California Environmental Protection Agency
Department of Pesticide Regulation

Addendum

to the

Field Fumigation Study Guide

November 2012

This addendum updates the *Field Fumigation Study Guide* with recent US EPA changes to soil fumigant pesticide labeling that affect soil fumigant applications.

The *Addendum to the Field Fumigation Study Guide* was published by the
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http://www.cdpr.ca.gov/docs/license/liccert.htm

MISSION

DPR's mission is to protect human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's strict oversight begins with pesticide product evaluation and registration and continues through statewide licensing of commercial applicators, dealers, consultants, and other pesticide professionals; evaluation of health impacts of pesticides through illness surveillance and risk assessment; environmental monitoring of air, water, and soil; field enforcement (with the county agricultural commissioners) of laws regulating pesticide use; residue testing of fresh produce; and encouraging development and adoption of least-toxic pest management practices through incentives and grants. DPR is one of five boards and departments within the California Environmental Protection Agency.

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INTRODUCTION

This document, *Addendum to the Field Fumigation Study Guide* (Addendum), updates the primary study guide *Field Fumigation Study Guide (Volume 9 in the Pesticide Application Compendium)* written by Susan Cohen and Tunyalee Martin of the University of California Davis. The US Environmental Protection Agency's (US EPA) new fumigant labeling safety requirements are described in detail in this Addendum.

The knowledge expectations for license holders, the Field Fumigation Study Guide, and this Addendum will help you prepare for the Department of Pesticide Regulation's (DPR) Qualified Applicator License (QAL) or Qualified Applicator Certificate (QAC) exam in pest control Category O, Field Soil Fumigation (see Table 1.).

BACKGROUND

US EPA changed safety requirements on soil fumigant labels to better protect applicators/handlers, agricultural workers, and bystanders against fumigant exposure. All of the new safety requirements are being implemented through fumigant product labeling, not by regulation. A sample label with the new safety measures highlighted has been included as Figure 1. Refer to the sample label for examples of the new fumigant labeling protective measures.

SOIL FUMIGANT ACTIVE INGREDIENTS AFFECTED BY LABEL CHANGES

- Chloropicrin
- Dazomet
- 1,3-Dichloropropene with chloropicrin
- Metam sodium
- Metam potassium
- Methyl bromide
- Methyl isothiocyanate (MITC)

SAFETY MEASURES ON THE LABEL

The US EPA fumigant safety measures are addressed in use directions, requirements, and prohibitions related to the topics listed below. Attachment 1 of this Addendum includes US EPA Fact Sheets that describe the safety measures.

- Buffer zones
- Posting requirements
- Agricultural worker protections
- Applicator training requirements and safety information for handlers
- Good agricultural practices
- Application method, practice, and rate restrictions
- Emergency preparedness and response requirements
- Compliance assistance and assurance measures
- Community outreach and education programs
- Site-specific fumigant management plans
- Restricted use pesticides

STUDY MATERIALS AND US EPA FACT SHEETS

Below is a list of the study material that you should review to prepare for the QAL or QAC exam.

Table 1 Field Fumigation Exam Study Materials

Study Material	Where to Obtain Materials
Field Fumigation Study Guide (Pesticide Compendium 9)	University of California Agriculture and Natural Resources sale publication code #9005 Order online: http://anrcatalog.ucdavis.edu/Items/9005.aspx
Addendum to the Field Fumigation Study Guide (this document)	No cost • Review online: www.cdpr.ca.gov/docs/license/pubs/fieldfum_studyguide_addendum.pdf
Knowledge Expectations: Field Fumigation Pest Control	No cost • Review online: www.cdpr.ca.gov/docs/license/knwldg_expcttns_subcat_o.pdf

DPR has incorporated the US EPA Soil Fumigant Fact Sheets as study material in this Addendum. The US EPA Fact Sheets describe the labeling protective measures in an easy to understand format. They can be viewed and downloaded from DPR's Licensing Web site at, www.cdpr.ca.gov/docs/license/pubs/fact_sheets_soilfum.pdf. In addition, more information can be viewed at the Web site, "US EPA's Implementation of Risk Mitigation Measures for Soil Fumigant Pesticides"

at, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/. The Web site includes supplemental information for applying a specific fumigant and for training fumigant applicators and workers.

The US EPA Fact Sheets contain general information about the new protective measures. Below is a summary.

- **Buffer zones and posting requirements** – New labeling includes buffer zone distance and posting requirements. Buffer zones will be determined by fumigant application rate, acreage treated, application method and depth, and soil sealing method. To determine the buffer zone for your application, review the fumigant labeling, California pesticide use regulations, and local county restricted material permit conditions for more details and to determine the most restrictive requirements. Follow the most restrictive requirements when it appears there are conflicts between labeling, regulations, and permit conditions.

- **Restricted use pesticides** – US EPA has recently re-classified metam sodium, metam potassium, and dazomet as Federal restricted use pesticides. This action has no impact on DPR-certified fumigant applicators as these fumigants had already been designated as California restricted materials, requiring applicator/handler certification, restricted material permits, and notices of intent before fumigating.

- **Agricultural worker protections** – These labeling requirements focus on handler activities, requiring additional information for non-certified applicators/handlers, and adding requirements for respirator use, tarpaulin removal, and the entry-restricted period.

- **Applicator training programs and safety information for handlers** – US EPA required registrants to develop and implement training programs for fumigant applicators. The training is fumigant specific and includes work practices and good agricultural practices for reducing exposure and improving safety for workers and bystanders. Note that DPR category O holders meet the training requirement as long as they passed the category O certification exam after January 1, 2012 **or** read the Addendum and return the verification postcard to DPR. Additional soil fumigation resources can be found at the EPA developed training materials and safety information web site, www.epa.gov/fumiganttraining. Fumigant applicators can also access DPR's 'Fumigant Resource Center' at, www.cdpr.ca.gov/docs/emon/methbrom/mb_main.htm for updated labels, templates for fumigant management plans, and additional safety information.

- **Good agricultural practices and information on application rates, methods, and practices** – Good Agricultural Practices (GAPs) are now required to reduce off-gassing and improve safety. These GAPs include proper soil preparation and moisture, air and soil temperature, soil sealing methods, equipment calibration, and weather criteria. The labeling will also include restrictions or prohibition of certain methods, practices, and rates for difficult to address risks, unless stricter regulations or permit conditions prevail.

- **Fumigant management plans and post-application summaries** – Fumigant labeling has been revised to include fumigation management plan (FMP) requirements. The management plan requires applicators to walk through a step-by-step list of tasks in preparation for the fumigation. The purpose of the list is to assure that the application is made in compliance with the label and for taking actions in case of an emergency. DPR makes available FMP templates and guidance in completing them at their web site, www.cdpr.ca.gov/docs/emon/methbrom/mb_main. FMPs have to be completed prior to the fumigation and made available upon request to DPR or county agricultural commissioner (CAC) enforcement staff. Post-application summaries are intended to describe any deviations from the FMP, and must be completed within 30 days of the application.

- **Compliance assistance and assurance measures** – Fumigant labeling now requires users to contact DPR or their local CAC prior to making fumigant applications to assure that fumigators are in compliance with field soil fumigant use requirements. DPR-certified fumigators meet this requirement when they submit to the local CAC a notice of intent to apply these California-designated restricted materials.

- **Community outreach and education programs** – The product registrants are required to develop and implement community outreach programs. The programs are to include safety information available to community members to address bystander exposure risks. The information is intended to educate the public about fumigants, buffer zones, recognizing early signs of exposure, and how to respond appropriately in case of an incident. These requirements are aimed at registrants, not the fumigant user, but it is important to be aware of this requirement.

- **Emergency Preparedness and Response, and Difficult to Evacuate Site Requirements** – To reduce risks to people near a buffer zone (e.g. at their home or working in a nearby field), the label requires applicators to provide on-site monitoring of the buffer zone near occupied structures or

provide emergency response information directly to neighbors. In addition, difficult to evacuate sites like schools, child care centers, and hospitals will require additional safety measures.

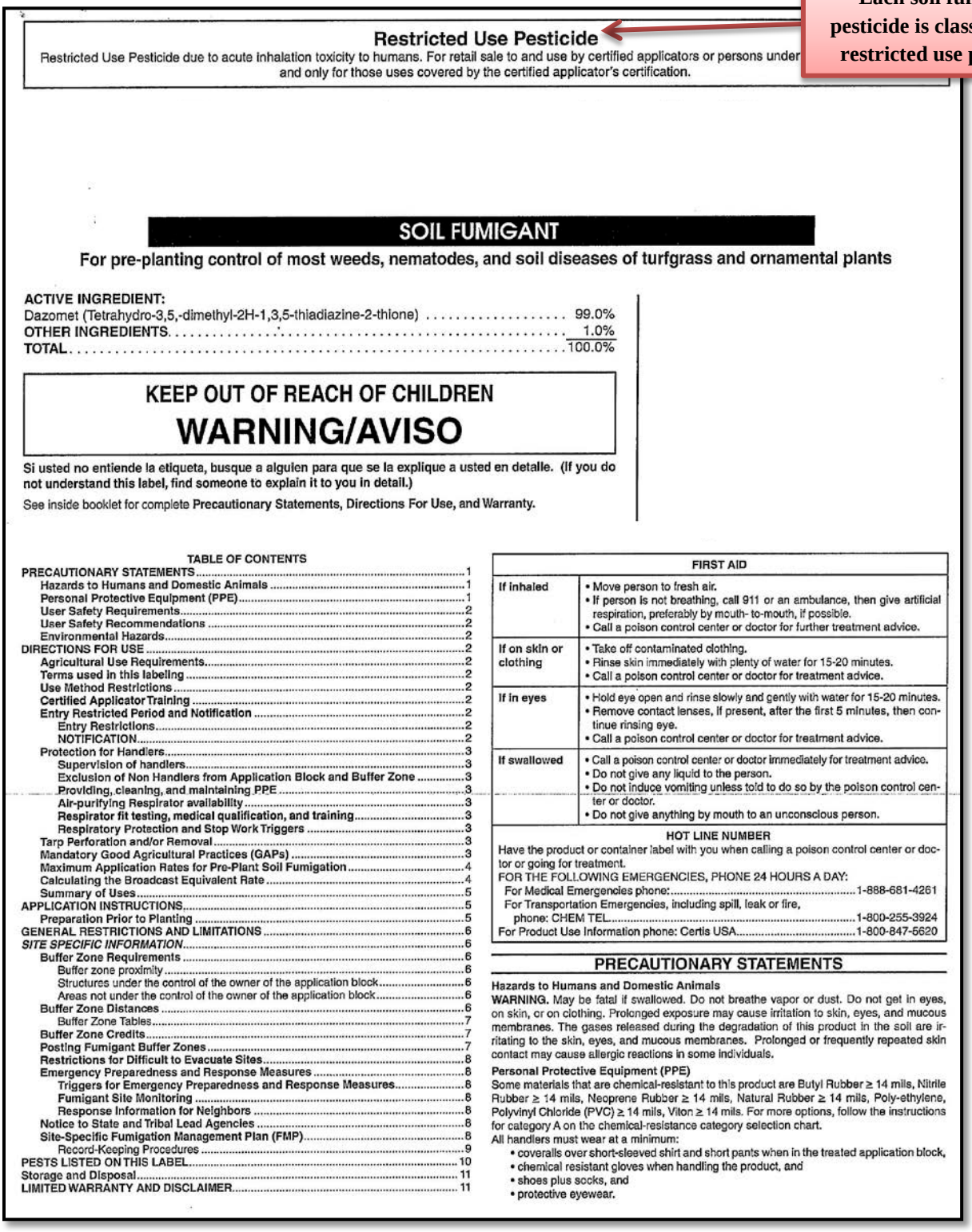
SUMMARY

The *Field Fumigation Study Guide*, the Addendum (particularly the US EPA Fact Sheets), and the knowledge expectations can be used to prepare for the QAL or QAC exam for Field Soil Fumigation Category O. The knowledge expectations are a guide to the specific material to focus on during exam preparation. All applicators/handlers must follow the strictest regulatory requirements and read labels carefully before an application. If possible, certified individuals should seek continuing education with a fumigant focus for their renewal requirements in order to remain informed.

Figure 1 Sample Fumigant Label
Follows after this page

FIGURE 1. SAMPLE SOIL FUMIGANT LABEL

The following sample soil fumigant label is included for illustrating the US EPA safety related requirements that are being implemented through product labeling. It is only for use in this study guide and shall not be considered a registered pesticide label for any other purposes. Be aware of possible conflicts between use requirements in fumigant labeling, California regulations, and restricted material permit conditions. Applicators must always follow the most restrictive requirements.



Each soil fumigant pesticide is classified as a restricted use pesticide

Restricted Use Pesticide

Restricted Use Pesticide due to acute inhalation toxicity to humans. For retail sale to and use by certified applicators or persons under
and only for those uses covered by the certified applicator's certification.

SOIL FUMIGANT

For pre-planting control of most weeds, nematodes, and soil diseases of turfgrass and ornamental plants

ACTIVE INGREDIENT:
Dazomet (Tetrahydro-3,5,-dimethyl-2H-1,3,5-thiadiazine-2-thione) 99.0%
OTHER INGREDIENTS 1.0%
TOTAL 100.0%

KEEP OUT OF REACH OF CHILDREN

WARNING/AVISO

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

See inside booklet for complete **Precautionary Statements, Directions For Use, and Warranty.**

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FIRST AID	
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth- to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If on skin or clothing	• 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	• 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 swallowed	• Call a poison control center or doctor immediately for treatment advice. • Do not give any liquid to the person. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.

HOT LINE NUMBER

Have the product or container label with you when calling a poison control center or doctor or going for treatment.
FOR THE FOLLOWING EMERGENCIES, PHONE 24 HOURS A DAY:
For Medical Emergencies phone: 1-888-681-4261
For Transportation Emergencies, including spill, leak or fire, phone: CHEM TEL 1-800-255-3924
For Product Use Information phone: Certis USA 1-800-847-5620

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

WARNING. May be fatal if swallowed. Do not breathe vapor or dust. Do not get in eyes, on skin, or on clothing. Prolonged exposure may cause irritation to skin, eyes, and mucous membranes. The gases released during the degradation of this product in the soil are irritating to the skin, eyes, and mucous membranes. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are Butyl Rubber ≥ 14 mils, Nitrile Rubber ≥ 14 mils, Neoprene Rubber ≥ 14 mils, Natural Rubber ≥ 14 mils, Poly-ethylene, Polyvinyl Chloride (PVC) ≥ 14 mils, Viton ≥ 14 mils. For more options, follow the instructions for category A on the chemical-resistance category selection chart.

All handlers must wear at a minimum:

- coveralls over short-sleeved shirt and short pants when in the treated application block,
- chemical resistant gloves when handling the product, and
- shoes plus socks, and
- protective eyewear.

In addition, when an air-purifying respirator is required under this label's Directions for Use, Protection for Handlers, Respiratory Protection and/or Stop Work Triggers section, handlers must wear at minimum either:

- A NIOSH certified full facepiece air-purifying respirator equipped with an organic vapor (OV, NIOSH approval prefix TC-23C) cartridge and a particulate pre-filter (Type N, R, P, or HE, NIOSH approval number prefix TC-84A), or
- A gas mask with a canister approved for organic vapor (NIOSH approval number prefix TC-14G).

