capacity” throughout label
 - change the word “at” to “between” in the phrase “top six inches **between** 60% to 80% soil capacity
- h. The Air Temperature section is mission from the Center Pivot; Solid Set Sprinkler; Drench; and Drip, Flood Basin, Furrow and Border application sections. Add the following directly before the Soil Temperature section in each

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of these application methods:

“Air Temperature

- The maximum air temperature is 90 degrees F.”

- i. In the Wind Speed section of the Center Pivot section, replace the first two bullets with the following:
 - For sprinkler or chemigation applications: 1) not using a solid stream type nozzle, OR 2) having a release height or spray height greater than 4 feet, OR 3) having 30 lbs or greater PSI at the sprinkler head, wind speed at the application site must be a minimum of 2 mph at the start of the application or forecasted to reach 5 mph during the application and the maximum wind speed is 10 mph.
 - For sprinkler or chemigation applications using: 1) a solid stream, AND 2) having release height and spray height less than 4 feet, AND 3) having 29 lbs. or less PSI at the sprinkler head, wind speed at the application site must be a minimum of 2 mph at the start of the application or forecasted to reach 5 mph during the application and the maximum wind speed is 25 mph.
- j. In the *“Soil Moisture”* sections of Chemigation; Solid Set Sprinkler; Drench; and Drip, Flood Basin, Furrow and Border application sections, the last bullet must be revised to the following:
 - “If there is insufficient moisture throughout the top six inches below the surface of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage prior to the application. To conserve soil moisture tillage should be done as close to the time of application as possible.”
- k. In the Application and Equipment Considerations sections of the Center Pivot, Solid Set Sprinkler, Drench, Drip, and Flood Basin, Furrow and Border Application sections, make the following changes:
 - Change the second bullet (except in Flood Basin, it is the fourth bullet) to “Tanks must be in good condition to ensure product does not spill or leak.”
 - In the following bullet (which appears in the above sections except Flood Basin), add “inspection port” as shown: *“The system must contain a functional check valve, vacuum relief valve, inspection port, and low-pressure drain...”*
- l. On page 13 – the second section beginning “Apply the product...”, the first sentence must state: “Spray or drip the product mixture on the soil immediately ahead of the bed-shaping equipment or tiller.
- m. Remove the following sentence from the second bullet of the Soil Conditions section under the Drench application methods: “Plant residue must be worked into the soil with little or no crop residue present on the soil surface.”

- n. In the “Drench,” “Drip,” and “Flood Basin” application sections the first bullet under the “Soil Conditions” section must state:
 - “Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, tillage to fracture these layers must occur. The soil must be tilled prior to the soil fumigant application, at minimum, to the depth of the treatment zone.”
- m. In the *Soil Conditions* sections on pages 16 (for Center Pivot) and 18 (for Solid Set Sprinkler), delete the phrase that states: “Except when applying over cover crops as set forth in the General Instructions for Sprinkler Systems.” There is no exception for cover crops on this label.
- n. On page 24 add to the application and equipment considerations-“nozzles and metering devices are of correct size and are sealed and unobstructed.”

9. Page 27

- a. Delete the phrase: “or, for center pivot applications which occur over many days, the total acres of a field treated and not separated by a 12 hour interruption” in the first paragraph under the heading “SITE SPECIFIC FUMIGATION MANAGEMENT PLAN (FMP)”
- b. Insert the words “and/or certificate” in the first bullet in the FMP section. The complete bullet should state:
 - i. “Applicator information (name, phone number, pesticide applicator license and/or certificate number, employer name, employer address).”

10. Page 29 (FMP section)

- a. Under Good Agricultural Practices, the first sub-bullet, remove the following: (registrants may also include optional GAPs)
- b. Following the description of Hazard Communication, insert “e.g.,” inside the parenthesis.
- c. In the paragraph that begins, “Once the application begins,....”, the sentence must read: “In case of an emergency, the FMP must be made immediately available when requested by federal/state/tribal/local emergency response and enforcement personnel.”

11. Page 30

- a. The conversion of the maximum application rate to the gallons of product is incorrect and must be changed to state:
 - i. “Maximum application rate is 320 lbs ai/A (85 gallons per treated acre).
- b. All rates stated on the label must be checked to not exceed the maximum allowed.
- c. In the first sentence under “GENERAL INFORMATION” delete the comma after the phrase “sever compaction prepare”
- d. Under the heading “Planning the Application” add the sentence: “Do not repeat an

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application within 30 days.”

- e. Move the greenhouse prohibitions, along with the handheld application prohibition to page 3, under the heading “Directions for Use”

12. Page 31

- a. delete all of the text under the heading “GENERAL PRECAUTIONS FOR IRRIGATION SYSTEMS”
- b. The sentence (“Do not apply when wind speed favors drift beyond the area intended for treatment.”) at the bottom of the page is duplicated. Delete one of the statements, and move the sentence to the bottom of page 3, before the sentence that begins “The following activities are prohibited from being performed....”

13. Page 32 and 33

- a. Revise the heading that currently states: “SOIL DRENCH APPLICATION TO TURF” to state: “SOIL DRENCH PRE-PLANT APPLICATION TO TURF” to clarify the use pattern.
- b. Under the current heading “SOIL DRENCH APPLICATION TO TURF”:
 - Under direction #2, since application with handheld equipment is prohibited revise the sentence to state: “Apply with a pump capable of delivering 10 to 15 gallons per minute at 15 to 25 psi.”
 - Also, delete the following phrase under direction #3: “to remove excess METAM 376 from grass blades and surface thatch” since this product is for pre-plant application.
- c. The WARRANTY AND DISCLAIMER section is out of date and should be modified with the language in the link below:
<http://www.epa.gov/oppfead1/labeling/lrm/chap-12.htm#IX>

14. Updated Storage and Disposal statements in accordance with PRN 2007-4.

CONDITIONS

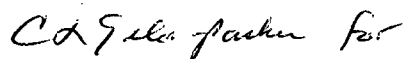
- 1. EPA has determined that the risk mitigation measures on the revised label for this product are necessary to adequately protect human health and the environment. Therefore, pursuant to 40 CFR § 152.130(d), EPA has decided that no product bearing previously approved labeling may be sold or distributed (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.

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2. One copy of the label stamped "Accepted with Comments" is enclosed for your records. Please submit one copy of the final printed label that incorporates the required change before the product is released for shipment.

If you have any questions, please contact Shaja Joyner by phone at: 703-308-3194 or via email at: joyner.shaja@epa.gov.

Sincerely,



Shaja B. Joyner
Product Manager (20)
Fungicide Branch
Registration Division (7504P)

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RESTRICTED USE PESTICIDE

(DUE TO ACUTE INHALATION TOXICITY TO HUMANS)

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.

METAM 376

For Turf Grasses

A SOIL FUMIGANT SOLUTION FOR CONTROL OR SUPPRESSION OF NEMATODES AND TO REDUCE THEIR DAMAGING EFFECTS ON TURF GRASSES SUCH AS BERMUDA, FESCUE AND RYE GRASS ON GOLF COURSES.

Not for use on turf being grown for sale or for other commercial use as sod, or for commercial seed production, or for research purposes.

ACTIVE INGREDIENT:

Sodium methylthiocarbamate (anhydrous) 38.0%

INERT INGREDIENTS: 62.0%

TOTAL: 100.0%

Contains 3.76 lbs. METAM SODIUM per gallon.

U.S. Patent No. 4,994,487 AND 5,075,332.

KEEP OUT OF REACH OF CHILDREN

DANGER

"PRECAUCION AL USUARIO:

Si usted no lee ingles, no use este producto hasta que la etiqueta haya sido explicado ampliamente.

FIRST AID

If on skin or clothing:	<ul style="list-style-type: none"> Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
If in eyes:	<ul style="list-style-type: none"> Hold eye 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 eye. Call a poison control center or doctor for treatment advice.
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 swallowed:	<ul style="list-style-type: none"> Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

EMERGENCY INFORMATION

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

FOR THE FOLLOWING EMERGENCIES, PHONE 24 HOURS A DAY:

Transportation: CHEMTREC.....1-800-424-9300

Other: AMVAC.....1-323-264-3910

NOTE TO PHYSICIAN

Probable mucosal damage may contraindicate the use of gastric lavage. This product may pose an aspiration pneumonia hazard.

SEE SIDE/BACK PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS AND DIRECTIONS FOR USE.

EPA Reg. No. 5481-456
EPA Est. No. 5481-CA-01

Net Weight:
As Marked on Container



4100 E. Washington Blvd.
Los Angeles, CA 90023 U.S.A

1-323-264-3910 • www.amvac-chemical.com

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Harmful if inhaled or swallowed. Irritating to eyes, nose, throat and skin. Avoid breathing vapors or spray mist. Avoid contact with skin, eyes, or clothing. In case of contact, immediately remove contaminated clothing. Wash and dry clothing before reuse.

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.

Handlers applying via weed sprayer while irrigation sprinklers are running or handlers who may be exposed to liquid spray while repairing a malfunctioning chemigation system or shutting off equipment must wear:

- Chemical-resistant coveralls over long-sleeve shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks,
- Chemical-resistant headgear,
- Protective eyewear, and
- Respirator of the type specified in the respiratory protection section in the PPE requirements on this label.

Handlers wearing chemical-resistant attire are limited to 30 minutes of exposure in any 60-minute period to prevent heat illness, and, as required by the Worker Protection Standard for Agricultural Pesticides, employers of these handlers must take any necessary steps to avoid heat illness.

Except as required above, handlers transferring or loading liquid formulations, handlers operating motorized ground equipment with open cabs, handlers repairing or inactivating irrigation or chemigation equipment during application, and handlers cleaning up spills or equipment must wear:

- Coveralls over long-sleeve shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks,
- Chemical-resistant apron if transferring or loading the fumigant or cleaning up spills or equipment,
- Protective eyewear, and
- Respirator of the type specified in the PPE requirements for respiratory protection section in the PPE requirements on this label if triggered.

All other handlers (except for fumigant handlers who set up and calibrate chemigation and irrigation equipment and start the application from inside the application block) as stated in this labeling must wear:

- Long-sleeve shirt and long pants,
- Shoes plus socks, and
- Respirator of the type specified in the eye and respiratory protection section in the PPE requirements on this label if triggered.

All handlers who set-up and calibrate chemigation and irrigation equipment and start the application from inside the application block must wear:

- Long-sleeve shirt and long pants,
- Shoes plus socks,
- Protective eyewear, and
- Respirator of the type specified in the respiratory protection section in the PPE requirements on this label if triggered.

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PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR RESPIRATORY PROTECTION

When respiratory protection is required, in lieu of protective eyewear, handlers must wear:

- At least a NIOSH-approved full-face, or helmet/hood style respirator with either:
 - An organic-vapor removing cartridge with a pre-filter approved for pesticides (NIOSH approval number prefix TC-23C), or
 - A respirator with a canister approved for pesticides (NIOSH approval number prefix TC-14G).

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 absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to mammals, birds, aquatic invertebrates and fish. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not contaminate water when disposing of equipment wash waters or rinsate. Apply this product only as specified on this label.

Metam sodium and metam potassium have certain properties and characteristics in common with chemicals that have been detected in groundwater (highly soluble in water and has low adsorption to soil).