Cartridges or canisters must be replaced when odor or sensory irritation from this product becomes apparent during use, if the measured concentration of Methyl Isothiocyanate (MITC) is greater than 6000 ppb (6 ppm), or in the absence of any other instructions or indications of service life, at the end of each day's work period.

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/PPE 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 fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

Dazomet has certain properties and characteristics in common with chemicals that have ter and has low adsorption

re is heavy rainfall after soil

arm an endangered species

or adversely modify the habitat is a violation of federal law.

DIRECTIONS FOR USE

Restricted Use Pesticide

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only handlers may be in the application block from the start of the application until the entry restricted period ends, and in the buffer zone during the buffer zone period. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Refer to supplemental labeling under "Agricultural Use Requirements" in this section for information about this standard.

All applicable directions, restrictions, precautions and **WARRANTY** are to be followed. This labeling must be in the user's possession during application.

Agricultural Use Requirements

Use this product only in accordance with its label 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.

For the entry restricted period and notification requirements, see the *Entry Restricted Period* and *Notification* sections of this labeling. PPE For Entry During the Entry-Restricted Period: PPE for entry that is permitted by this label is listed in the *Personal Protective Equipment (PPE)* section of this label.

Terms used in this labeling

Soil Fumigant Training Program: Certified applicator training that provides information on (1) how to correctly apply the fumigant, including how to comply with new label requirements; (2) how to protect handlers and bystanders; (3) how to determine buffer zone distances; (4) how to complete an FMP and the post-application summary; (5) how to determine when weather and other site-specific factors are not favorable for fumigant application; (6) how to comply with required GAPs and how to document compliance with GAPs in the FMP; and (7) how to develop and implement emergency response plans.

Fumigant Safe Handling Information: Information that must be provided annually to handlers that must include the following: (1) what fumigants are and how they work, (2) safe application and handling of soil fumigants, (3) air monitoring and respiratory protection requirements for handlers, (4) early signs and symptoms of exposure, (5) appropriate steps to take to mitigate exposures, (6) what to do in case of an emergency, and (7) how to report incidents.

Application Block: Area within the perimeter of the fumigated portion of a field or greenhouse (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

Application Rate: The ratio of fumigant mass applied compared to the soil surface area (e.g., lbs of product per acre). The application rate is expressed on this labeling in terms of either the "treated area application rate" or the "broadcast equivalent application rate." The "treated area application rate" relates to only the rate of fumigant applied to the portion of the field that is fumigated (e.g., rate within the bed or strips). The "broadcast equivalent application rate" relates to the rate of fumigant applied within the entire perimeter of the application block. For bedded and strip applications, the "broadcast equivalent application rate" must be calculated to determine the buffer zone distance required by this labeling.

Start of the Application: The time at which the fumigant is first delivered/dispensed into the soil in the application block.

Application is Complete: The time at which the fumigant has stopped being delivered/dispensed into the soil and the soil has been sealed on Day 1 (see the *Water Requirements* section)

Entry Restricted Period: This period begins at the start of the application and expires depending on the application method and if tarps are used when the tarps are perforated and removed. Entry into the application block during this period is only allowed for appropriately PPE-equipped handlers performing handling tasks. See the Entry Restricted Period and Notification section for additional information.

Buffer Zone: An area established around the perimeter of each application block. The buffer zone must extend outward from the edge of the application block perimeter equally in all directions.

Buffer Zone Period: Begins at the start of the application and lasts for a minimum of 48-hours after the application is complete. Non-handlers must be excluded from the buffer zone during the buffer zone period.

Difficult to Evacuate Sites: Pre-K to Grade 12 schools, state licensed daycare centers, nursing homes, assisted living facilities, hospitals, in-patient clinics, and prisons.

Owner: Any person who has a present possessory interes in an agricultural establishment. A person who has both l ment to another person and granted that same person the and govern the use of such agricultural establishment "owner" in WPS (40 CFR §170.3).

Roadway: Portion of a street or highway improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk or shoulder even if such sidewalk or shoulder is used by persons riding bicycles. In the event a highway includes two or more separated roadways, the term *roadway* shall refer to any such roadway separately.

Representative Handling Task: For air monitoring, the locations and handler activities sampled must represent each handler's exposure occurring within the application block. For example, for an application consisting of a seven-handler crew (1 tractor driver, 1 tractor co-pilot, 4 shovelers, and 1 certified applicator supervising) two breathing zone samples could be collected: one sample for the tractor co-pilot and one sample for a downwind shoveler. Results of previous sampling may indicate which tasks and locations are worst case and therefore representative of all handlers.

Use Method Restrictions

The use of this product is restricted to the methods described in this label.

Certified Applicator Training

Any certified applicator supervising a soil fumigant applica n must have successfully completed one of the soil fumigant training programs listed on the following EPA website www.epa.gov/fumiganttraining for the active ingredient(s) in this product. The training must be completed in the time frames listed on the website. The FMP must docume location where the soil fumigant training program was completed.

Entry Restricted Period and Notification

Entry Restrictions

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

- 5 days (120 hours) after the application is complete for untarped applications, or
- 5 days (120 hours) after the application is complete if tarps are not perforated and removed for at least 14 days after the application is complete, or
- 48 hours after tarp perforation is complete if tarps will be perforated within 14 days after the application is complete and will not be removed for at least 14 days after the application is complete, or
- tarp removal is completed if tarps are both perforated and removed less than 14 days after application is complete.

NOTES:

- See *Tarp Perforation and/or Removal* section on this labeling for requirements when tarps are allowed to be perforated.
- If early tarp removal occurs for a broadcast application the entry restricted peri minimum of 5 days after the application is complete.
- When listing application information for soil fumigant applications to comply wi 170.122 of the WPS, list the entry restricted period time frame in place of the R

NOTIFICATION: Notify workers of the application by warning them orally and by posting Fumigant Treated Area signs. The signs must bear the skull and cross bones symbol and state:
(1) "DANGER/ PELIGRO,"
(2) "Area under fumigation, DO NOT ENTER/ NO ENTRE,"
(3) "Dazomet Fumigant in USE,"
(4) the date and time of fumigation
(5) the date and time entry restricted period is over,
(6) "Basamid G", and
(7) Name, address, and telephone number of the certified applicator in charge of fumigation.

Post the Fumigant Treated Area sign instead of the WPS sign for this application but follow all WPS requirements pertaining to location, legibility, text size, and sign size (40 CFR § 170.120).

Post the Fumigant Treated Area signs at all entrances to the application block no sooner than 24 hours prior to application.

Fumigant Treated Area signs must remain posted for no less than the duration of the entry restricted period.

Fumigant Treated Area signs must be removed within 3 days after the end of the entry restricted period.

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

Application method, practice, and rate restrictions

Agricultural use requirements for entry restricted period, notification and applicator training

Certified applicator training

Entry restricted period and notification

Definitions of terms in labeling

Descriptions of handler activities and protections, fumigant training for not-certified handlers, and protecting non-handlers

Protection for Handlers

The following activities are prohibited from being performed by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in WPS (40 CFR Part 170):

- Monitoring fumigant air concentrations;
- 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; and
- Performing any handling tasks as defined by the WPS (40 CFR 170).

The following activities are prohibited from being performed in the application block from the start of the application until the entry restricted period ends and in the buffer zone during the buffer zone period by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in WPS (40 CFR Part 170). Prohibited activities (except for trained and equipped handlers) include:

- Participating in the application as supervisors, loaders, drivers, tractor co-pilots, shovelers, cross ditchers, or as other direct application participants;
- Installing, repairing, operating, or removing irrigation equipment;
- Performing scouting, crop advising, or monitoring tasks;
- Installing, perforating (cutting, punching, slicing, poking), or removing tarps; and
- Repairing or monitoring tarps until 14 days after application is complete if tarps are not perforated and removed during those 14 days. NOTE: see *Tarp Perforation and/or Removal* section on this labeling for requirements about when tarps are allowed to be perforated.

Handlers do not include local, state, or federal officials performing inspection, sampling, or other similar official duties.

Supervision of handlers:
For all applications from the start of the application until the application is complete, a certified applicator must be at the application block in the line of sight of the application and must directly supervise all persons performing handling activities.

For handling activities that take place after the application is complete until the entry restricted period expires, the certified applicator is not required to be on-site, but must have communicated in a manner that can be understood by the site owner 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).

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

The certified applicator must provide **Fumigant Safe Handling Information** to each handler or confirm that within the past 12 months, each handler has received **Fumigant Safe Handling Information** in a manner that he/she can understand. **Fumigant Safe Handling Information** will be provided where this product is purchased or at http://www.epa.gov/fumiganttraining.

Exclusion of Non Handlers from Application Block and Buffer Zone:
The certified applicator supervising the application and the owner of the establishment where the application is taking place must make sure that all persons who are not trained and PPE-equipped and who are not performing one of the handling tasks as stated in this labeling are:

- excluded from the application block during the entry restricted period, and
- excluded from the buffer zone during the buffer zone period (see buffer zone exemption for transit on roadways in Buffer Zone Requirements section).

Local, state, or federal officials performing inspection, sampling, or other similar official duties are not excluded from the application block or the buffer zone by this labeling. The certified applicator supervising the application and the owner of the establishment where the application is taking place are not authorized to, or responsible for, excluding those officials from the application block or the buffer zone.

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

Air-purifying Respirator Availability:
At least one handler must have the appropriate air-purifying respirator and cartridges available, and they must be fit-tested, trained, and medically examined.

The employer of any handler must confirm that an air-purifying respirator and appropriate cartridges of the type specified in the *PPE* section of this labeling are immediately available for each handler who will wear one. At least one handler must have the appropriate air-purifying respirator and cartridges available (see *Respirator Fit Testing, Medical Qualification, and Training* section for additional requirements). Exception: After the application is complete, air-purifying respirators do not need to be made available for handlers performing fumigant site monitoring tasks outside of the buffer zone.

Respirator Fit Testing, Medical Qualification, and Training
Using a program that conforms to OSHA's requirements (see 29 CFR Part 1910.134), employers must verify that any handler that uses a respirator is:

- Fit-tested and fit-checked
- Trained, and
- 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 re-examined by a qualified medical practitioner if their health status or respirator style or use-conditions change.

Upon request by local/state/federal/tribal enforcement personnel, employers must provide documentation demonstrating how they have complied with these requirements.

Respiratory Protection and Stop Work Triggers: The following procedures must be followed to determine whether an air-purifying respirator is required or if operations must cease for any person performing a handling task (except for fumigant site monitoring outside of the buffer zone) as stated in this label.

- If at any time any handler experiences sensory irritation (tearing, burning of the eyes or nose), then either:
  - An air-purifying respirator must be worn by all handlers who remain in the application block or surrounding buffer zone, or
  - Operations must cease and handlers not wearing an air-purifying respirator must leave the application block and surrounding buffer zone.
- Handlers can remove air-purifying respirators or resume operations if two consecutive breathing-zone samples taken at the handling site at least 15 minutes apart show that levels of MITC have decreased to less than 600 ppb (0.6 ppm), provided that handlers do not experience sensory irritation. During the collection of air samples, an air-purifying respirator must be worn by the handler taking the air samples. Samples must be taken at the location where the irritation was first experienced or where samples were greater or equal to 6000 ppb (6 ppm).
- When using monitoring devices to monitor air concentration levels, a direct read detection device, such as an electronic device or a colorimetric device (e.g., Draeger, Sensydine) must be used. The devices must have sensitivity of at least 600 ppb (0.6 ppm) for MITC. Persons using direct read detection devices must follow the manufacturer's directions.
- When breathing zone samples are required, they must be taken outside respiratory protection equipment and within a 10 inch radius of the handler's nose and mouth.
- When air-purifying respirators are worn, 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 sensory irritation when wearing an air-purifying respirator, or (2) a MITC air sample is greater than or equal to 6,000 ppb (6 ppm) then all handler activities must cease and handlers must be removed from the application block and surrounding buffer zone.
- Handlers can resume work activities without air-purifying respirators if two consecutive breathing-zone samples taken at the handling site at least 15 minutes apart show levels of MITC have decreased to less than 600 ppb (0.6 ppm), provided that handlers do not experience sensory irritation. During the collection of air samples an air-purifying respirator must be worn by the handler taking the air samples. Samples must be taken at the location where the irritation was first experienced or where samples were greater or equal to 6000 ppb (6 ppm).
- Handlers can resume work activities if all of the following conditions exist provided that the appropriate air-purifying respirator is worn or where samples were greater or equal to 6000 ppb (6 ppm):
  - two consecutive breathing zone samples for MITC taken at the handling site at least 15 minutes apart must be less than 6,000 ppb (6 ppm),
  - handlers do not experience sensory irritation while wearing an air-purifying respirator, and
  - filter 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 at the location where the irritation was first experienced.

Tarp Perforation and/or Removal

IMPORTANT: Persons perforating, repairing, removing, and/or monitoring tarps are defined, within certain time limitations, as handlers (see *Handlers* section) 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 application is complete, unless a weather condition exists which necessitates perforation or removal (see *Early Tarp Removal for Broadcast Applications Only* and *Tarp Perforation during Flood Prevention Activities for Bedded Applications Only*).
- If tarps are perforated within 14 days after the application is complete, tarp removal must not begin until at least 2 hours after tarp perforation is complete.
- If tarps are perforated but not removed within 14 days after the application is complete, planting or transplanting must not begin until at least 48 hours after the tarp perforation is complete.
- If tarps are not perforated or removed within 14 days after the application 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 may be perforated manually ONLY for the following situations:
  - At the beginning of each row when a coulter blade (or other device which performs similarly) is used on a motorized vehicle such as an ATV.
  - In fields that are 1 acre or less.
  - During flood prevention activities.
- In all other instances tarps must be perforated (cut, punched, poked, or sliced) only by mechanical methods.
- Tarp perforation for broadcast fumigations must be completed before noon.
- For broadcast fumigations tarps must not be perforated if rainfall is expected within 12 hours.
- Early Tarp Removal for Broadcast Applications Only:
  - Tarps may be removed before the required 5 days (120 hours) if adverse weather conditions have compromised the integrity of the tarp, provided that the compromised tarp poses a safety hazard. *Adverse weather* includes high wind, hail, or storms that blow tarps off the field and create a hazard, e.g., tarps blowing into power lines and onto roads. A *compromised tarp* is a tarp that due to an adverse weather condition is no longer performing its intended function and is creating a hazard.
- Early Tarp Perforation during Flood Prevention Activities for Bedded Applications Only:
  - Tarp perforation is allowed before the 5 days (120 hours) have elapsed.
  - Tarps must be immediately retucked and packed after soil removal.

Mandatory Good Agricultural Practices (GAPs)

The following GAPs must be followed during all fumigant applications.

Weather Conditions

- To determine if unfavorable weather conditions exist or are predicted (*see Identifying Unfavorable Weather Conditions*) and whether application should proceed, the National Weather Service weather forecast must be checked by the certified applicator supervising the application:
  - on the day of, but prior to the start of the application, and
  - on a daily basis during applications if the time period from the start of the application until the application is complete is greater than 24 hours.

Respiratory protection, stop work triggers and tarp handling

Mandatory good agricultural practices

- Do not apply if an air-stagnation advisory issued by the National Weather Service is in effect for the area in which the application is planned, during the application, or the 48 hours after the application is complete.
- Do not apply if light wind conditions (< 2 mph) are forecast to persist for more than 18 consecutive hours from the time the application starts until 48 hours after the application is complete.
- Detailed National Weather Service forecasts for local weather conditions, wind speed, and air stagnation advisories may be obtained on-line at: http://www.nws.noaa.gov, on NOAA weather radio, or by contacting your local National Weather Service Forecasting Office.

Identifying Unfavorable Weather Conditions

- Unfavorable weather conditions block upward movement of air, which results in trapping fumigant vapors near the ground. The resulting air mass can move off-site in unpredictable directions. These conditions typically exist within an hour prior to sunset and continue past sunrise and may 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.

Application Restrictions

- Do not use dazomet when the soil temperature is over 90 degrees F, 2 inches deep. The soil temperature must be above 43° F (6° C) and remain at least this high during the entire fumigation period. Application in the field during periods of possible frost must be avoided. If the soil temperature falls below 43° F (6° C), the gas may sink into deeper soil layers when there is danger of frost which can cause crop injury later if the soil is not aerated deeply enough. The best conditions prevail at soil temperatures of 54-69° F (12-20 ° C). Do not apply Basamid® G if the soil temperature exceeds 90° F (32° C), 2 inches deep or the ambient air temperature exceeds 103° F (39° C). If the soil temperature is too high, the gases escape too rapidly from the soil, resulting in incomplete fumigation.
- Do not apply within 3-4 feet of growing plants or closer than the drip line of trees and large shrubs. If slopes are treated with this product, take precautions to prevent the chemical from washing downward to growing plants.
- The area intended for treatment should be in seedbed condition with a fine tilth, free of clods. Do not apply dazomet to dry or improperly tilled soil. Repeated cultivation before treating will improve control of perennial weeds. Ditching around the site will prevent weed seeds, nematodes, and fungi from washing into the treated area and contaminating it.
- Do not apply dazomet if ambient air temperature exceeds 103 degrees F.
- Do not store dazomet in an open spreader overnight.
- Do not apply dazomet when wind may cause granules to drift from target area.
- Do not apply dazomet through any type of irrigation equipment.
- Before using dazomet be aware that the three most critical factors for a successful fumigation program are: soil preparation, soil temperature, and soil moisture
- Do not store this product overnight in an open container
- Do not apply Basamid® G to growing crops - it is for use as a soil treatment only.
- Do not apply or mix with any other material.

Water Requirements

For optimal effect, the soil to be fumigated must have sufficient moisture for good plant growth (at least 50% available water capacity) for 5-14 days (depending on temperature) before the treatment.

- Prior to application, soil moisture should be at 60-80% field capacity for sand, 50% for loam, and 30-40% for clay soils.

For both water incorporated and mechanically incorporated applications:

Apply Basamid® G to the soil
After spreading, apply overhead irrigation to activate Basamid® G and seal the soil surface.

Day 1: Irrigate sufficiently to move the water front 4 to 6 inches into the soil profile. Depending on soil type, structure, and weather conditions, apply 0.75 to 1 inches of water. Repeat the application, as necessary, to ensure the soil profile is thoroughly wetted and all granules are activated.

Day 2: Continue irrigation to ensure the surface area retains sealed but not waterlogged. Typically, half the amount of water applied on Day 1 should be sufficient. Make multiple applications, depending on local conditions, to ensure that no gases escape as they move up through the soil.

Day 3: Continue irrigations to ensure the surface area does not dry out and no cracks appear in the treated area. Typically half the amount of water applied on Day 2. Make multiple applications, depending on local conditions, to ensure that no gases escape as they move up through the soil.

Day 4: Irrigate with a minimal amount of water to keep the surface sealed and free of cracks. Typically, half the amount of water applied on Day 3. Make multiple applications, depending on local conditions.

Maximum Application Rates for Pre-Plant Soil Fumigation

Physical/Mechanical Incorporation
Maximum physical incorporated rate for all uses, except for golf course renovation, is 421 lbs of product per treated acre. The maximum rate for golf course fairways, with a physical incorporated application method, is 525 lbs of product per treated acre.

Water Incorporation
The maximum rate for water incorporated applications is 262 lbs of product per treated acre.

Greenhouse
The maximum rate for all greenhouse applications is 262 lbs. of product per treated acre.

Application with handheld equipment is prohibited.

For greenhouse applications
The maximum application block size that can be treated is 50,000 square feet.

During the application keep all doors, vents, and windows to the outside open, and keep all fans or mechanical ventilation systems running within the greenhouse.

For all use sites
Application with handheld equipment is prohibited.

Calculating the Broadcast Equivalent Rate

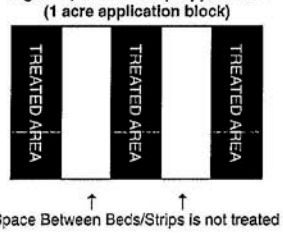
To calculate the broadcast equivalent rate for bedded or strip applications the following information is needed:

- Pounds of product per treated acre
- strip or bed bottom width (inches)
- center-to-center row spacing (inches)
- application block size (acres)

Pounds of product per treated acre is the ratio of total amount of product applied to the size of the total area treated (e.g., the rate of product applied in the bed). For bedded or strip applications, the total area treated is the summation of the area (i.e., length x width) of each treated bed bottom or strip that is located within the application block as shown by the black areas in Figure 1 (e.g., black areas are 0.6A or 60% of the area within the application block). The area of the space between the beds/strips is not factored in the total area treated.

The application block size is the acreage within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

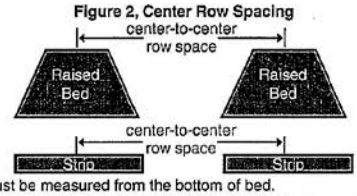
Figure 1, Bedded/Strip Application (1 acre application block)



The "broadcast equivalent rate" must be calculated with the following formula:

$$\text{broadcast equivalent rate (pounds product/acre)} = \frac{\text{strip or bed bottom width (inches)}}{\text{center-to-center row spacing (inches)}} \times \text{pounds product/ treated acre applied in the strip or bed}$$

Figure 2, Center Row Spacing

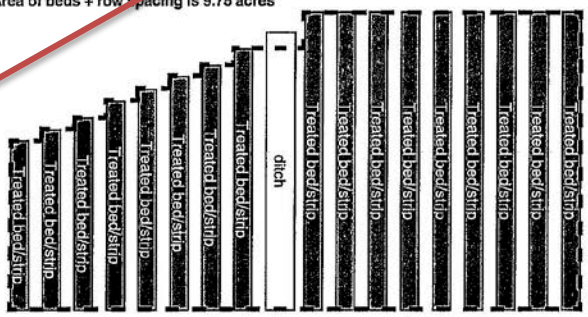


- The bed width must be measured from the bottom of bed.
- The center-to-center row spacing must calculate as shown in Figure 2.
- If there are any ditches, waterways, drive rows and other areas that are not fumigated that are in the application block, multiply the above broadcast equivalent [illegible] or beds + row spacing) / (application block size). A sample

Sample broadcast equivalent rate calculation

Assumptions:

- **Application method is shank bedded**
- **Bed width is 30 inches (measured at the bottom of bed)**
- **Center-to-center row spacing is 60 inches**
- **200 pounds of product per treated acre is applied in the beds**
- **Total application block size is 10 acres**
- **Ditch in the middle of application block is 0.25 acres**
- **Area of beds + row spacing is 9.75 acres**



$$\text{broadcast equivalent rate (pounds product/acre)} = \frac{\text{strip or bed bottom width (inches)}}{\text{center-to-center row spacing (inches)}} \times \frac{\text{area of strip or bed + row spacing}}{\text{application block size}} \times \text{pounds product/ treated acre applied in the bed}$$

$$= \frac{\text{30 inch width beds}}{\text{60 inch row spacing}} \times \frac{\text{9.75 acres}}{\text{10 acres}} \times \text{200 pounds product/ treated acre}$$

$$= \text{97.5 lbs product/acre}$$

Application method, practice, and rate restrictions

The application rates in Table 1 are based on an incorporation depth of 6 inches. Additional Basamid® G is needed when the infestation extends to greater depths. For specific use recommendations, see **SITE-SPECIFIC INFORMATION.**

Table 1. Basamid® G Application Rates
(Do not exceed the maximum application rates identified in the Maximum Application Rates for Pre-Plant Soil Fumigation section of this label).

Weeds, Nematodes, and Diseases		Application Rate at 6 Inch Incorporation Depth			Ounces Per cubic yard
		Ounces per 100 sq feet	Pounds Per 1000 sq feet	Pounds of product/A	
To control soil borne pathogens[1]		10 – 13	6 – 8	257-347	5 – 7
To control weeds[2]	Seed propagated	8 – 17	5 – 10	218-446	4 – 9
	Root propagated	8 – 19	5 – 12	218-525	4 – 11
To control ectoparasitic root nematodes[3]	in light soils	8 – 10	5 – 6	218-257	4 – 5
	in heavy soils	10 – 13	6 – 8	257-347	5 – 7
To control root-knot nematodes	in light soils	11 – 13	7 – 8	302-347	6 – 7
	in heavy soils	13 – 17	8 – 10	347-446	7 – 9
To reduce infestations of stem and cyst nematodes[4]		11 – 19	7 – 12	302-525	6 – 11
Product needed per 4 inches of additional soil depth		5 – 7	3 – 4	135-175	---

1) Soils infected with the fungi *Verticillium albo-atrum* and *Fusarium oxysporum* must be treated to a depth of 12" (13 ounces per 100 square feet or 8 pounds per 1,000 square feet).
2) If the primary goal is to eliminate annual weeds, 8 ounces per 100 square feet should be incorporated into the top 6 inches.
3) For lighter soils that are heavily infested with nematodes, use the application rates recommended for heavy soils.
4) Mechanically incorporate plant parts into the soil to boost their disintegration and improve the degree of reduction.

Summary of Uses

Basamid® G soil fumigant is intended for pre-planting control of most weeds, nematodes, and soil diseases of turfgrass and ornamental plants:

- Ornamental Sites – such as flowers, bulbs, bedding plants, ground cover, seed or propagating beds
- Field Nurseries – such as forest, nonbearing and ornamental trees, shrubs, or Christmas tree seedlings
- Turf Sites - establishment or renovation of existing sites such as golf courses (fairways, tees, greens), athletic fields, sod farms, or lawns
- Greenhouses
- Hoop Houses
- Soil Media - such as potting soil, soil heaps, or compost piles
- Interplanting
- Nonbearing Crops

Weeds controlled
When properly applied, this product will eliminate many weeds such as crabgrass, henbit, pigweed, foxtail, purslane, mustard, witchweed, and many other plants and weed seeds. For a complete list see **Table 5 – Germinating Seeds of Annual and Perennial Weeds, Table 6 – Root Propagated Weeds,** and **Table 7 – Parasitic weeds.**

Nematodes controlled
This product will control root knot, stubby root, reinform, ectoparasitic root, (i.e., *Meloidogyne* sp., *Pratylenchus* sp., *Hoplolaimus* sp., *Tylenchorrhynchus* sp., *Rotylenchulus* sp., *Paratylenchus* sp., *Xiphinema* sp., *Tylenchus* sp.) and other nematodes. For a complete list see **Table 8 – Plant-parasitic nematodes.**

Diseases controlled
This product will control root rots, damping off, and wilt diseases caused by *Aphanomyces* sp., *Fusarium* sp., *Phytophthora cactorum, Pythium* sp., *Rhizoctonia* sp., *Thielaviopsis basicola, Verticillium albo-atrum,* and soil-borne *Stromatinia gladioli* and corm rot of gladiolus caused by *Fusarium* sp. For a complete list see **Table 9 – Soil-borne Fungi** and **Table 10 – Soil-borne Bacteria.**

APPLICATION INSTRUCTIONS

Preparation Prior to Application
1) Basamid® G can be applied to tilled and non-tilled sites:
   a. Tilled Sites: The area intended for treatment should be in seedbed condition with a fine tilth, free of clods. Repeated cultivation before treating will improve control of perennial weeds.
   b. Non-Tilled Sites: Remove existing vegetation with a mower or other suitable equipment. The vegetation must be cut to the lowest height possible, 1/8 inch or less. Aerate and/or verticut to improve water penetration and remove surface debris.
2) In tilled sites, weed seeds or plant material bearing nematodes must be mechanically hoed or plowed into the soil 1-2 weeks before fumigating so that the emerging weeds and nematodes are subject to fumigation.
3) If root-knot nematodes must be controlled, delay application at least 2-3 weeks, until the root-knot infested root residues have begun to decompose and the remaining plant refuse has been tilled into the soil.
4) Do not apply farmyard manure, peat, other organic fertilizers, burnt lime, or lime nitrogen just before, along with, or just after this product.
5) Converting the active ingredient into the gaseous phase depends primarily on soil moisture and temperature (see *Application Restrictions* and *Water Requirements* in the GAPs section of this label).

Methods of Application
Apply Basamid® G soil fumigant to properly prepared soils using scoops, shakers, shanks, drop-type fertilizer spreaders, or other suitable equipment. To prevent Basamid® G from sticking to the tires of the application equipment, the surface of the soil should be dry to the touch at the time of application. Either incorporate the material physically into the soil to the desired depth, or incorporate the material into the soil with water. If physically incorporated, the soil surface should be sealed as described in the **Preparation Prior to Application** section. DO NOT store Basamid® G overnight in an uncovered container. DO NOT apply Basamid® G when wind may cause granules to drift from target area.

Physical/Mechanical Incorporation for Combined Disease, Nematode, and Weed Control
1) Apply Basamid® G to the soil.
2) After applying, incorporate the granules into the soil as uniformly as possible to the desired depth. This is best accomplished with an L-shaped tine rototiller or spading machine.
3) Following incorporation, seal the soil surface by smoothing or rolling to impede fumigant escape.
4) The treatment is more successful if the incorporation and sealing is followed by thoroughly wetting the soil, keeping it moist (but not waterlogged) for 72 hours. Alternatively, the soil can be covered with a tarp (e.g. barrier film) (such as polyethylene sheeting or other material) to retain fumigant vapors.

Water Incorporation with Drip Irrigation for Disease and Weed Control
1) Drip irrigation tape or tubing can be applied prior to, or following, the Basamid® G application.
2) Apply Basamid® G to the soil.
3) After applying, cover with tarp (e.g., plastic mulch).
4) Activate the Basamid® G using drip irrigation, wetting entirely to the margins of the treated area (such as bed shoulders).
5) The soil must be kept moist (but not waterlogged) for 72 hours.