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

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product through any type of irrigation system.

The following activities are prohibited from being performed in the fumigant application block (i.e., the field or portion of a field treated with a fumigant in any 24-hour period or, for center pivot applications which occur over many days, the total acres of a field treated and not separated by a 12-hour interruption) 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. 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;
- Persons cleaning up fumigant spills (this does not include emergency personnel not associated with the fumigation application);
- 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 application block;

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- 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 tarps perforation is complete if they will not be removed within 14 days after application.

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

- Performing any handling tasks as defined by the Worker Protection Standard.
- In addition to the above, persons outside the perimeter of the application block who visually monitor application equipment to ensure proper functioning and monitor fumigant air concentrations in accordance with the fumigant site monitoring requirement must also be trained and equipped as handlers in accordance with the requirements in the Worker Protection Standard (40 CFR Part 170).

PROTECTION FOR 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 all water-run applications (e.g., sprinkler/chemigation, wheel line, center pivot, lateral move, drip, flood, etc.), the certified applicator must be at the fumigation site in the line of sight of the application 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 Worker Protection Standard-trained handlers on-site until the fumigation has stopped being delivered/dispersed into the soil. Worker Protection Standard-trained handlers may perform the monitoring functions in place of the certified applicator but must be under the supervision of the certified applicator and 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 Fumigation Management Plan (FMP).

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 by 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).

The results of 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 [*the registrant provided*] 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.

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 defined in this labeling are excluded from application block during the entry restricted period.

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.

At least one handler must have the appropriate respirator and cartridges available, and they must be fit-tested, trained, and medically examined.

The fumigation handler employer must confirm and document in the FMP 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.

RESPIRATOR FIT TESTING, MEDICAL QUALIFICATION, AND TRAINING

Employers must ensure that any handler that 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 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.

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 defined in this labeling.

- 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 an air-purifying respirator must leave the application block.
- Handlers can remove respirators or resume operations if two consecutive breathing-zone samples taken at the handling site at least 15 minutes apart show that levels of MITC have decreased to less than 600 ppb, provided that handlers do not experience sensory irritation. Samples must be taken where the irritation is first experienced.
- When using monitoring devices to monitor air concentration levels, a direct reading detection device, such as a Draeger or Sensidyne device must be used. The devices must have a sensitivity of at least 600 ppb for MITC.
- When 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 6,000 ppb, 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 respiratory protection, if two consecutive breathing zone samples taken at the handling site at least 15 minutes apart show levels of MITC have decreased to less than 600 ppb, 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 experienced.

- Work activities can resume if the following conditions exist provided that the appropriate air-purifying respirator is worn:
 - Two consecutive breathing zone samples for MITC taken at the handling site at least 15 minutes apart must be less than 6,000 ppb,
 - 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 definition of fumigant handlers 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 where a coultter 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; or
 - 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 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-fumigation summary section of the FMP.
- Early Tarp Perforation for Flood Prevention Activities:
 - Tarp perforation is allowed before the 5 days (120 hours) have elapsed if rain necessitates field drainage.
 - Tarps must be immediately retucked and packed after soil removal.

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.

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 notifications to workers. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS).

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

ENTRY-RESTRICTED PERIOD

Entry (including early entry that would otherwise be permitted under the Worker Protection Standard) 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
- 5 days (120 hours) after application is complete if tarps are not perforated and removed for at least 14 days following application, or
- 48 hours after tarp perforation is complete if they will not be removed for at least 14 days following application, or
- Tarp removal is completed if tarps are both perforated and removed less than 14 days after application.

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

NOTIFICATION REQUIREMENT

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

- DANGER/PELIGRO,
- Area under fumigation, DO NOT ENTER/NO ENTRE,
- Metam Sodium Fumigant in Use,
- The date and time of fumigation,
- The date and time the entry restricted period is lifted,
- Brand name of this product (METAM 376), and
- Name, address, and telephone number of the certified applicator in charge of the fumigation.

Post the Fumigant Treated Area sign instead of the Worker Protection Standard sign for this application but follow all Worker Protection Standard 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 field or portion of a field treated with a fumigant in any 24-hour period or, for center pivot applications which occur over many days, the total acres of a field treated and not separated by a 12-hour interruption.

MANDATORY GOOD AGRICULTURAL PRACTICES (GAP)

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 the post-application summary report.

Shank Applications

Wind Speed

- 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.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions, Injection Depth and Soil Sealing

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural "chimneys" that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

For applications: The injection point for bedded and broadcast applications shall be a minimum of 3 inches from the final soil/air interface. Chisel traces must be eliminated following an application and the soil surface must be sealed immediately after application using one or more of the following methods:

- Compaction with a bed-shaper, roller, press wheel or by similar device, OR
- Covering the treated soil with 3-6 inches of untreated soil, OR
- Applying a minimum of a ½-inch of water beginning immediately after application of a set and completing the water treatment within four hours, OR
- Covering treated area with a tarp.

Tarps

- When tarps are used for emission control, tarps must be installed immediately after application.
- When tarps are used, a written tarp plan must be developed and included in the FMP that includes:
 - Schedule and procedures for checking tarpaulins for damage, tears, and other problems,
 - Plans for determining when and how repairs to tarp will be made, and by whom,
 - Minimum time following injection that tarp will be repaired,

- Minimum size of damage that will be repaired,
- Other factors used to determine when tarp repair will be conducted,
- Schedule, equipment and methods used to cut tarp,
- Aeration plans and procedures following cutting and/or slitting prior to tarp removal or planting, and
- Schedule, equipment, and procedures for tarp removal.