Preparation Prior to Planting

Before seeding, planting, or transplanting, all the gaseous residues must be gone from the soil. The time between treatment and replanting depends on soil temperature, structure, moisture, and the method of sealing. Do not plant any crop until all fumigant odors have dissipated from the soil and can no longer be detected. Follow the instructions below to allow any remaining fumigant gases to escape from treated soil before planting. As an added precaution, conduct a cress or lettuce seed germination test as follows:

Safety Germination Test
1) Take soil samples at several places in the treated area. Scrape the surface soil aside and quickly fill a sample into a clear (transparent) glass jar. Do not take soil from below the depth of incorporation. Depending on the size of the jar used, either combine samples into a single jar or fill each sample into a separate jar. Fill the jars about halfway and seal them. As a control, fill an additional jar with untreated soil and seal.
2) Sow a small amount of cress *(Lipidium sativum)* or lettuce *(Lactuca sativa)* seeds directly onto the soil and seal the jars. Use the same amount of seed in each jar. The soil should be sufficiently moist to assure quick germination.
3) Place the jars in a room with sufficient temperature to allow for speedy germination. Check for germination after 2 to 3 days. If the seeds have germinated in the jar with the untreated soil but not in the jars with the treated soil, MITC has not yet completely degraded and the treated soil should not be planted. In this case, repeat the germination test after an additional 1-3 days aeration of the treated area. If seeds in all jars germinate normally, and begin to develop normal roots, it is safe to plant the crop.

Soils without Tarps (e.g. Plastic Covers or Mulch)
Aerate the soil with hand implements, rakes, or power tillers above the depth of original incorporation before planting. The soil must not be loosened to the depth of incorporation as non-fumigated soil may be transported up from lower soil layers and can spread very quickly in decontaminated soil and jeopardize pest management. Avoid planting into treated soil within 1 week after Basamid® G application to allow fumigation to occur and MITC gas to dissipate to levels safe for planting. **Recommendations: Soil Temperature and Waiting Period** provides recommended waiting periods between treatment and planting based on soil temperature. The waiting period can be shortened by repeated hoeing, digging, or other tillage of the soil to speed aeration. Longer waiting periods may be required in soils with high concentrations of organic matter. Fall soil treatment is recommended if early spring planting is necessary.

Table 2. Planting Recommendations: Soil Temperature and Waiting Period *without* Tarps

Soil Temperature at 4" Depth	Gas Activity (Days)	Aeration Time (Days)	Germination Test (Days)	Recommended Waiting Period from Treatment to Planting (Days)
77° F (25° C)	4	2	2	8
68° F (20° C)	6	3	2	11
59° F (15° C)	8	5	2	15
50° F (10° C)	12	10	2	24
41° F (5° C)	25	20	2	47

Soils Covered with Tarps
Transplants, bulbs, or seeds can be planted directly into a previously treated bed if certain precautions are followed. The plastic sheeting used to tarp a treated area can also function as a mulch and be left in place in the field. For this application, observe the following steps:
1) A waiting period (see **Table 3 – Planting Recommendations: Soil Temperature and Waiting Period *with* Tarps**) is recommended between application and planting.
2) Cut holes in the plastic 4 to 7 days before the intended planting date. Cultivation to aerate treated soil cannot be performed before planting as in situations where plastic mulch is not present.
3) Perform Safety Germination Test:
4) Proceed with planting if the seeds germinate normally as described in the Safety Germination Test.

Table 3. Planting Recommendations: Soil Temperature and Waiting Period *with* Tarps

Soil Temperature at 4" Depth	Recommended Waiting Period from Treatment to Planting
Above 75° F (24° C)	14 days
65-75° F (18-24° C)	21 days
55-65° F (13-18° C)	30 days

Application method, practice, and rate restrictions

GENERAL RESTRICTIONS AND LIMITATIONS

Maximum seasonal use rate: Refer to **Table 1 – Basamid® G Application Rates** for maximum rates of Basamid® G soil fumigant per acre, per season.

1) Preharvest Interval (PHI): Refer to **Preparation Prior to Planting.**
2) Entry Restricted Period: Refer to **Agricultural Use Requirements.**
3) Crop Rotation Restriction: If all label procedures are followed correctly and all gases have escaped, no crop rotation restrictions apply.
4) This product cannot be used to formulate or reformulate any other pesticide product.
5) DO NOT use Basamid® G when soil temperatures 4" deep are below 43° F (6° C) or above 90° F (32° C).
6) DO NOT plant any crop until all fumigant gases have dissipated from the soil. A Safety Germination Test is recommended.
7) DO NOT apply within 3-4 feet of growing plants or closer than the drip line of trees and large shrubs.

SITE SPECIFIC INFORMATION

Turf Sites - Establishment or Renovation

Basamid® G can be used for new construction or renovation of existing turf sites such as golf courses (fairways, tees, greens), athletic fields, sod farms, or lawns. Site preparation prior to applying Basamid® G on such sites may differ depending on the type of turf, i.e. cool season vs. warm season grasses.

1) Cool Season Grass – Typically a renovation of a turf site to kill the existing grasses and weed seeds in the soil profile, without disturbing the soil. The area should be mowed to the lowest cutting height possible (1/8-inch or less). Then core aerated in several directions to allow movement of the product into the targeted soil profile (generally 6-8 inches). Cores should be removed and the area cleaned of debris. Verticutting may be necessary if water infiltration will be inhibited by a thatch layer.
2) Warm Season Grass - Most warm season turf situations involve the removal, or mechanical incorporation, of a thatch layer consisting of rhizomes and/or stolons. Under these conditions, two to three applications of a broad sprectrum herbicide, such as glyphosate, prior to disturbing the soil is generally beneficial.

In both turf situations, follow the instructions in **Preparation Prior to Application** and apply the recommended rate (see **Table 1 – Basamid® G Application Rates**) using a drop-type spreader. Incorporate and seal the soil surface by following the instruction in **Methods of Application - Water Incorporation with Overhead Irrigation for Disease and Weed Control.** Prior to seeding, sodding, or sprigging follow the instructions in **Preparation Prior to Planting.** For additional information contact your Certis representative.

Greenhouses

Basamid® G can be used for fumigation in greenhouses. Observe all **Personal Protective Equipment (PPE)** requirements for use in greenhouses and other enclosed areas. During the application keep all doors, vents, and windows to the outside open, and keep all fans or mechanical ventilation systems running within the greenhouse. Before applying Basamid® G soil fumigant in greenhouses, nursery boxes, etc., all plants and living plant materials must be removed. Leaks through which gases could penetrate into adjacent rooms or greenhouses filled with plants must be sealed. Various ornamentals (e.g., *Ficus* sp., *Hydrangea macrophylla*, *Asparagus plumosus*) are very sensitive to trace amounts of MITC. Follow instructions in **Preparation Prior to Application.** Select an appropriate application rate (see **Table 1 – Basamid® G Application Rates**) and methodology as outlined in **Methods of Application.** Following fumigation, and before turning off the heat in a greenhouse closing for the winter, a germination test must be performed to ensure that MITC has completely degraded. Failing to eliminate all the gases from the soil may delay spring planting or cause plant loss. Prior to seeding or transplanting follow the instructions in **Preparation Prior to Planting.**

Requirements for Pre-Plant Greenhouse Soil Fumigations: The maximum application block size that can be treated is 50,000 square feet.

Soil Media

Basamid® G can be used for disinfestation of soil media, such as potting soils, soil heaps, or compost piles. Mechanically incorporate the recommended amount of product (see **Table 1 – Basamid® G Application Rates**) per cubic yard of substrate. Soil moisture should be maintained at 60-80% field capacity for sand, 50% for loam, and 30-40% for clay soils. The soil temperature must be above 43° F (6° C) and remain at least this high during the entire fumigation period. Commercial soil preparation setups, such as conveyors or cement-type mixers, have proved suitable. Any suitable alternative for mixing this product with the soil is acceptable. Following are two examples of acceptable methods:

Layering

1) Spread moist soil on a solid surface, if possible on a polyethylene sheet.
2) Each soil layer should be 8-10" deep.
3) The required amount of Basamid® G is spread on each soil layer and thoroughly incorporated with a rotary tiller.

Bulk

1) Mix moist soil on a solid surface, if possible on a polyethylene sheet.
2) Using a front loader, or equivalent, thoroughly mix the required amount of Basamid® G with a measured volume of soil by repeated turning of the soil pile.
3) Repeat the procedure until all the untreated soil has been blended.

Treated soil can be heaped up to 1 yard high (36 inches). To seal the surface and reduce gas escape, covering the soil heap with a plastic tarp is highly recommended. Leave the pile covered for a minimum of 7 days, then remove the cover and leave undisturbed for an additional 7 days to allow residual gas to dissipate. Prior to use, follow the guidelines in **Preparation Prior to Planting** and utilize the **Safety Germination Test.**

Interplanting

For soil treatment prior to interplanting in existing orchards, berry fields, and similar areas, thoroughly till a spot large enough to accommodate the root system of the plant. Root systems of nearby existing plants should be completely severed to avoid contact with the treated soil. Soil may be treated in place based on the area and depth tilled using the instructions in **Method of Application - Physical Incorporation for Combined Disease, Nematode, and Weed Control.** The soil may be removed and treated in a pile (see **Soil Media**). The soil surface should be tarped for best results. Do not harvest produce within one year of application.

Buffer Zone Requirements

A buffer zone must be established for every fumigant applicati
the general buffer zone requirements:

- The buffer zone must extend outward from the edge of the application block perimeter equally in all directions.
- All non-handlers, including field workers, residents, pedestrians, and other bystanders, must be excluded from the buffer zone during the buffer zone period except for transit (see *Buffer Zone Exemptions for Transit on Roadways*).
  - Local, state, or federal officials performing inspection, sampling, or other similar official duties are not excluded from the application block or the buffer zone by this labeling. The certified applicator supervising the application and the owner of the establishment where the application is taking place are not authorized to, or responsible for, excluding those officials from the application block or the buffer zone.
- The buffer zone period begins at the start of the application and lasts for a minimum of 48-hours after the application is complete.

Buffer zone proximity

- Before the start of application, the certified applicator must determine whether their buffer zone will overlap with any other dazomet (or other MITC generating pesticide) buffer zone(s).
- To reduce the potential for off-site movement from multiple fumigated fields, buffer zones from multiple dazomet (or other MITC generating pesticide) application blocks must not overlap UNLESS:
  1. A minimum of 12 hours have elapsed from the time the earlier application(s) is complete until the start of the later application, and
  2. *Fumigant Site Monitoring* or *Response Information for Neighbors* have been implemented if there are any residences or businesses within 300 feet of any of the buffer zones.

Structures under the control of the owner of the application block

- Buffer zones must not include buildings used for storage (e.g., sheds, barns, garages), UNLESS:
  - The storage buildings are not occupied during the buffer zone period, and
  - The storage buildings do not share a common wall with an occupied structure.

Areas not under the control of the owner of the application block

- Buffer zones must not include residential areas (e.g., employee housing, private property), buildings (e.g., commercial, industrial), outdoor residential areas (e.g., lawns, gardens, play areas) and other areas that people may occupy, UNLESS:
  1. The occupants provide written agreement, prior to the start of the application, that they will voluntarily vacate the buffer zone during the entire buffer zone period, and
  2. Reentry by occupants and other non-handlers must not occur until,
     - The buffer zone period has ended, and
     - Sensory irritation is not experienced upon re-entry.
- Buffer zones must not include agricultural areas owned and/or operated by persons other than the owner of the application block, UNLESS:
  1. The owner of the application block can ensure that the buffer zone will not overlap with a dazomet (or other MITC generating pesticide) buffer zone from any other property owners, except as provided in the *Buffer Zone Proximity* section, and
  2. The owner of the other property provides written agreement to the applicator that they, their employees, and other persons will stay out of the buffer zone during the entire buffer zone period.
- Buffer zones must not include roadways and rights of way UNLESS:
  1. The area is not occupied during the buffer zone period, and
  2. Entry by non-handlers is prohibited during the buffer zone period.

  Buffer Zone Exemptions for Transit on Roadways
  Vehicular and bicycle traffic on public and private roadways through the buffer zone is permitted. (NOTE: Buffer zones are not permitted to include bus stops or other locations where persons wait for public transit.)
- For all other publicly owned and/or operated areas such as parks, sidewalks, permanent walking paths, playgrounds, and athletic fields, buffer zones must not include these areas UNLESS:
  1. The area is not occupied during the buffer zone period,
  2. Entry by non-handlers is prohibited during the buffer zone period, and
  3. Written permission to include the public area in the buffer zone is
     propriate state and/or local authorities responsible for manage
     the area.

Certified applicators must comply with all local laws and regulations.

See the *Posting* section for additional requirements that may apply.

Buffer Zone Distances

Buffer zone distances must be calculated using the application rate and the size of the application block.

Buffer zone distances

- Buffer zone distances must be based on look-up tables in this labeling (25 feet is the minimum distance regardless of site-specific application parameters).
- If after applying all applicable buffer zone credits the buffer zone is greater than 1/2 mile (2,640 ft), then the application is prohibited.
- Tables 1-4 must be used to determine the minimum buffer distances. Round up to the nearest rate and block size, where applicable. Applications are prohibited for rates or block sizes that exceed what is presented in the buffer zone tables.

Buffer zone requirements

Buffer zone distances

Calculating buffer zone distances

Buffer Zone Tables

Table 1: Buffer zone distances (in feet) for mechanically incorporated dazomet soil applications except golf course fairways and greenhouses

Application Rate (lbs product/A)	Block Size (acres)													
	40	30	20	15	10	9	8	7	6	5	4	3	2	1 or less
421	864	692	520	400	280	256	232	208	184	160	150	140	120	110
396	770	605	440	343	247	230	210	190	170	150	135	117	100	75
386	750	588	426	333	240	222	204	185	167	147	130	113	96	72
376	730	571	412	323	233	215	197	179	161	144	127	110	92	69
366	710	554	398	312	227	210	193	176	159	141	123	106	88	66
356	690	537	384	302	220	204	188	172	156	138	120	102	84	63
347	670	520	370	292	213	198	182	166	151	135	117	99	80	60
337	650	503	356	281	207	192	177	162	147	132	113	95	76	57
327	630	487	343	271	200	186	171	157	143	128	109	91	72	54
317	610	470	330	261	193	180	167	153	139	124	105	87	68	51
307	590	454	317	251	186	173	160	147	134	120	101	82	64	48
297	565	435	305	242	179	167	155	142	129	116	97	78	60	45
287	545	417	288	229	171	159	147	135	123	112	93	75	56	42
277	524	400	275	219	164	153	142	131	119	108	89	70	52	39
267	505	383	260	208	156	146	136	125	115	104	85	66	48	36
262	500	375	250	200	150	140	130	120	110	100	82	64	44	33
257	490	368	245	193	141	130	119	110	99	89	72	56	40	30
248	471	353	234	182	130	120	109	99	89	78	64	50	36	25
238	452	338	223	171	119	109	98	89	79	67	55	43	32	25
228	433	323	212	160	108	99	88	78	67	56	47	38	28	25
218	414	308	201	149	97	89	78	68	57	45	39	32	25	25
208	395	293	190	138	86	76	65	54	44	34	31	29	25	25
198	375	281	187	133	79	68	57	46	38	25	25	25	25	25
188	357	268	179	128	76	65	55	44	35	25	25	25	25	25
178	339	255	171	122	74	63	53	43	34	25	25	25	25	25
168	321	242	163	117	71	61	51	42	33	25	25	25	25	25
158	303	229	154	111	68	59	49	41	32	25	25	25	25	25
149	285	215	145	105	65	56	47	39	31	25	25	25	25	25
139	267	202	136	99	62	54	45	38	31	25	25	25	25	25
131	250	188	125	92	58	51	44	37	30	25	25	25	25	25
129	250	188	125	92	58	49	41	35	30	25	25	25	25	25
119	218	164	110	82	53	45	38	33	29	25	25	25	25	25
109	186	141	95	72	48	41	35	31	28	25	25	25	25	25
99	154	117	80	62	43	38	33	30	28	25	25	25	25	25
89	122	94	65	52	38	34	30	28	27	25	25	25	25	25
79	90	70	50	42	33	31	28	27	26	25	25	25	25	25
69	58	47	35	32	28	28	27	26	26	25	25	25	25	25
65	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Table 2: Buffer zone distances (in feet) for water incorporated (surface) dazomet soil applications except golf course fairways and greenhouses

Application Rate (lbs product/A)	Block Size (acres)													
	40	30	20	15	10	9	8	7	6	5	4	3	2	1 or less
262	675	560	450	420	390	360	330	300	270	240	176	112	47	35
257	669	546	429	400	371	342	313	284	255	223	164	105	45	34
248	663	532	408	379	350	321	292	263	234	206	152	98	42	34
238	657	518	387	359	331	303	275	247	219	189	140	91	41	33
228	651	504	366	338	310	282	254	226	198	172	128	84	39	32
218	645	490	345	318	291	264	237	210	183	155	116	77	38	31
208	639	477	323	297	271	245	219	193	167	138	104	70	36	31
198	630	465	300	274	248	222	196	170	144	120	91	62	35	31
188	576	425	275	248	221	197	172	151	127	106	82	57	33	29
178	522	385	250	222	194	172	148	132	110	92	73	51	32	28
168	467	345	225	196	167	147	124	113	93	78	64	46	29	27
158	414	305	200	170	140	122	100	94	76	64	55	40	28	27
149	360	265	175	144	113	97	76	75	59	50	46	35	27	26
139	306	225	150	118	86	72	52	56	42	36	37	30	26	26
131	250	188	125	92	58	51	44	38	31	25	25	25	25	25
129	250	188	125	92	58	51	44	38	31	25	25	25	25	25
119	218	164	110	82	53	47	41	35	30	25	25	25	25	25
109	186	141	95	72	48	43	38	34	29	25	25	25	25	25
99	154	117	80	62	43	41	38	33	29	25	25	25	25	25
89	122	94	65	52	38	36	33	30	27	25	25	25	25	25
79	90	70	50	42	33	31	29	28	26	25	25	25	25	25
69	58	47	35	32	28	27	27	26	26	25	25	25	25	25
65	25	25	25	25	25	25	25	25	25	25	25	25	25	25

Table 3: Buffer zone distances (in feet) for dazomet greenhouse applications

Block Size	5000 square feet	10000 square feet	15000 square feet	20000 square feet	25000 square feet	30000 square feet	35000 square feet	40000 square feet	45000 square feet	50000 square feet
262 lbs product/A	240	360	450	540	630	720	810	855	900	1140
198 lbs product/A	180	300	330	450	540	570	650	720	760	810
131 lbs product/A	120	210	270	330	390	450	585	540	600	630
65 lbs product/A	45	90	110	170	210	240	270	300	330	360

Table 4: Buffer zone distances (in feet) for mechanically incorporated dazomet applications to golf course fairways*

Application Rate (lbs product/A)	Block size (acres)				
	5	4	3	2	1 or less
525	25	25	25	25	25
396	25	25	25	25	25
386	25	25	25	25	25
376	25	25	25	25	25
366	25	25	25	25	25
356	25	25	25	25	25
347	25	25	25	25	25
337	25	25	25	25	25
327	25	25	25	25	25
317	25	25	25	25	25
307	25	25	25	25	25
297	25	25	25	25	25
287	25	25	25	25	25
277	25	25	25	25	25
267	25	25	25	25	25
262	25	25	25	25	25
257	25	25	25	25	25
248	25	25	25	25	25
238	25	25	25	25	25

*This buffer table may only be used if the length of the application area is twice the distance of the width (i.e., the length is 80 feet and the width is no greater than 40 feet). If the application area does not meet these requirements, use the buffer zone distances in Table 1.

Buffer Zone Credits

The buffer zone distances for Basamid® G applications may be reduced by the percentages listed below. Credits may be added, but credits cannot exceed 80%. Also the minimum buffer zone distance is 25 feet regardless of buffer zone credits available.

- 10% reduction in buffer zone distance, IF the organic content of the soil in the application block is ≥ 1% - 2%; a 20% reduction is buffer zone distance, IF the organic content of the soil in the application block is >2% - 3%; and a 30% reduction in the buffer zone distance, IF the organic content of the soil in the application block is >3%.
- 10% reduction in buffer zone distance, IF the soil temperature is … or less. Record temperature measurements at the application … whichever is shallower.
- 10% reduction in the buffer zone distance, IF the clay content of … tion block is greater than 27%.

Posting buffer zone warning signs

Examples of Buffer Calculation if a Credit(s) is Applicable

If the buffer zone is 50 feet and the application qualifies for a buffer zone reduction credit since the soil organic content is 1.5%, then the buffer zone can be reduced by 10%, i.e., reduced by 5 feet based on the following calculation: 50 feet – (50 feet x 10%) = 45 feet.

If the buffer zones is 50 feet and the application qualifies for two buffer zone credits since the soil organic content is 1.5% and the clay content is greater than 27%, then the buffer zone can be reduced by 20% (10% organic content credit + 10% clay content credit), i.e., reduced by 10 feet based on the following calculation 50 feet - (50 feet x 20%) = 40 feet.

Posting Fumigant Buffer Zones

- Posting of a buffer zone is required unless there is a physical barrier that prevents bystander access to the buffer zone.
- Buffer Zone signs must be placed along or outside the perimeter of the buffer zone, at all usual points of entry and along likely routes of approach from areas where people not under the owner's control may approach the buffer zone.
  - Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
  - Some examples of likely routes of approach include, but are not limited to, the area between a buffer zone and a roadway, or the area between a buffer zone and a housing development.
  - When posting, the certified applicator supervising the application must ensure compliance with all local laws and regulations.
- Buffer Zone signs must meet the following criteria:
  - The printed side of the sign must face away from the application block toward areas from which people could approach.
  - Signs must remain legible during the entire posting period and must meet the general standards outlined in the WPS for sign size, text size, and legibility (see 40 CFR §170.120).
  - Signs must be posted no sooner than 24 hours prior to the start of the application and remain posted until the buffer zone period has expired.
  - Signs must be removed within 3 days after the end of the buffer zone period.
  - Buffer Zone signs which meet the criteria above will be provided at points of sale for applicators to use. Templates may be downloaded from http://www.epa.gov/pesticides/reregistration/soil_fumigants/.

(continued)

Posting Fumigant Buffer Zones *(continued)*

- The Buffer Zone signs must contain the following information:
  - The 'Do Not Walk' symbol
  - DO NOT ENTER/NO ENTRE,
  - Dazomet Basamid G Fumigant BUFFER ZONE,
  - Contact information for the certified applicator in charge of the fumigation.

Exception: If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks' buffer zones may be posted. Buffer Zone signs must be posted no sooner than 24-hours prior to the start of the first application. The signs must remain posted until the last buffer zone period expires and signs must be removed within 3-days after the buffer zone period for the last block has expired.

Restrictions for Difficult to Evacuate Sites

Difficult to evacuate sites are pre-K to grade 12 schools, state licensed daycare centers, nursing homes, assisted living facilities, hospitals, in-patient clinics, and prisons:

- No fumigant application with a buffer zone greater than 300 feet is permitted within 1/4 mile (1320 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.
- No fumigant application with a buffer zone of 300 feet or less is permitted within 1/8 mile (660 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

Emergency Preparedness and Response Measures

If the buffer zone is 25 feet, then the *Emergency Preparedness and Response Measures* are not applicable.

Triggers for Emergency Preparedness and Response Measures:

The certified applicator must either follow the directions under the *Fumigant Site Monitoring* section or follow the directions under the *Response Information for Neighbors* section if:

- the buffer zone is greater than 25 feet but less than or equal to 100 feet, and there are residences or businesses within 50 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 100 feet but less than or equal to 200 feet, and there are residences or businesses within 100 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 200 feet but less than or equal to 300 feet, and there are residences or businesses within 200 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 300 feet or the buffer zones overlap, and there are residences or businesses within 300 feet from the outer edge of the buffer zone.

Fumigant Site Monitoring

NOTE: *Fumigant Site Monitoring* is ONLY required if the *Emergency Preparedness and Response Measures* are triggered AND directions from the *Response Information for Neighbors* section are not followed.

From the beginning of the application until the buffer zone period expires, a certified applicator or handler(s) under his/her supervision must:

- Monitor for sensory irritation in areas between the buffer zone outer perimeter and residences and businesses that trigger this requirement.
- Monitoring for sensory irritation must begin the evening on the day of application and continue until the buffer zone period expires. Monitor a minimum of 8 times during the buffer zone period, including these periods:
  - 1 hour before sunset,
  - during the night,
  - 1 hour after sunrise, and
  - during daylight hours.

Implement the emergency response plan immediately if a handler monitoring experiences sensory irritation.

Response Information for Neighbors

NOTE: *Response Information for Neighbors* is ONLY required if the *Emergency Preparedness and Response Measures* are triggered AND directions from the *Fumigant Site Monitoring* section are not followed.

The certified applicator supervising the application must ensure that residences and businesses that trigger the requirement have been provided the emergency response information at least 1 week before the application starts. The information provided may include application dates that range for no more than 4 weeks. If the application does not occur when specified, the information must be delivered again.

Information that must be included:

- The location of the application block.
- Fumigant(s) applied including the active ingredient, name of the fumigant product(s), and the EPA Registration number
- Contact information for the applicator and property owner
- Time period in which the application is planned to take place (must not range more than 4 weeks)Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and who to call if you believe you are being exposed (911 in most cases)
- How to find additional information about fumigants.

The method used to share the response information for neighbors can be accomplished through mailings, door hangers, or other methods that will effectively inform the residences and businesses within the required distance from the edge of the buffer zone.

Notice to State and Tribal Lead Agencies

If your state and/or tribal lead agency requires notice, information must be provided to the appropriate state or tribal lead agency prior to the application. Please refer to www.epa.gov/fumigantstatenotice for a list of states and tribal lead agencies that require notice and information on how to submit the information.

The information that must be provided to state and tribal lead agencies includes the following:

- Location of the application blocks,
- Fumigant(s) applied including EPA registration number,
- Applicator and property owner/operator contact information, and
- Time period that fumigation may occur.

Emergency Response Plan

The certified applicator must include in the FMP a written emergency response pl identifies:

- evacuation routes,
- locations of telephones,
- contact information for first responders and local/state/federal/tribal personnel, and
- emergency procedures/responsibilities (e.g., adding water to the field, repairing tarps, fixing equipment, evacuating upwind) if:
  - there is an incident,
  - sensory irritation is experienced outside of the buffer zone, and/or there are equipment/tarp/seal failure or complaints, or other emergencies

Site-Specific Fumigation Management Plan (FMP)

Prior to the start of application, the certified applicator supervising the application must verify that a site-specific FMP exists for each application block. In addition, an agricultural operation fumigating multiple application blocks may format the FMP in a manner whereby all of the information that is common to all the application blocks is captured once, and any information unique to a particular application block or blocks is captured in subsequent sections.

The FMP must be prepared by the certified applicator, the site owner, 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 application.

Each site specific FMP must contain the following elements:

- ❖ Certified Applicator Supervising the Application
  - ➢ Name,
  - ➢ Phone number,
  - ➢ Pesticide applicator license and/or certificate number,
  - ➢ Specify if commercial or private applicator,
  - ➢ Employer name,
  - ➢ Employer address, and
  - ➢ Date and location of completing EPA approved soil fumigant training program.
- ❖ General site information
  - ➢ Application block location (e.g., county, township-range-section quadrant), address, or global positioning system (GPS) coordinates
  - ➢ Name, address, and phone number of application block owner
  - ➢ Map, aerial photo, or detailed sketch showing:
    - application block location
    - application block dimensions
    - buffer zone dimensions
    - property lines
    - roadways
    - rights-of-ways
    - sidewalks
    - permanent walking paths
    - bus stops
    - nearby application blocks
    - surrounding structures (occupied and non-occupied)
    - locations of Buffer Zone signs, and
    - locations of difficult to evacuate sites with distances from the application block labeled.
- ❖ General application information
  - ➢ Target application date/window,
  - ➢ Fumigant Product Name, and
  - ➢ EPA registration number.
- ❖ Tarp Plan (if tarp is used)
  - ➢ Schedule for checking tarps for damage, tears, and other problems,
  - ➢ Minimum size of damage that will be repaired,
  - ➢ Factors used to determine when tarp repair will be conducted,
  - ➢ Equipment/methods used to perforate tarps,
  - ➢ Target dates for perforating tarps, and
  - ➢ Target dates for removing tarps.
- ❖ Soil conditions
  - ➢ Description of soil texture and moisture in application block,
  - ➢ Method used to determine soil moisture, and
  - ➢ Soil temperature measurement.
- ❖ Buffer zones
  - ➢ Application method,
  - ➢ Application rate from lookup table on label,
  - ➢ Application block size from lookup table on label,
  - ➢ Credits applied and measurements taken (if applicable),
    - Organic matter content
    - Clay content
    - Soil temperature
  - ➢ Buffer zone distance, and
  - ➢ Description of areas in the buffer zone that are not under the control of the owner of the application block. If buffer zones extend onto areas not under the control of the owner, attach the written agreement and keep it with the FMP.
- ❖ Record Emergency Response Plan as described in the *Emergency Response Plan* section
- ❖ Posting of Fumigant Treated Area and Buffer Zone
  - ➢ Person(s) who will post and remove (if different) Fumigant Treated Area a Zone signs, and
  - ➢ Location of Buffer Zone signs.
- ❖ Emergency Preparedness and Response Measures (if applicable)
  - ➢ Fumigant site monitoring (if applicable):
    - When and where it will be conducted;
  - ➢ Response information for neighbors (if applicable):
    - List of residences and businesses informed,
    - Name and phone number of person providing information, and
    - Method of providing the information.
- ❖ State and/or tribal lead agency advance notification (if state and/or tribal lead agency requires notice, provide a list of contacts that were notified and date notified)

Site-specific fumigant management plan

Emergency preparedness and response measures

Notification to lead agency (CAC) for compliance assistance and assurance

- ❖ Plan describing how communication will take place between the certified applicator supervising the application, the owner, and other on-site handlers (e.g., tarp perforators/removers, irrigators) for complying with label requirements (e.g., buffer zone location, buffer zone start and end times, timing of tarp perforation and removal, PPE).
  - ➢ Name and phone number of persons contacted by the certified applicator, and
  - ➢ Date contacted.
- ❖ Handler (including Certified Applicators) Information and PPE
  - ➢ Names, addresses and phone numbers of handlers
  - ➢ Names, addresses, and phone numbers for employers of handlers
  - ➢ Tasks that each handler is authorized and trained to perform
  - ➢ Date of PPE training for each handler
  - ➢ Applicable handler PPE including:
    - ▪ coveralls over short-sleeved shirt and short pants when in the treated application block
    - ▪ chemical resistant gloves
    - ▪ shoes plus socks
    - ▪ Protective eyewear
    - ▪ Air-purifying respirators
      - Respirator make, model, type, style, size, cartridge type, and cartridge replacement schedule
    - ▪ Other PPE
  - ➢ For handlers: Confirmation of receipt of Fumigant Safe Handling Information.
  - ➢ For certified applicator(s) supervising the application: Completion date and location of the soil fumigant training program listed on the following EPA website www.epa.gov/fumiganttraining, for the active ingredient(s) in this product.
  - ➢ For handlers designated to wear air-purifying respirators:
    - ▪ date of medical qualification to wear a respirator,
    - ▪ date of respirator training, and
    - ▪ date of fit-testing for the respirator.
  - ➢ Unless exempted in the *Protection of Handlers* section, verify that:
    - ▪ at minimum 1 handler has the appropriate respirators and cartridges during handler activities, and
    - ▪ the employer has confirmed that the appropriate respirator and cartridges are immediately available for each handler who will wear one.
- ❖ Air monitoring plan
  - ➢ If sensory irritation is experienced, indicate whether operations will cease or operations will continue with use of an air-purifying respirator
  - ➢ For monitoring the breathing zone:
    - ▪ Representative handler tasks to be monitored,
    - ▪ Monitoring equipment to be used, and
    - ▪ Timing of the monitoring.
  - ➢ Fumigant site monitoring:
    - ▪ Monitoring equipment to be used.
- ❖ Good Agricultural Practices (GAPs)
  - ➢ Identify (e.g., list, attach applicable label section) applicable mandatory GAPs.
- ❖ Pesticide Product Labels and Material Safety Data Sheets (MSDS)
- ❖ Ensure that labels and MSDS are on-site and readily available for employees to review.