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Soil Temperature

- At the beginning of the application, the maximum soil temperature at the injection depth is 90°F.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application, subject to the exception below.
- EXCEPTION: In areas where soil moisture must exceed field capacity to form a bed (e.g. certain regions in Florida), soil capacity may exceed the 80% allocated above.
- If appropriate measuring equipment is not used to determine whether the soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Application and Equipment Considerations

- Do not apply or allow fumigant to drain or drip onto the soil surface. Injectors must be placed below the soil surface before product flow begins. 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.

- Application equipment must be in good working order.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Dry connect fittings (closed transfer system) must be installed on all tanks and transfer hoses.
- Sight gauges and pressure gauges must be working.
- Nozzles and metering devices must be the correct size and sealed and unobstructed.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- Each nozzle must be equipped with a flow monitor, e.g. mechanical, electronic, or Red-ball type monitor.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- All rigs must include a filter to remove any particulates from the fumigant, and a check valve that is visible to the tractor pilot during application to prevent backflow of the fumigant into the pressurizing cylinder.
- All rigs must include a flow meter or a flow monitoring device.
- All rigs must have a constant pressure system with orifice plates to insure the proper amount of fumigant is applied.
- Valves, vacuum relief valves, and low pressure drains must be in place, operational, and leak free.
- Interlocking controls must be installed and functioning.
- Use only positive displacement pumps. Do NOT use impellers made of brass, aluminum, or galvanized material.
- 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.

Spray Blade Applications (includes bed-top blade and soil cap applications)

Wind Speed

- 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.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.

- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions, Injection Depth and Soil Sealing

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural “chimneys” that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Apply the product on the soil immediately ahead of the bed-shaping equipment. The soil surface must be compacted immediately after application using one or more of the following methods:

- Compaction with a bed-shaper, roller, press wheel or similar device, OR
- Covering the treated soil with 3-6 inches of untreated soil, OR
- Applying a minimum of a ½-inch of water beginning immediately after application of a set and completing the water treatment within four hours, OR
- Covering treated area with a tarp..

Tarps

- When tarps are used for emission control, tarps must be installed immediately after application.
- When tarps are used, a written tarp plan must be developed and included in the FMP that includes:
 - Schedule and procedures for checking tarpaulins for damage, tears, and other problems,
 - Plans for determining when and how repairs to tarp will be made, and by whom,
 - Minimum time following injection that tarp will be repaired,
 - Minimum size of damage that will be repaired,
 - Other factors used to determine when tarp repair will be conducted,
 - Schedule, equipment and methods used to cut tarp,
 - Aeration plans and procedures following cutting and/or slitting prior to tarp removal or planting, and
 - Schedule, equipment, and procedures for tarp removal.

Soil Temperature

- At the beginning of the application, the maximum soil temperature at the injection depth is 90°F.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application, subject to the exception below.
- **EXCEPTION:** In areas where soil moisture must exceed field capacity to form a bed (e.g. certain regions in Florida), soil capacity may exceed the 80% allocated above.
- If appropriate measuring equipment is not used to determine whether the soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Application and Equipment Considerations

- Do not apply or allow fumigant to drain or drip onto the soil surface.
- Application equipment must be in good working order.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Dry connect fittings (closed transfer system) must be installed on all tanks and transfer hoses.
- Sight gauges and pressure gauges must be working.
- Nozzles and metering devices must be the correct size and sealed and unobstructed.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- Each nozzle must be equipped with a flow monitor, e.g. mechanical, electronic, or Red-ball type monitor.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.

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- All rigs must include a filter to remove any particulates from the fumigant, and a check valve that is visible to the tractor pilot during application to prevent backflow of the fumigant into the pressurizing cylinder.
 - 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.

Rotary Tiller Applications

Wind Speed

- 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.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions, Injection Depth and Soil Sealing

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural "chimneys" that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Apply the product on the soil immediately ahead of the tiller. The soil surface must be compacted immediately after application using one or more of the following methods:

- Compaction with a bed-shaper, roller, press wheel or similar device, OR
- Covering the treated soil with 3-6 inches of untreated soil, OR

- Applying a minimum of a ½-inch of water beginning immediately after application of a set and completing the water treatment within four hours, OR
- Covering treated area with a tarp.

Tarps

- When tarps are used for emission control, tarps must be installed immediately after application.
- When tarps are used, a written tarp plan must be developed and included in the FMP that includes:
 - Schedule and procedures for checking tarpaulins for damage, tears, and other problems,
 - Plans for determining when and how repairs to tarp will be made, and by whom,
 - Minimum time following injection that tarp will be repaired,
 - Minimum size of damage that will be repaired,
 - Other factors used to determine when tarp repair will be conducted,
 - Schedule, equipment and methods used to cut tarp,
 - Aeration plans and procedures following cutting and/or slitting prior to tarp removal or planting, and
 - Schedule, equipment, and procedures for tarp removal.

Soil Temperature

- At the beginning of the application, the maximum soil temperature at the injection depth is 90°F.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application, subject to the exception below.
- EXCEPTION: In areas where soil moisture must exceed field capacity to form a bed (e.g. certain regions in Florida), soil capacity may exceed the 80% allocated above.
- If appropriate measuring equipment is not used to determine whether the soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Application and Equipment Considerations

- Do not apply or allow fumigant to drain or drip onto the soil surface.
- Dry connect fittings (closed transfer system) must be installed on all tanks and transfer hoses.
- Application equipment must be in good working order.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Sight gauges and pressure gauges must be working.
- Nozzles and metering devices must be the correct size and sealed and unobstructed.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- Each nozzle must be equipped with a flow monitor, e.g. mechanical, electronic, or Red-ball type monitor.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- All rigs must include a filter to remove any particulates from the fumigant, and a check valve that is visible to the tractor pilot during application to prevent backflow of the fumigant into the pressurizing cylinder.
- 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.