Record-Keeping Procedures
The owner of the application block as well as the certified applicator supervising the application 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 application blocks (e.g., applicator information, certified applicator, handlers, record-keeping procedures, emergency procedures) only elements that have changed need to be updated in the site-specific FMP provided the following:

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

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

Within 30 days after the application is complete, the certified applicator supervising the application must complete a Post-Application Summary.

Post-Application Summary
The Post-Application Summary must contain the following elements:

- ❖ Actual date and time of the application,
- ❖ Application rate
- ❖ Size of application block
- ❖ Weather Conditions
  - ➢ Summary of the National Weather Service weather forecast during the application and the 48-hours after the application is complete including:
    - ▪ wind speed, and
    - ▪ air stagnation advisory (if applicable).
  - ➢ Forecast must be checked on the day of, but prior to the start of the application, and on a daily basis during the application if the time period from the start of the application until the application is complete is greater than 24 hours.
- ❖ Tarp damage and repair information (if applicable):
  - ➢ Date of tarp damage discovery,
  - ➢ Location and size of tarp damage,
  - ➢ Description of tarp/tarp seal/tarp equipment failure, and
  - ➢ Date and time of tarp repair completion.
- ❖ Tarp perforation/removal details (if applicable):
  - ➢ Date and time tarps were perforated,
  - ➢ Date and time tarps were removed, and
  - ➢ Record if tarps were perforated and/or removed early. Describe the conditions that caused early tarp perforation and/or removal.
- ❖ 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, and
  - ➢ Description of control measures or emergency procedures followed after complaint.
- ❖ Description of incidents, equipment failure, or other emergency and emergency procedures followed (if applicable).
- ❖ Air monitoring results:
  - ➢ When sensory irritation was experienced:
    - ▪ Date, time, location, and handler task/activity where irritation was observed and
    - ▪ Resulting action (e.g., cease operations, continue operations with air-purifying respirators).
  - ➢ When using a direct read detection device:
    - ▪ Sample date(s), time(s), location(s), and concentration(s),
    - ▪ Handler task/activity monitored (if applicable), and
    - ▪ Resulting action (e.g., cease operations, continue operations with air-purifying respirators).
- ❖ Fumigant Treated Area and Buffer Zone Signs:
  - ➢ Dates of posting and removal.
- ❖ Any deviations from the FMP (e.g., changes in emergency response actions, changes in handler information, changes in handlers responsible for completing emergency tasks, changes in communication between certified applicator, owner, and other handlers).

Record-Keeping Procedures
The owner of the application block, as well as the certified applicator supervising the application, must keep a signed copy of the Post-Application Summary for 2 years from the date of application.

GENERAL INFORMATION

Important Notes to User
1) Read the entire label carefully before use.
2) This product is toxic to all growing plants.
3) Root pruning with a plow or trencher is recommended when applications will be made adjacent to large plant material.
4) If slopes are treated with this product, take precautions to prevent the chemical from washing downward toward desirable plants, creeks, streams, lakes or ponds. Erect silt fences or place straw bales in vulnerable areas. Cover drains in the treated area that may empty into ponds or creeks or onto desirable vegetation. Tarping of these areas is also effective to reduce the possibility of off site movement.
5) Vapors from soil treated with this product in greenhouses and cold frames may injure growing plants. Data are not complete on use in propagating beds composed of materials other than soil or soil and peat mixtures. Clean equipment thoroughly with detergent and water after using with this or with other pesticides before using for other purposes.
6) Fumigation may slow the rate of nitrification (the conversion of nitrates from ammonia by bacterial action). Therefore, certain ammonia-sensitive plants may exhibit growth inhibition when planted in fumigated soils containing high amounts of ammonia nitrogen. To lessen this hazard, at least half, and preferably all, of the nitrogen fertilizer added immediately before or soon after fumigation should be in the form of nitrate nitrogen. This hazard may also be reduced by delaying planting until several months after fumigation, such as fall fumigation before a spring-planted crop. If a nitrate form of nitrogen such as sodium or calcium nitrate is not readily available, ammonium nitrate used sparingly will supply the nitrogen needed without risk. Phosphorus, potassium, and other plant nutrients should be used according to soil needs.

Mode of Action
When Basamid® G soil fumigant is correctly incorporated into moist soil, the active ingredient is transformed into methyl isothiocyanate (MITC) gas. MITC diffuses upward through spaces in the soil, killing the living organisms it contacts. As with other sterilizing materials, the effectiveness of Basamid® G depends primarily on the concentration used, the length of time that it takes effect, and the physiological state of the organisms to be controlled. Free-living nematodes, developing fungal mycelium, and freshly-germinating weed seeds are most likely to be controlled. Dormant weed seeds, fungi in a resting stage, and encysted nematodes, or those protected within roots, will not be controlled.

Crop Tolerance
All crops listed on the label are tolerant to areas that have been treated with Basamid® G following dissipation of the gases. Data have shown that certain subsequent crops are positively influenced by a Basamid® G treatment, because pathogens, weeds, etc. will not have time to multiply and compete with the crop for nutrients. However, the presence of Basamid® G is toxic to all growing plants. Perform the **Safety Germination Test** to ensure the absence of gases.

Clean
Clean … detergent or commercial sprayer … and after applying this product.

Post-application summary

PESTS LISTED ON THIS LABEL

Table 5. Germinating Seeds of Annual and Perennial Weeds

Common Name	Scientific Name
Barnyardgrass*	*Echinochloa crus-galli*
Birdweed*	*Convolvulus arvensis*
Blackgrass*	*Alopecurus myosuroides*
Bristlegrass*	*Setraia spp.*
Buckwheat, Wild*	*Polygonum convululus*
Callalily, Brazil*	*Richardia brasiliensis*
Chamomile, Wild*	*Matricaria chamomilla*
Chickweed*	*Stellaria media*
Cinquefoil *	*Potentilla norvegica*
Cleavers*	*Gallium aparine*
Clover*	*Trifolium spp.*
Cocksfoot*	*Dactylus glomerata*
Corn Flower*	*Centurea cyanus*
Crabgrass	*Digitaria spp.*
Cress, Hoary*	*Cardaria draba*
Dock, Broadleaved*	*Rumex obtusifolius*
Fescuegrass*	*Festuca arundinacela*
Foxtail, Short-awned	*Alopecurus aequalis*
Fumitory, Common*	*Fumaria officinalis*
Galinsoga, Small-flowered*	*Galinsoga parviflora*
Groundsel*	*Senecio vulgatum*
Hempnettle*	*Galeopsis tetrahit*
Henbit	*Lamium amplexicaule*
Itchgrass*	*Rottboellia exaltata*
Jimsonweed*	*Datura stramonium*
Knotgrass*	*Polygonum aviculare*
Ladysthumb*	*Polygonum persicaria*
Lambsquarters*	*Chenopodium album*
Marigold, Corn*	*Chrysanthemum segetum*
Marigold, Dwarf*	*Schkuhria pinnata*
Meadowgrass, Annual (aka Annual Bluegrass)*	*Poa annua*
Medic*	*Medicago spp.*
Mustard, Wild	*Brassica kaber*
Nettle, Small*	*Uetica urens*
Nettle, Stinging*	*Urtica diolca*
Nightshade, Black*	*Solanum nigrum*
Oats, Wild*	*Avena fatua*
Pennycress, Field*	*Thlapsi arvense*
Pigweed	*Amaranthus spp.*
Purslane, Common	*Portulaca oleracea*
Quackgrass*	*Agropyron repens*
Radish, Wild*	*Raphanus raphanistrum*
Rapeseed*	*Brassica spp.*
Sedges*	*Cyperus spp.*
Shepardspurse*	*Capsella bursa-pastosis*
Smartweed, Pale*	*Polygonum lapatifolium*
Spurge, Sun*	*Euphorbia helioscopia*
Vetch, Tufted*	*Vicia cracca*
Witchweed	*Striga asiatica*
Yellowrocket*	*Barbarea vulgaris*

Table 6. Root Propagated Weeds

Common Name	Scientific Name
Bermudagrass*	*Cynodon dactylon*
Bindweed, Field*	*Convolvuluv arvensis*
Cinquefoil, Rough*	*Potentilla norvegica*
Clover*	*Trifolium spp.*
Cress, Hoary*	*Cardaria draba*
Nettle, Stinging*	*Urtica diolca*
Quackgrass*	*Agropyron repens*
Sedges*	*Cyperus spp.*

* Not for use in California

Table 7. Parasitic weeds

Common Name	Scientific Name
Broomrape*	*Orobanche spp.*
Dodder*	*Cuscuta spp.*
Witchweed*	*Striga spp.*

Table 8. Plant-parasitic nematodes

Common Name	Scientific Name
Cyst-forming root nematodes	
Eelworm, Beet Cyst*	*Heterodera schachtii*
Eelworm, Pea Cyst*	*Heterodera goettingia*
Eelworm, Yellow Potato Cyst*	*Globodera rostochiensis*
Free-living (migratory) root nematodes	
Eelworm, Dagger	*Rotylenchus spp.*
Nematode, Lance	*Hoplolaimus spp.*
Nematode, Root	*Tylenchus spp.*
Nematode, Spiral	*Tylenchorrhynchus spp.*
Nematode, Stunt	*Xiphinema spp.*
Root knot nematodes	
Eelworm, Root Knot	*Meloidogyne spp.*
Stem and leaf nematodes	
Eelworm, Stem and Bulb*	*Ditylenchus dipsaci*

Table 9. Soil-borne Fungi

Common Name	Scientific Name
Blights	
Blossom blight*	*Choanephora cucurbitarum*
Early blight*	*Alternaria solani*
Molds	
Black mold*	*Aspergillus niger*
Black mold*	*Cladosporium herbarum*
Citrus molds*	*Penisillium spp*
Grey mold*	*Botrytis spp.*
Molds*	*Mucor circinelloides*
White mold*	*Mycogone perniciosa*
Spots	
Eyespot*	*Cercosporella spp.*
Root Diseases	
Club root*	*Plasmodiophora brassicae*
Corky root of tomato*	*Pyrenochaeta lycopersici*
Root diseases	*Rhizoctonia spp.*
Root diseases*	*Rosellinia spp.*
Rots	
Bitter rot*	*Gloeosporium fructigenum*
Blackroot rot*	*Macrophomina phaseolina*
Blackroot rot*	*Phomopsis sclerotioides*
Blackroot rot*	*Thielaviopsis basicola*
Buttrot*	*Fomes spp.*
Citrus bitter rot*	*Trichothecium roseum*
Club root*	*Plasmodiophora brassicae*
Corky root of tomato*	*Pyrenochaeta lycopersici*
Foot rots	*Fusarium spp.*
Fruit rot*	*Didymella lycopersici*
Fruit rot*	*Choanephora cucurbitarum*
Heart rot*	*Fomes spp.*
Root rot*	*Aphanomyces spp.*
Root rot*	*Helicobasidium mompa*
Root rot*	*Sclerotium spp.*
Root rots	*Phytophthora spp.*
Sclerotinia softrots*	*Sclerotinia spp.*
Soft rot*	*Rhizopus spp.*
Tomato stem rot*	*Didymella lycopersici*
White rot*	*Sclerotium cepivorum*
Wilts	
Wilt disease	*Verticillium spp.*
Wilts*	*Phialophora spp.*
Others	
Blackleg*	*Phoma spp.*
Damping off	*Pythium spp.*
Mushroom pathogen*	*Myriococcum spp.*
Mushroom pathogen*	*Thielavia spp.*
Mushroom pathogen*	*Diehliomyces microspores*
Silver leaf*	*Stereum purpureum*
Soil pathogen*	*Chaetomium spp.*
Soil pathogen*	*Clomerella cingulata*
Soil pathogen*	*Collectotrichum spp.*
Soil pathogen*	*Cylindrocarpon spp.*
Soil pathogen	*Nigrospora sacchan*
Soil pathogen	*Sporotrichum spinlosum*
Soil pathogen	*Stemphylium radicinum*

Table 10. Soil-borne Bacteria

Common Name	Scientific Name
Gall, Crown*	*Agrobacterium tumefaciens*
Scabs*	*Streptomyces spp.*

*Not approved for use in California

Storage and Disposal

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

Pesticide Storage: Store this product in a dry, cool place below 95° F (35° C) -- it will decompose at higher temperatures. This material reacts nonviolently with moisture, releasing fumigant vapors. Keep the container tightly sealed when not in use. Do not re-use the empty container. Keep this product and its vapors away from desirable plants, seeds, fertilizers, insecticides, and other agricultural chemicals as plant injury or loss may result from contamination.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or an approved waste disposal facility.

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling, if available or dispose of empty bag in a sanitary landfill or by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Steps to be taken in case material is released: Keep the spill out of all sewers and open bodies of water. Remove contaminated clothing, and wash affected skin areas with soap and water. Wash clothing before re-use.

LIMITED WARRANTY AND DISCLAIMER

"TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CERTIS DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CERTIS, MANUFACTURER, AND SELLER DISCLAIM AND SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE, HANDLING, APPLICATION, STORAGE, OR DISPOSAL OF THIS PRODUCT OR FOR DAMAGES IN THE NATURE OF PENALTIES, AND THE USER AND BUYER WAIVE ANY RIGHT THAT THEY MAY HAVE TO SUCH DAMAGES. NO AGENT, REPRESENTATIVE OR EMPLOYEE OF CERTIS IS AUTHORIZED TO MAKE ANY WARRANTY, GUARANTEE OR REPRESENTATION BEYOND THOSE CONTAINED HEREIN OR TO MODIFY THE WARRANTIES CONTAINED HEREIN. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE TOTAL LIABILITY OF CERTIS, MANUFACTURER, AND SELLER, SHALL BE LIMITED TO THE PURCHASE PRICE PAID, OR AT CERTIS' ELECTION, THE REPLACEMENT OF THE PRODUCT."

Attachment 1
US EPA Fact Sheet Compendium

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-005

United States Environmental Protection Agency

Soil Fumigant Mitigation Factsheet:

Implementation Schedule

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders – people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes the soil fumigant product label changes that are going into effect during each of two phases. For detailed information on these new requirements for soil fumigants, visit EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.

Phase 1 Changes That Went Into Effect December 31, 2010

Phase 1 Changes that Went Into Effect December 31, 2010:

Agricultural Worker Protection: Persons engaged in any of a number of activities that are part of the fumigation process are considered "handlers." New restrictions address respiratory protection, tarp handling and an entry-restricted period.

Handler Training Information: Labels require fumigant registrants to develop and disseminate training information and materials for fumigant handlers (those working under the supervision of the certified applicator in charge of fumigations).

Good Agricultural Practices**:** Many good agricultural practices recommended on older fumigant labels became mandatory on the new labels to minimize inhalation and other risks from fumigant applications. Examples of good agricultural practices include proper soil preparation/tilling, ensuring optimal soil moisture and temperature, and appropriate use of sealing techniques.

Application Method, Practice and Rate Restrictions**:** Labels restrict certain fumigant application methods that lead to risks that are difficult to address. These include certain untarped applications for some fumigants. The label also lowers the maximum application rate, thereby reducing the potential for inhalation exposure and risk.

Restricted Use Pesticide Classification**:** EPA determined that all of the soil fumigants undergoing reregistration meet the criteria for restricted use. Therefore, EPA has reclassified metam sodium/potassium and dazomet, which had not been restricted, as restricted use pesticides.

Site-Specific Fumigant Management Plans (Partial)**:** Labels require fumigant users to prepare a written, site-specific fumigant management plan (FMP) before fumigations begin. In Phase 1, FMPs do not need to address any of the requirements that go into effect during Phase 2. These written plans will help prevent accidents and misuse, and will capture steps to take in case an accident occurs. EPA is developing FMP templates for each fumigant.

Phase 2 Changes that Go Into Effect in Late 2012

Phase 2 Changes that Go into Effect December 1, 2012:

Buffer zones: New labels will require fumigant users to establish a buffer zone around treated fields to reduce risks from acute inhalation exposure to bystanders. Buffer zone distances are scenario-based using applicable site conditions, and will be provided in look-up tables on product labels. EPA is also giving "credits" to encourage users to employ practices that reduce emissions (for example, use of high-barrier tarps). Credits will reduce buffer distances. Some credits will also be available for site conditions that reduce emissions (e.g., high organic or clay content of soils).

Posting requirements: For buffer zones to be effective, bystanders need to be informed about the location and timing of fumigations. New labels will require buffer zones be posted at usual points of entry and along likely routes of approach to the buffer unless a physical barrier prevents access to the buffer. The signs must include a "do not walk" symbol, fumigant product name, and contact information for the fumigator.

Site-Specific Fumigant Management Plans (Complete)**:** In addition to the FMP requirements listed above, FMPs will need to include those requirements that go into effect in Phase 2.

Emergency Preparedness and Response Requirements**:** New labels will require registrants to provide information to first responders in high fumigant use areas. In addition, EPA is requiring site-specific measures in areas where bystanders may be close to fumigant buffer zones. Fumigators may choose *either* to monitor the buffer perimeter or to provide emergency response information directly to neighbors.

- If the applicator chooses to monitor, the emergency response plan stated in the FMP must be implemented if the person monitoring experiences sensory irritation or if air concentrations reach action levels on labels. This monitoring must be done four times per day during the buffer zone period at times when the greatest potential exists for fumigants to move off-site.
- If the applicator chooses instead to provide emergency response information directly to neighbors, the certified applicator supervising the fumigation must ensure that nearby residents and business owners/operators have been provided the response information at least one week prior to the fumigant application. The method for distributing information to neighbors must be described in the FMP.

Applicator Training Programs: EPA has required fumigant registrants to develop and implement training programs for certified applicators in charge of soil fumigations.

Information for Handlers, Communities, and First Responders: EPA has required fumigant registrants to develop and disseminate safety information for fumigant handlers (those working under the supervision of the certified applicator in charge of the fumigations). EPA has also required fumigant registrants to develop and implement community outreach programs and information for first responders to ensure that information about fumigants and safety is available within communities where soil fumigation occurs.

Compliance Assistance and Assurance Measures**:** In states that require notification of fumigant applications, applicators must notify State and Tribal Lead Agencies for pesticide enforcement about fumigant applications they plan to conduct. This information will aid those states in planning compliance assistance and assurance activities.

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-007

United States Environmental Protection Agency

Soil Fumigant Mitigation Factsheet: Phase 2 Site-Specific Fumigant Management Plans and Post-Application Summaries

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders – people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes new requirements to protect fumigant handlers and other workers from fumigant exposures. The new requirements are being implemented in two phases. When new Phase 2 fumigant labels appear in the market place in late 2012, fumigant users will need to comply with these new requirements.

Fumigant Management Plans

Elements of FMPs

To address the risk to bystanders, handlers and workers, the Agency is requiring site-specific fumigant management plans (FMPs) and post-application summaries. Each site-specific FMP must contain the following elements:

- Certified applicator information (name, phone number, license and/or certificate number, employer name, employer address)
- General site information
- Application block location (e.g., address or global positioning system (GPS) coordinates)
- Name, address, and, phone number of owner of the application block
- Map showing the application block location and dimensions, buffer zone, property lines, roadways, rights-of-ways, sidewalks, permanent walking paths, bus stops, nearby application blocks, surrounding structures, locations of buffer zone signs, and locations of difficult to evacuate sites
- General application information (target application date/window, brand name of fumigant, EPA registration number)
- Tarp plan (if tarp is used)
    - Schedule for checking tarps for damage, tears, and other problems
    - Factors used to determine when tarp repair will be conducted
    - Equipment/methods used to perforate tarps
    - Target dates for perforating tarps
    - Target dates for removing tarps

Fumigant Management Plans (continued)

- Soil conditions (description of soil texture and moisture in application block, method used to determine soil moisture, and soil temperature measurements if needed)
- Buffer zone information (application method and rate, injection depth, application block size, credits applied and measurements taken to support the credits, buffer zone distance, and description of areas in the buffer zone that are not under the control of the owner of the application block)
- Emergency response plan
- Posting procedures (person(s) who will post signs, dates for posting and for sign removal)
- Emergency Preparedness and Response Measures (if applicable)
    - When and where fumigant site monitoring will be conducted (if applicable)
    - Response information for neighbors if applicable (list of residences and businesses informed, name and phone number of person providing information, and method of providing information)
- State and/or tribal lead agency advance notification (if state and/or tribal lead agency requires notice, provide a list of contacts that were notified and date notified)
- Plan describing how communication will take place between applicator, land owner, and other on-site handlers (e.g., tarp perforators/removers, irrigators) for complying with label requirements (e.g., timing of tarp cutting and removal, PPE, buffer zone location, buffer zone start and end times)
    - Name and phone number of persons contacted
    - Date contacted
- Handler (including Certified Applicators) information and PPE
    - Names, addresses and phone numbers of all handlers
    - Employer name, addresses, and phone numbers for all handlers
    - Tasks that each handler is authorized and trained to perform
    - Date of PPE training for each handler
    - Applicable handler PPE
- For handlers: Confirmation of receipt of Fumigant Safe Handling Information
- For certified applicator(s) supervising the application: Completion date and location of the soil fumigant training program
- For handlers designated to wear respirators:
    - Date of medical qualification to wear a respirator
    - Date of respirator training
    - Date of fit testing for the respirator

Fumigant Management Plans (continued)

- Unless exempted, verify that:
  - Handlers have the appropriate respirators and cartridges during handler activities
  - The employer has confirmed that the appropriate respirator and cartridges are immediately available for each handler who will wear one
- Air monitoring plan
  - For monitoring after tarp perforation is complete and before tarp removal begins, indicate the monitoring equipment to be used and the timing of monitoring
  - If sensory irritation is experienced, indicate whether operations will be ceased or operations will continue with respiratory protection
  - For monitoring the breathing zone when using **methyl bromide formulations with < 20% chloropicrin**:
    - Representative handler tasks to be monitored
    - Monitoring equipment to be used and timing of monitoring
  - For monitoring residential structures within the buffer zone (for re-entry) when using **methyl bromide formulations with < 20% chloropicrin**:
    - Monitoring equipment to be used and timing of the monitoring
    - Monitoring location
- Description of applicable mandatory Good Agricultural Practices (GAPs)
- Description of hazard communication (The application block has been posted in accordance with the label. Pesticide product labels and material safety data sheets are on-site and readily available for employees to review.)
- Record-keeping procedures (the owner 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, handlers, record keeping procedures, emergency procedures) only elements that have changed need to be updated in the site-specific FMP provided the following:

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

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

New Requirements for Post-Application Summaries

New Requirements for Post-Application Summaries

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 the 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.

Specifically the Post-Application Summary must contain the following elements:

- Actual date and time 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 including wind speed and air stagnation advisories. The forecast must be checked on the day of, but prior to the start of the application, and on a daily basis during the application if the time period from the start of the application until the application is complete is greater than 24 hours.
- Tarp damage and repair information (if applicable)
  - Date of tarp damage discovery
  - Location and size of tarp damage
  - Description of tarp/tarp seal/tarp equipment failure
  - Date and time of tarp repair completion
- Tarp perforation/removal details (if applicable)
  - Date and time tarps were perforated
  - Date and time tarps were removed
  - If tarps were perforated and/or removed early, describe the conditions that caused early perforation and/or removal
- Complaint details (if applicable)
  - Person filing complaint (e.g., on-site handler, person off-site)
  - If person filing complaint is off-site, provide their name, address, and phone number
  - Description of control measures or emergency procedures followed after complaint
- Description of incidents, equipment failure, or other emergency and emergency procedures followed (if applicable)
- Air monitoring results
  - When sensory irritation experienced:
    - Date, time, location, and handler task/activity where irritation was observed
    - Resulting action (e.g., cease operations, continue operations with respiratory protection, implement Emergency Response Plan)

Post-Application Summaries (continued)

- When using a direct read detection device:
  - Sample date(s), time(s), location(s), and concentration(s)
  - Handler task/activity monitored (if applicable)
  - Resulting action (e.g., cease operations, continue operations with respiratory protection, implement Emergency Response Plan)
- Date of sign posting and removal
- Any deviations from the FMP

Both the certified applicator and owner of the application block keep a signed copy of the post-application summary record for 2 years from the date of application.

Applicators and other stakeholders have the flexibility to use EPA's FMP template, prepare their own FMP templates, or use other commercially available software with certain elements listed above in check-list and/or fill in the blank format.

For additional information, please see EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.

EPA United States Environmental Protection Agency

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-008

Soil Fumigant Mitigation Factsheet:

Worker Protection Measures

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders -- people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes new requirements to protect fumigant handlers and other workers from fumigant exposures.

Handler activities on labels

To address risks to fumigant handlers and workers, EPA is requiring:

A clear description of handler activities on labels

All persons performing the following handler activities at any time must be trained and equipped as handlers in accordance with the requirements in the WPS (40 CFR Part 170):

- Monitoring fumigant air concentrations;
- Cleaning up fumigant spills (this does not include emergency personnel not associated with the application);
- Handling or disposing of fumigant containers; and
- Cleaning, handling, adjusting, or repairing the parts of application equipment that may contain fumigant residues.

All persons performing the following handler activities in the application block during the application until the entry restricted period ends and in the buffer zone during the buffer zone period must be trained and equipped as handlers in accordance with the requirements in the WPS (40 CFR Part 170):

- Participating in the application as supervisors, loaders, drivers, tractor co-pilots, shovelers, cross ditchers, or as other direct application participants;
- Installing, repairing, operating, or removing irrigation equipment;
- Performing scouting, crop advising, or monitoring tasks;
- Installing, perforating (cutting, punching, slicing, poking), or removing tarps; and
- Repairing or monitoring tarps until 14 days after application is complete if tarps are not perforated and removed during those 14 days.

On-site supervision and training

On-site supervision and training

- Direct, on-site supervision by certified applicators during most fumigant applications
- New training for certified applicators who supervise fumigant applications
- New training information for other handlers.

Respiratory protection requirements

Respiratory protection requirements

- Handlers must either stop work and leave the area or use air-purifying respirators if they experience sensory irritation (this does not apply to methyl bromide formulations with less than 20% chloropicrin)
- For methyl bromide formulations with less than 20% chloropicrin, handlers must wear air-purifying respirators during handling activities
- Air monitoring while handlers use respirators to ensure concentrations do not exceed the upper working limit of respirators
- All handlers who will wear a respirator must be fit-tested, trained, and medically examined to ensure they do not have health problems such as a heart condition that could make use of a respirator dangerous
- An air purifying respirator with the appropriate cartridges must be available for each handler who will wear a respirator.

Tarp perforation and removal requirements

Tarp perforation and removal requirements

- If tarps are used, they may not be perforated until at least 5 days (120 hours) have elapsed after the application is complete unless a weather condition exists that necessitates early removal
- Tarp removal may not begin until at least 2 hours after tarp perforation is complete and tarp removers must follow respiratory protection requirements
    - For methyl bromide, air monitoring with direct-read instruments is required before tarp removal can begin
- If tarps are not removed, planting may not begin until at least 48 hours after tarp perforation is complete
- If tarps are left on the soil for at least 14 days after the application is complete, planting may begin when the tarps are being perforated
- Tarps must be perforated using mechanical methods (e.g., all-terrain vehicles with cutting implements) except for small areas (less than 1 acre), at the start of a row, and during flood prevention activities.

Entry-restricted period requirements

Entry-restricted period requirements

- Entry into treated fields (including early entry that would otherwise be permitted under the WPS) by any person other than a trained and equipped handler is prohibited from the start of the application until
    - 5 days (120 hours) after application is complete for untarped applications, or
    - After tarps are perforated and removed if tarp removal is completed less than 14 days after application, or
    - 48 hours after tarp perforation is complete if they will not be removed at least 14 days after the application, or
    - 5 days (120 hours) after application is complete if tarps are not perforated and removed 14 days after the application is complete.