Center Pivot Applications

Wind Speed

- For mid-release, high-release and end-gun sprinkler or chemigation applications as defined by U.S. EPA, 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 and the maximum wind speed is 10 mph.
- For low-release height-solid stream sprinkler or chemigation applications as defined by U.S. EPA, 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 and the maximum wind speed is 25 mph.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, tillage to fracture these layers must occur. The soil must be tilled before or during the application, at minimum, to the depth of the intended treatment zone.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Except when applying over cover crops as set forth in the General Instructions for Sprinkler System, crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural “chimneys” that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Soil Temperature

- At the beginning of the application, the maximum soil temperature is 90°F, measured at 3 inches in depth.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application.
- If appropriate measuring equipment is not used to determine whether soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.

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- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Flushing Irrigation Lines

- Do not allow fumigant to remain in the irrigation system after the application is complete. After application of the fumigant, flush the injection and irrigation system with untreated water. The flush time must be adequate to purge the fumigant from the injection and irrigation system, but should be less than the amount that could over-saturate the beds. If common lines are used for both the fumigant application and the water treatment/seal (if applied), these lines must be adequately flushed before starting the water treatment/seal.

Application and Equipment Considerations

- Anti-siphon and back-flow prevention devices must be installed and in working order.
- Use only tanks constructed with materials approved for handling metam. Tanks must be inspected, in good condition, and not past their life expectancy to ensure product does not spill or leak.
- Tanks must have proper pesticide labels on them.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- Use only positive displacement pumps. Do NOT use impellers made of brass, aluminum, or galvanized material.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid toward the injection pump.
- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

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Solid Set Sprinkler Applications

Wind Speed

- 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 and the maximum wind speed is 10 mph.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, the soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Except when applying over cover crops as set forth in the General Instructions for Sprinkler System, crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural "chimneys" that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Soil Temperature

- At the beginning of the application, the maximum soil temperature is 90°F, measured at 3 inches in depth.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application.
- If appropriate measuring equipment is not used to determine whether soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.

- **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
- **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
- **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Flushing Irrigation Lines

- Do not allow fumigant to remain in the irrigation system after the application is complete. After application of the fumigant, flush the injection and irrigation system with untreated water. The flush time must be adequate to purge the fumigant from the injection and irrigation system, but should be less than the amount that could over-saturate the beds. If common lines are used for both the fumigant application and the water treatment/seal (if applied), these lines must be adequately flushed before starting the water treatment/seal.

Application and Equipment Considerations

- Anti-siphon and back-flow prevention devices must be installed and in working order.
- Use only tanks constructed with materials approved for handling metam. Tanks must be inspected, in good condition, and not past their life expectancy to ensure product does not spill or leak.
- Tanks must have proper pesticide labels on them.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- Use only positive displacement pumps. Do NOT use impellers made of brass, aluminum, or galvanized material.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid toward the injection pump.

- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Drench Applications

Wind Speed

- Wind speed at the application site must be a minimum of 2 mph at the start of the application or forecasted to reach 5 mph during the application.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue must be worked into the soil with little or no crop residue present on the soil surface. Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural "chimneys" that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Soil Temperature

- At the beginning of the application, the maximum soil temperature is 90°F, measured at 3 inches in depth.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application.
- If appropriate measuring equipment is not used to determine whether soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.
- Applications must be followed immediately with 0.20 to 0.50 inches of water through solid set sprinklers.
- A minimum of two more water seals must be applied; one water seal on the first evening of the application and the second on the evening of the day after application.

Application and Equipment Considerations

- Anti-siphon and back-flow prevention devices must be installed and in working order.
- Use only tanks constructed with materials approved for handling metam. Tanks must be inspected, in good condition, and not past their life expectancy to ensure product does not spill or leak.
- Tanks must have proper pesticide labels on them.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Dry connect fittings (closed transfer system) must be installed on all tanks and transfer hoses.

- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- Each nozzle must be equipped with a flow monitor, e.g., mechanical, electronic, or Red-ball type monitor.
- To inject fumigant, use a metering system, effectively designed and constructed of materials that are compatible with the fumigant and capable of being fitted with system interlocking controls.
- Nozzles and metering devices are of correct size and are sealed and unobstructed.
- 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid toward the injection pump.
- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Drip Applications

Wind Speed

- 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.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 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>. For further guidance, contact 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 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 Conditions

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue must be worked into the soil with little or no crop residue present on the soil surface. Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural “chimneys” that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Soil Temperature

- At the beginning of the application, the maximum soil temperature is 90°F, measured at 3 inches in depth.
- If air temperatures have been above 100°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 moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application, subject to the exception below.
- **EXCEPTION:** In areas where soil moisture must exceed field capacity to form a bed (e.g. certain regions in Florida), soil capacity may exceed the 80% allocated above.
- If appropriate measuring equipment is not used to determine whether soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.

- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Tarps

- When tarps are used for emission control in drip irrigation, the tarps must be installed immediately after application.
- When tarps are used, a written tarp plan must be developed and included in the FMP that includes:
 - Schedule and procedures for checking tarpaulins for damage, tears, and other problems,
 - Plans for determining when and how repairs to tarp will be made, and by whom,
 - Minimum time following injection that tarp will be repaired,
 - Minimum size of damage that will be repaired,
 - Other factors used to determine when tarp repair will be conducted,
 - Schedule, equipment and methods used to cut tarp,
 - Aeration plans and procedures following cutting and/or slitting prior to tarp removal or planting, and
 - Schedule, equipment, and procedures for tarp removal.

Flushing Drip Irrigation Lines

- After application of the fumigant, continue to irrigate the area with water to flush the injection and irrigation system with untreated water. Do not allow fumigant to remain in the irrigation system after the application is complete. The total volume of water must be adequate to completely remove the fumigant from the irrigation system, but should be less than the amount that could over-saturate the beds. If common lines are used for both the fumigant application and the water treatment/seal (if applied), these lines must be adequately flushed before starting the water treatment/seal and/or normal irrigation practices.

Application and Equipment Considerations

- Anti-siphon and back-flow prevention devices must be installed and in working order.
- Use only tanks constructed with materials approved for handling metam. Tanks must be inspected, in good condition, and not past their life expectancy to ensure product does not spill or leak.
- Tanks must have proper pesticide labels on them.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- The drip irrigation system (main lines, headers, drip tape) must be thoroughly checked for leaks before the start of the application. An adequate run-time and pressure are needed to detect leaks. Look for puddling along major pipes (holes on pipes or leaky joints), at the top and ends of rows (leaky connections, open drip tape), in the furrows and on the bed surface (damaged drip tape, malfunctioning emitters).
- To inject fumigant, use a metering system, effectively designed and constructed of materials that are compatible with the fumigant and capable of being fitted with system interlocking controls.
- 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.

- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid toward the injection pump.
- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Flood Basin, Furrow and Border Application

Wind Speed

- 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.

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 or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether fumigation should proceed.
- 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 which the fumigation is planned.
- Detailed local forecasts for weather conditions, wind speed, and air stagnation advisories may be obtained online at <http://www.nws.noaa.gov>. For further guidance, contact 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 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 Conditions

- Soil must be in good tilth and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or as part of the soil fumigant application. The soil must be tilled, at minimum to the depth of the treatment zone.
- Plant residue must be worked into the soil with little or no crop residue present on the soil surface. Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural “chimneys” that may occur in the soil when plant 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 limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.

Tarps

- When tarps are used for emission control, the tarps must be installed immediately after application.
- When tarps are used, a written tarp plan must be developed and included in the FMP that includes:
 - Schedule and procedures for checking tarpaulins for damage, tears, and other problems,
 - Plans for determining when and how repairs to tarp will be made, and by whom,
 - Minimum time following injection that tarp will be repaired,
 - Minimum size of damage that will be repaired,
 - Other factors used to determine when tarp repair will be conducted,
 - Schedule, equipment and methods used to cut tarp,
 - Aeration plans and procedures following cutting and/or slitting prior to tarp removal or planting, and
 - Schedule, equipment, and procedures for tarp removal.

Soil Temperature

- At the beginning of the application, the maximum soil temperature is 90°F, measured at 3 inches in depth.
- If air temperatures have been above 100°F in any of the three days prior to application, then soil temperature must be measured and recorded in the FMP.

Soil Moisture

- Soil moisture in the top six inches of soil must be at 60% to 80% of soil capacity immediately prior to the application.
- EXCEPTION: In areas where soil moisture must exceed field capacity to form a bed (e.g., certain regions in Florida), soil capacity may exceed the 80% allocated above.
- If appropriate measuring equipment is not used to determine whether soil moisture in the top six inches of soil is at 60% to 80% of soil capacity immediately prior to the application, the USDA *Feel Method* test may be used to help estimate whether the 60% to 80% soil capacity requirement is met:
 - **coarse** textured soils (fine sand and loamy fine sand): there must be enough moisture (50-75% available soil water moisture) to form a weak ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.
 - **moderately coarse** textured soils (sandy loam and fine sandy loam): there must be enough moisture (50-75% available soil water moisture) to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color, will not stick.
 - **medium** textured soils (sandy clay loam, loam, and silt loam): there must be enough moisture (50-75% available soil water moisture) to form a ball, very light staining on fingers, darkened color, pliable and forms a weak ribbon between the thumb and forefinger.
 - **fine** textured soils (clay, clay loam, and silty clay loam): there must be enough moisture (50-75% available soil water moisture) to form 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. The field may 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 or soil conservation service specialist or pest control advisor (agriculture consultant) should be consulted for assistance.
- If there is insufficient moisture throughout the top six inches of soil immediately prior to the application, the soil moisture must be adjusted. If there is adequate soil moisture below six inches, soil moisture can

be brought to the surface by tillage before or during injection. To conserve soil moisture, tillage should be done as close to the time of application as possible.

Application and Equipment Considerations

- Systems using a gravity flow pesticide dispersing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.
- Meter at a steady rate into 3 to 18 inches of water per treated acre during irrigation. **IMPORTANT:** Prior to starting the application, always inspect ditches and border areas to ensure containment of the irrigation waters. Apply only into field head ditch. **DO NOT APPLY INTO ANY LATERAL DITCHES.**
- Back-flow prevention devices must be installed and in working order.
- Use only tanks constructed with materials approved for handling metam. Tanks must be inspected, in good condition, and not past their life expectancy to ensure product does not spill or leak.
- Dry connect fittings (closed transfer system) must be installed on all tanks and transfer hoses.
- Tanks must have proper pesticide labels on them.
- All tanks, hoses, fittings, valves and connections must be serviceable, tightened, sealed and not leaking.
- Use only tanks, hoses and fittings designed to withstand the pressure of the system and resistant to metam.
- For undiluted product, aluminum, brass, copper, galvanized iron, and zinc materials cannot be used.
- To inject fumigant, use a metering system, effectively designed and constructed of materials that are compatible with the fumigant and capable of being fitted with system interlocking controls.
- Flow rates must be calibrated and checked for each application.
- All previous materials applied with the system must be cleaned thoroughly prior to fumigant application.
- System must be flushed after application to totally remove all fumigant.