Entry Restricted Period by Scenario

	If the application is [____]	and Tarp is [____]	[____] days after application is completed	workers may enter [____]
1.	Untarped	---------	---------	5 days after application is complete
2.	Tarped	Perforated **and** Removed	Within 14 days	After tarp is removed
3.	Tarped	Perforated **BUT <u>NOT</u>** Removed	Within 14 days	48 hours after tarp perforation is complete
4.	Tarped	Perforated **and/or** Removed	More than 14 days	5 days after application is complete

For additional information, please see EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-003

United States Environmental Protection Agency

Soil Fumigant Mitigation Factsheet:

Buffer Zones

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders -- people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes new requirements to protect fumigant handlers and other workers from fumigant exposures. Some fumigant products have additional buffer zone requirements beyond those described in this factsheet (e.g., methyl bromide products applied with certain high barrier tarps). See the buffer zone section of individual labels for these requirements. The new Buffer Zone requirements are being implemented during the second of two phases. When new Phase 2 fumigant labels appear in the market place in late 2012, fumigant users will need to comply with these new requirements.

Buffer Zone Distances

A buffer zone provides distance between the application site (i.e., edge of field) and bystanders, allowing airborne residues to disperse before reaching the bystanders. This buffer will reduce the chances that air concentrations where bystanders are located will cause acute adverse health effects.

EPA has selected buffer distances that will protect bystanders from acute exposures, but which are not so great as to eliminate benefits of soil fumigant use. The size of the buffer zones is based on the following factors:

- application rate;
- field size;
- application equipment and methods; and,
- credits for use of emission-reduction measures such as high-barrier tarps and site conditions.

Buffer zone distances are scenario-based using applicable site conditions and will be based on look-up tables on product labels. EPA is also giving "credits" to encourage users to employ practices which reduce emissions. Credits will reduce buffer distances. Some credits will also be available for site conditions that reduce emissions (e.g., high organic or clay content of soils).

See www.epa.gov/pesticides/tarpcredits for a list of tarps that have been tested and determined to qualify for buffer zone reduction credits.

New Requirements for Buffer Zones

To address the risk to bystanders who live and work near fumigated fields, the Agency is requiring buffer zones. The following summarizes the buffer zone requirements:

General

General

- A "buffer zone" must be established around the perimeter of each application block where a soil fumigant is applied. The buffer zone must extend from the edge of the application block perimeter equally in all directions.
- All non-handlers including field workers, nearby residents, pedestrians, and other bystanders must be excluded from the buffer zone during the buffer zone period, except for people in transit (see exemptions section below).

- The "buffer zone period" starts at the moment when any fumigant is delivered/ dispensed to the soil within the application block or greenhouse and lasts for a minimum of 48 hours after the fumigant has stopped being delivered/dispensed to the soil.

Buffer Zone Distances

Buffer zone distances

- Buffer zone distances must be based on look-up tables on product labels unless otherwise specified on the product label (25 feet is the smallest distance regardless of site-specific application parameters).
- For selective replant fumigation in an orchard using hand held application methods (e.g., deep injection auger probes) to treat individual tree holes, the minimum buffer zone will be 25 feet measured from the center of each injection site (i.e., tree hole).

Authorized Entry to Buffer Zones

Authorized entry to buffer zones

- Only authorized handlers who have been properly trained and equipped according to EPA's Worker Protection Standard (WPS) and label requirements may be in the buffer zone during the buffer zone period.

Buffer Zone Proximity

Buffer zone proximity

- To reduce the potential for off-site bystander exposure to peak fumigant emissions from multiple fumigated fields, buffer zones from multiple application blocks may only overlap under the following conditions:
    - For continuous-move center-pivot applications (metam sodium/potassium products only), buffers may overlap only if applications are made using low-drift systems.
    - For all other application methods, buffers may overlap only if at least 12 hours have elapsed from end of the application for which a buffer is already in place to the start of the subsequent application.
    - The certified applicators in charge of the fumigations must provide information to handlers who may work in the buffers about the protective equipment, signs of exposure, and health effects associated with each fumigant to which they may be exposed.

Exemptions for Transit Through Buffer Zones

Exemptions for transit through buffer zones

- Vehicular and bicycle traffic on public and private roadways through the buffer zone is permitted.
- Bus stops or other locations where persons wait for public transit are not permitted within the buffer zone.
- See the Posting Fact Sheet for additional requirements that may apply.

Structures Under the Control of Owner of the Application Block

Structures under the control of owner of the application block

- Buffer zones may not include buildings used for storage such as sheds, barns, garages, etc., **UNLESS,**
    - The storage buildings are not occupied during the buffer zone period, and
    - The storage buildings do not share a common wall with an occupied structure.
- See the Posting Fact Sheet for additional requirements that may apply.

Areas Not Under the Control of Owner of the Application Block

Areas not under the control of owner of the application block

- Buffer zones may not include residential areas (including employee housing, private property, buildings, commercial, industrial, and other areas that people may occupy or outdoor residential areas, such as lawns, gardens, or play areas) **UNLESS**,
  - The occupants provide written agreement that they will voluntarily vacate the buffer zone during the entire buffer zone period, and
  - Reentry by occupants and other non-handlers does not occur until the buffer zone period has ended.
  - For methyl bromide formulations with less than 20% chloropicrin, air monitoring with direct-read instruments shows concentrations are below action levels before reentry is permitted.

- Buffer zones may not include agricultural areas owned/operated by persons other than the owner of the application block, **UNLESS**,
  - The owner of the application block can ensure that the buffer zone will not overlap with a buffer zone from any adjacent property owners, taking into account the amended requirements for overlapping buffers, and
  - The owner/operator of the areas that are not under the control of the applicator provides written agreement to the applicator that they, their employees, and other persons will stay out of the buffer zone during the entire buffer zone period.

- Buffer zones may not include publicly owned and/or operated areas (e.g., parks, sidewalks, walking paths, playgrounds, athletic fields, etc), UNLESS,
  - The area is not occupied during the buffer zone period,
  - Entry by non-handlers is prohibited during the buffer zone period, and
  - Written permission is given by the appropriate state and/or local authorities to include public areas in the buffer zone.

- Buffer zones may include publicly owned and/or operated roads, including rights of ways. As mentioned in the previous bullet, if a sidewalk or permanent walking path is associated with it, written permission must be given by the appropriate state and/or local authorities.

For additional information, please see EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-006

United States Environmental Protection Agency

Soil Fumigant Mitigation Factsheet:

Posting Requirements for Buffer Zones

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders -- people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes new requirements to protect fumigant handlers and other workers from fumigant exposures. The new Posting Requirements for Buffer Zones are being implemented during the second of two phases. When new Phase 2 fumigant labels appear in the market place in late 2012, fumigant users will need to comply with these new requirements.

New Requirements for Posting Buffer Zones

New Requirements for Posting Buffer Zones

Current soil fumigant labels require treated areas to be posted, and handlers are required to wear specific personal protective equipment when they are in a treated area. For buffer zones to be effective, bystanders need to be informed of the location of the buffer to ensure they do not enter areas designated as part of the buffer zone. The perimeter of the fumigant buffer zones must be posted as described below.

Posting of a buffer zone is required unless there is a physical barrier that prevents bystander access to the buffer zone.

Additional Posting Requirements

Additional Posting Requirements

Buffer zone posting signs must:

- Be placed at all usual points of entry and along likely routes of approach from areas where people who are not under the land owner's control may approach the buffer zone.
  - Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
  - Some examples of likely routes of approach are the area between a buffer zone and a roadway, or the area between a buffer zone and a housing development.

- The printed side of the sign must face away from the treated area toward areas from which people could approach.
- Signs must remain legible the entire posting period.
- Signs must be posted no sooner than 24 hours before the start of the application and remain posted until the buffer zone period has expired.
- Signs must be removed within three days after the end of the buffer zone period.

Additional Posting Requirements, continued

Exception: If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks' buffer zones may be posted. Buffer zone signs must be posted no sooner than 24 hours prior to the start of the first application. The signs must remain posted until the last buffer zone period expires and signs must be removed within three days after the buffer zone period for the last block has expired.

Contents of Signs

Contents of Signs

Signs must meet the general standards outlined in the Worker Protection Standard (WPS) for sign size, text size and legibility (see 40 CFR §170.120). Registrants must provide generic buffer zone posting signs that meet these criteria at points of sale for applicators to use.

Current soil fumigant labels require treated areas to be posted, and handlers are required to wear specific personal protective equipment when they are in a treated area.

Buffer Zone Sign

The **buffer zone** sign must include the following:

- Do not walk symbol
- "DO NOT ENTER/NO ENTRE,"
- "[*Name of fumigant*] [*Name of product*] Fumigant BUFFER ZONE,"
- Contact information for the certified applicator in charge of the fumigation

Treated Area Sign

The **treated area sign** (currently required for fumigants) must state the following:

- Skull and crossbones symbol
- "DANGER/PELIGRO,"
- "Area under fumigation, DO NOT ENTER/NO ENTRE,"
- "[*Name of fumigant*] Fumigant in USE,"
- Date and time of fumigation,
- Date and time entry restricted period is over
- Name of the product
- Name, address, and telephone number of the certified applicator in charge of the fumigation.

For additional information, please see EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.

Office of Pesticide Programs (7506P) March 2012 EPA 735-F-12-004

United States Environmental Protection Agency

Soil Fumigant Mitigation Factsheet:

Emergency Preparedness and Response Requirements

EPA is requiring important new safety measures for soil fumigant pesticides to increase protections for agricultural workers and bystanders -- people who live, work, or otherwise spend time near fields that are fumigated. These measures are for the soil fumigants chloropicrin, dazomet, metam sodium/potassium, and methyl bromide.

This fact sheet summarizes new requirements to protect fumigant handlers and other workers from fumigant exposures. The new Emergency Preparedness and Response requirements are being implemented during the second of two phases. When new Phase 2 fumigant labels appear in the market place in late 2012, fumigant users will need to comply with these new requirements.

New Requirements for Emergency Preparedness and Response

New Requirements for Emergency Preparedness and Response

To reduce risks to people who may be near a buffer zone (e.g., at their home or working in a nearby field), EPA is requiring applicators to either provide on-site monitoring of the buffer zone perimeter in areas where residences and other occupied structures are within a specific distance, or, as an alternative to on-site monitoring, provide emergency response information directly to neighbors. Whether measures are required depends on the size of the buffer zone and how close people may be to the buffer zone. An example of each element is discussed in more detail below.

When are Emergency Preparedness and Response Measures Needed?

When are Emergency Preparedness and Response Measures Needed?

Site-Specific Proximity Triggers for Buffer Zones Greater than 25 Feet

If the buffer zone is:	AND there are residences and businesses:
> 25 feet and ≤ 100 feet	50 feet from the edge of the buffer zone
> 100 feet and ≤ 200 feet	100 feet from the edge of the buffer zone
> 200 feet and ≤ 300 feet	200 feet from the edge of the buffer zone
> 300 feet	300 feet from the edge of the buffer zone
Applicator must either : Monitor the air (Option 1) or Provide information to neighbors (Option 2)	

Exception: If the buffer zone is 25 feet, the minimum buffer zone size, then Emergency Preparedness and Response measures are not required. Also, if all of the land within 300 feet of the edge of the buffer zone is under the control of the owner of the fumigated field, then Emergency Preparedness and Response measures are not required regardless of the size of the buffer zone.

Fumigant Site Monitoring

Fumigation Site Monitoring

If emergency response measures are required based on the triggers above and the applicator chooses to monitor the buffer perimeter rather than to provide information directly to the neighbors, here is what the applicator must do:

- Monitoring must begin on the day the application begins and continue until the buffer zone period expires.
- Monitoring must take place approximately 1 hour before sunset on the day the application begins and continue once during the night, once at 1 hour after sunrise, and once during the day until the end of the buffer zone period.
- Monitor for sensory irritation for metam sodium/potassium, dazomet, chloropicrin, and methyl bromide products that include at least 20% chloropicrin.
- Air concentrations of methyl bromide must be measured using a direct-read instrument if the methyl bromide product applied contains less than 20% chloropicrin.
- Monitoring must be conducted by a certified applicator or someone under his/her supervision.
- Monitoring must take place in areas between the buffer zone perimeter and residences or other occupied areas that trigger this requirement.
- If at any time the person monitoring the air concentrations experiences sensory irritation consistent with fumigant exposure, then the emergency response plan stated in the Fumigant Management Plan (FMP) must be immediately implemented.
- If other problems occur, such as a tarp coming loose, then the appropriate control plan must be activated.
- For formulations with less than 20% chloropicrin, the location and results of the air monitoring must be recorded in the post-application summary.
- For formulations with 20% or greater chloropicrin, the location where any sensory irritation occurred must be recorded in the post-application summary.

EPA believes this will help ensure that if a problem occurs during or after the fumigation, the appropriate steps can be taken to reduce the risk of exposure. While protective, site monitoring may be burdensome for users fumigating in areas with few people. Therefore, users have the option of providing emergency response information directly to neighbors rather than monitoring.

Response Information for Neighbors

Response Information for Neighbors

As an alternative to on-site monitoring, the certified applicator supervising the application would need to ensure that residences and businesses that trigger the requirement have been provided the information below at least one week before the application starts. The information provided may include application dates that range for no more than 4 weeks.

Response Information for Neighbors, continued

If an application is not made when specified, the information must be delivered again.

Information that must be provided includes:

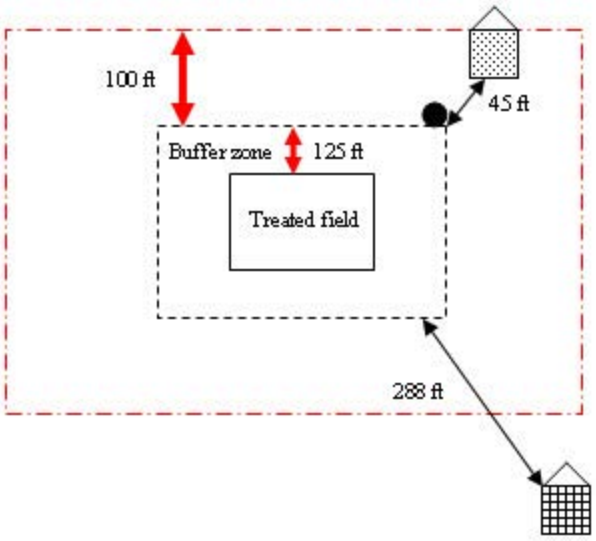
- The location of the application block,
- Fumigant(s) applied including the active ingredient, name of the fumigant products(s), and the EPA Registration number,
- Contact information for the applicator and property owner/operator,
- Time period in which the fumigation is planned to take place (must not range more than 4 weeks),
- Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and emergency responder phone number to call (911 in most cases), and
- How to find additional information about fumigants.

The method used to share the response information for neighbors can be accomplished through mail, telephone, door hangers, or through other methods that can be reasonably expected to effectively inform residences and businesses within the required distance from the edge of the buffer zone.

Example Site Map

Example Site Map
Below is an example to clarify this requirement:

- IF the buffer zone is **125 feet**, then these requirements apply to residences within 100 feet of the buffer zone. Either the applicator must monitor the area between the dotted house and the buffer zone or residents of the dotted house must be provided emergency response information.
- The location of the cross-hatched house would not prompt any action since it is outside the specified distance.



For additional information, please see EPA's Soil Fumigant Toolbox, www.epa.gov/oppsrrd1/reregistration/soil_fumigants/.