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., the field or portion of a field treated with a fumigant in any 24-hour period, or, for center pivot applications which occur over many days, the total acres of a field treated and not separated by a 12 hour interruption). In addition, agricultural operations fumigating multiple application blocks as part of a larger fumigation may format their 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, separate 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 number, employer name, employer address).
- General site information.

- Application block location (e.g., county, township, range, quadrant), address, or global positioning system (GPS) coordinates.
- Name, address, and phone number of owner/operator of the application block.
- 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 cutting and/or removing tarps (if other than certified applicator).
 - Equipment/methods used to cut tarps.
 - Schedule and target dates for cutting 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.
- Respirators and other PPE for handlers (handler task, protective clothing, respirator type, respirator cartridge type, respirator cartridge replacement schedule, 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, odor complaints, or other emergencies).
- Fumigant Treated Area posting procedures (name, address, and phone number of person(s) who will post Fumigant Treated Area signs, location of posting Fumigant Treated Area signs, procedures for Fumigant Treated Area sign removal).
- Plan describing how communication will take place between applicator, land owner/operator, and other on-site handlers (e.g., tarp cutters/removers, irrigators) for complying with label requirements (e.g., treated area location, timing of tarp cutting and removal, PPE).
 - Name and phone number of persons contacted.
 - Date contacted.
- Authorized on-site personnel.
 - Names, addresses and phone numbers of handlers.
 - Name, address, 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 one handler):
 - 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 (registrants may also include optional GAPs).
 - Measurements and documentation to ensure GAPs are achieved (e.g., measurement of soil and other site conditions).
- Description of hazard communication. (The treated area 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, etc.), 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 and has documented the verification in the site-specific FMP; and
- 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 federal, state, tribal, or local enforcement personnel who request the FMP. In case of an emergency, the FMP must be made available when requested by federal/state/tribal/local 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-fumigation application summary that describes any deviations from FMP that have occurred, measurements taken to comply with GAPs as well as any complaints and/or incidents that have been reported to him/her.

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.
- 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 measure 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 measure or emergency procedures followed.
 - 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).

Maximum application rate is 320 lbs ai/A (75 gallons per treated acre).

Use in greenhouses is prohibited. Application with handheld equipment is prohibited. Application with cement grinder and shredder equipment is prohibited. Open-pour applications are prohibited.

GENERAL INFORMATION

Before applying METAM 376 to areas with poor water penetration or severe compaction prepare, the turf by hollow core aerification or other available methods to increase water penetration. NOTE: Do not use wetting agents to increase water penetration into the turf profile within 7 days of treatment.

IMPORTANT-DO NOT APPLY WITHIN 50 FEET OF ANY OCCUPIED BUILDINGS SUCH AS SCHOOLS, HOSPITALS, COMMERCIAL OR OFFICE BUILDINGS, FACTORIES, RESIDENTIAL BUILDINGS, ETC.

PRODUCT INFORMATION

METAM 376 is a water soluble liquid. When applied to soil, the liquid is converted into a volatile fumigant (Methylisothiocyanate, MITC). After a sufficient interval of time, the gas degrades/dissipates.

When to Use Maximum and Minimum Rates

The application rate of METAM 376 is dependent on the soil type to be treated, density or thickness of the thatch layer and depth of the desired treatment. Generally, a light sandy soil requires a lower application rate than a heavier mineral soil. In addition, turf with a dense or thick thatch generally requires the higher rate.

Planning the Application

METAM 376 may be applied to turf grasses any time of the year when chronic nematode damage is adversely affecting the quality of the turf grass.

Phytotoxicity

Use of METAM 376 in accordance with the label may cause temporary discoloration (phytotoxicity) to some turf. Before using this product, it is recommended that a small area be treated to determine the level of phytotoxicity, if any, on your turf grass. Discoloration, if any, will appear within 7 days.

NOTE: Higher rates may cause more discoloration than lower rates. For test procedures and additional information contact you local METAM 376 distributor or Amvac Chemical Corporation.

USE OF DILUTED METAM 376

Do not store the diluted product. Do not allow the diluted solution to stand overnight. Use the diluted solution promptly after mixing with water. Flush all equipment with water after each day's use, disassemble valves and clean carefully.

GENERAL PRECAUTIONS FOR IRRIGATION SYSTEMS

Posting 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 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 signs 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 discoloration and maintain legibility for the duration of the posting period.

All words shall consist of letters of at least 2-1/2 inches tall and all letters and the symbol shall be a color which 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 of a least 8 inches in diameter containing the word STOP. Below the symbol shall be the words: "PESTICIDES IN IRRIGATION WATER". This sign is in addition to any sign posted to comply with the Worker Protection Standard.

STATEMENTS CONCERNING CHEMIGATION OF METAM 376

When applying by chemigation methods, the following directions or warnings must be observed. Apply this product only through sprinkler irrigation systems, including center pivot, lateral move, end tow, side wheel roll, traveler, big gun, solid set or hand move. Do not apply this product through any other type of irrigation system. Crop injury or lack of effectiveness in the crop can result from non-uniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts. Do not connect an irrigation system used for pesticide application to a public water system unless the pesticide label prescribed safety devices for public water systems are in place. 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.

OBSERVE THE FOLLOWING PRECAUTIONS IF YOUR CHEMIGATION SYSTEM IS CONNECTED TO A PUBLIC WATER SYSTEM

NOTE: AMVAC CHEMICAL CORPORATION DOES NOT ENCOURAGE CONNECTION OF CHEMIGATION SYSTEMS TO PUBLIC WATER SYSTEMS. THE FOLLOWING INFORMATION IS PROVIDED FOR USERS WHO HAVE EVALUATED ALTERNATIVE APPLICATION AND WATER SOURCE OPTIONS BEFORE CHOOSING TO MAKE SUCH A CONNECTION.

Public water system is defined as a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of a year. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top of overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid toward the injection pump.

Any alternatives to the above required safety devices must conform to the list of EPA-approved alternative devices. Do not apply when wind speed favors drift beyond the area intended for treatment.

Do not apply when wind speed favors drift beyond the area intended for treatment.

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USE PRECAUTIONS

Keep children and pets out of treated areas. All plant foliage and any established plants growing on the treatment sites will be either severely damaged or destroyed. Keep the product off of any desirable turf or plants. Do not apply within 3 feet of the drip line of desirable plants, shrubs, or trees. Do not use in greenhouses. Keep container tightly closed when not in use. Do not store near feed or food. NOTE: METAM 376 will suppress and/or control only those pests in the fumigation zone at the time of treatment. Reinfestation may occur subsequent to the fumigants degradation/dissipation from the soil.

DIRECTIONS FOR USE ON TURF GRASS

SPRAY ON AND IRRIGATE INTO SOIL

Application rates: Use 5.14 to 15.4 fluid ounces per 1,000 sq. ft. which is equal to 1.75 to 5.25 gallons of product per treated acre.

Application Notes:

1. Mix 1.75 to 5.25 gallons of METAM 376 in 100 gallons of total spray liquid (1.75 to 5.25 gallons of METAM 376 in 98.75 to 94.75 gallons of water respectively) for each treated acre. This is equivalent to 5.14 to 15.4 fluid ounces per 2.29 gallons of water per 1,000 sq. ft.
2. Apply using a spray boom with low pressure spray tips that produce large droplet sizes. Select spray tip size and ground speed per manufacturer recommendations to maintain spray boom pressure of 30 psi or less. Do not exceed 30 psi on the spray boom. NOTE: Total coverage of the turf foliage is not necessary as METAM 376 is a soil fumigant.
3. Following spray application irrigate at least twice with sufficient water to penetrate the soil profile 3 to 5 inches deep. The volume of water will vary with soil type and depth of control desired. First irrigation to be initiated within 20 minutes of spray application. Apply second irrigation within one hour of the spray application. A third irrigation may be required to penetrate the soil to the desired depth. Do not exceed 0.5 inches of water on each irrigation.

SOIL DRENCH APPLICATION TO TURF

Application Rates: Use 0.51 to 1.54 fluid ounces per 100 sq. ft. which is equal to 1.75 to 5.25 gallons of product per treated acre.

Application Notes:

1. Mix 0.51 to 1.54 fluid ounces of METAM 376 in 62 gallons of water and drench onto 100 sq. ft. (62 gallons of water per 100 sq. ft. is equivalent to 1 inch of water per treated acre.) NOTE: Use diluted product within one hour of mixing.
2. Apply with a hand held wand with a low pressure water breaker such as a "Dram Water Breaker". Delivery to the wand from the tank can be made with any pump capable of delivering 10 to 15 gallons per minute at 15 to 25 psi
3. Immediately after application, irrigate with 0.1 inch of water to remove excess METAM 376 from grass blades and surface thatch.
4. Application of METAM 376 by the soil drench method should be limited to treatment of small areas only.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store product in a cool, dry, locked place out of reach of children. Keep container closed when not in use. Do not store below 32°F. Product crystallizes at lower temperatures. If exposed, warm or store at higher temperatures and mix to re-dissolve crystals and assure uniformity before use.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of 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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CONTAINER DISPOSAL: (METAL) Triple rinse or equivalent. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. (PLASTIC) Triple rinse or equivalent. Puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by State and local authorities by burning. If burned, stay out of smoke.

LIMITED WARRANTY AND DISCLAIMER

The manufacturer warrants (a) that this product conforms to the chemical description on the label; (b) that this product is reasonably fit for the purposes set forth in the directions for use, subject to the inherent risks referred to herein, when it is used in accordance with such directions; and (c) that the directions, warnings, and other statements on this label are based upon responsible experts' evaluations of reasonable tests of effectiveness, of toxicity to laboratory animals and to plants and residues on food crops, and upon reports of field experience. Tests have not been made on all varieties of food crops and plants, or in all states or under all conditions.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH HEREIN. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW THE MANUFACTURER NEITHER MAKES NOR INTENDS, NOR DOES IT AUTHORIZE ANY AGENT OR REPRESENTATIVE, TO MAKE ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND IT EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY OF QUALITY OR PERFORMANCE. THIS WARRANTY DOES NOT EXTEND TO, AND THE BUYER SHALL BE SOLELY RESPONSIBLE FOR, ANY AND ALL LOSS OR DAMAGE WHICH RESULTS FROM THE USE OF THIS PRODUCT IN ANY MANNER WHICH IS INCONSISTENT WITH THE LABEL DIRECTIONS, WARNINGS OR CAUTIONS.

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW BUYER'S EXCLUSIVE REMEDY AND MANUFACTURER'S OR SELLER'S EXCLUSIVE LIABILITY FOR ANY AND ALL CLAIMS, LOSSES, DAMAGES, OR INJURIES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER OR NOT BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, SHALL BE LIMITED, AT THE MANUFACTURER'S OPTION, TO REPLACEMENT OF, OR THE REPAYMENT OF THE PURCHASE PRICE FOR, THE QUANTITY OF PRODUCT WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW MANUFACTURER OR SELLER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

AMVAC offers this product, and Buyer accepts it, subject to the foregoing Limited Warranty which may be varied only by agreement in writing signed by an authorized representative of AMVAC.

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ACCEPTED
with COMMENTS
In EPA Letter Dated

APR 30 2010
Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
5481-456