PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. EXTREMELY HAZARDOUS LIQUID AND VAPOR UNDER PRESSURE. DO NOT BREATHE VAPORS. INHALATION MAY BE FATAL OR CAUSE SERIOUS ACUTE ILLNESS OR DELAYED LUNG OR NERVOUS SYSTEM INJURY, WHICH MAY HAVE A DELAYED ONSET. THIS PRODUCT CONTAINS CHLOROPICRIN, WHICH IS VERY IRRITATING TO THE UPPER RESPIRATORY TRACT AND EVEN AT LOW LEVELS CAN CAUSE PAINFUL IRRITATION TO THE NOSE, THROAT, AND EYES, PRODUCING TEARING. IF THESE SYMPTOMS OCCUR, LEAVE THE FUMIGATION AREA IMMEDIATELY. CONTINUED EXPOSURE AFTER IRRITATION IS EVIDENT, OR HIGHER CONCENTRATIONS, MAY CAUSE PAINFUL IRRITATION TO THE EYES OR TEMPORARY BLINDNESS WHICH MAY CAUSE PANIC THAT MAY IN TURN LEAD TO FURTHER ACCIDENTS.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. For more options, follow the instructions for Category H on the chemical-resistance category selection chart. PPE constructed of Saranex, neoprene, and chlorinated polyethylene provide short-term contact or splash protection against liquid in this product. Longer-term protection is provided by PPE constructed of Viton, Teflon, and EVAL barrier laminates (for example, responder suits manufactured by Life-Guard or Silvershield gloves manufactured by North). Where chemical-resistant materials are required, leather, canvas, or cotton materials offer no protection from this product and must not be worn as the sole article of protection when contact with this product is possible.

When performing tasks with NO potential for contact with liquid fumigant, all handlers (including applicators) must:

- Wear long-sleeved shirt, long pants, shoes and socks.
- Not wear jewelry, goggles, tight clothing, chemical-resistant gloves, rubber protective clothing, or rubber boots when handling. Methyl bromide can be trapped inside clothing and cause skin injury.

Handlers with no potential for contact with liquid fumigant (e.g. shovelers) may wear cotton, leather, or other porous, non-chemical-resistant gloves. If such gloves are exposed to liquid fumigant, they must immediately be removed and discarded.

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

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

In addition, all handlers (including applicators) must wear:

- a NIOSH-certified half-mask or full-facepiece air-purifying respirator with a cartridge certified by the manufacturer for protection from exposure to methyl bromide at concentrations up to 5 ppm (e.g., a 3M air-purifying respirator equipped with 3M Model 60928 Organic Vapor/Acid Gas/P100 cartridges).
  Exception: Handlers performing fumigant site monitoring tasks outside the buffer zone are not required to wear an air-purifying respirator.

IMPORTANT: A self-contained breathing apparatus (SCBA) is not permitted for routine handler tasks.

If responding to an emergency when corrective action is needed to reduce air concentrations to acceptable levels, wear an SCBA. Escape-only SCBA respirators must not be used by handlers for responding to emergencies. In addition wear PPE required for potential contact with liquid fumigant.

See label booklet for additional Precautionary Statements.

NOTICE: Contains methyl bromide, a substance which harms public health and the environment by destroying ozone in the upper atmosphere.

RESTRICTED USE PESTICIDE

DUE TO ACUTE TOXICITY

For retail sale to and use by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

Methyl Bromide 98%

A Fumigant for Use Only by Certified Applicators

ACTIVE INGREDIENT:
Methyl Bromide 98%
OTHER INGREDIENT:
Chloropicrin 2%
TOTAL: 100%

This product weighs 13.98 lbs./gal. at 68º F (20º C)

KEEP OUT OF REACH OF CHILDREN

DANGER **PELIGRO**

POISON

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

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

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 eyes open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.

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

EMERGENCY PHONE NUMBER: Chemtrec, 1-800-424-9300

NOTE TO PHYSICIAN

Early symptoms of overexposure to methyl bromide are dizziness, headache, nausea and vomiting, weakness, and collapse. Lung edema may develop in 2 to 48 hours after exposure, accompanied by cardiac irregularities; these effects are the usual cause of death. Repeated overexposures can result in blurred vision, staggering gait, and mental imbalance, with probable recovery after a period of no exposure. Blood bromide levels suggest the occurrence, but not the degree, of exposure. Treatment is symptomatic.

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.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR 170. Refer to label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Storage and Disposal

DO NOT CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL.

Pesticide Storage: Store in a dry, cool, well-ventilated area under lock and key. Post as a pesticide storage area.

Pesticide Disposal: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. When a cylinder is partially full, and there is no further requirement for the product, return the cylinder to the registrant or distributor. Replace safety cap and valve protection bonnet before shipping container.

Container Handling: Store cylinders upright, secured to a rack or wall to prevent tipping. Do not subject cylinders to rough handling or mechanical shock such as dropping, bumping, dragging, or sliding. Do not use rope slings, hooks, tongs or similar devices to unload cylinders. Transport cylinders using hand truck, fork truck or other device to which the cylinder can be firmly secured. Do not remove valve protection bonnet and safety cap until immediately before use. Replace safety cap and valve protection bonnet when cylinder is not in use.

Return of Containers: Cylinders are the property of the registrant or distributor and must be returned promptly after use. Do not ship cylinders without safety caps or valve protection bonnets.

Refillable Container: Only the registrant or distributor is allowed to refill this container. This container can be refilled with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Container Disposal: To clean the container before final disposal, remove any remaining liquid from the container, using dry air pressure if necessary. Allow container to aerate for at least 5 days. After aeration, wash container using hot water; then offer container to qualified reconditioner or dispose of as directed by State or local regulations.

See label booklet for complete Directions for Use.

Produced for:
Soil Chemicals Corporation D/B/A
Cardinal Professional Products
P. O. Box 782 • Hollister • CA 95024-0782
(831) 630-2258

EPA Reg. No. 8536-19
EPA Est. 11220-CA-4

Date of Labeling: October 31, 2012

NET CONTENTS.....LBS.

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WARRANTY

Seller warrants that this product conforms to the chemical description on its label and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use. To the extent consistent with applicable law, neither this warranty nor any other warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE, express or implied, extends to the use of this product in a manner contrary to its label.

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EPA Reg. No. 8536-19 EPA Est. 11220-CA-4

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

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If responding to an emergency when corrective action is needed to reduce air concentrations to acceptable levels, wear an SCBA. Escape-only SCBA respirators must not be used by handlers for responding to emergencies. In addition wear PPE required for potential contact with liquid fumigant.

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

- Methyl bromide has certain properties and characteristics in common with chemicals that have been detected in groundwater (methyl bromide is highly soluble in water and has low adsorption to soil).
- For untarped applications of methyl bromide, leaching and runoff may occur if there is heavy rainfall after soil fumigation.

PHYSICAL OR CHEMICAL HAZARDS

Do not use containers or application equipment made of magnesium, aluminum, or their alloys, as under certain conditions this fumigant may be severely corrosive to such metals. [See the *Calibration, Set-up, Repair and Maintenance for Application Rigs* section of this labeling for further requirements for application equipment.] Do not permit water to be used to clean the fumigant pressure system, as corrosion will result. Diesel oil is satisfactory for this purpose.

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.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 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. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS). ***No instructions elsewhere on this labeling relieve users from complying with the requirements of the WPS.***

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

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 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 (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., pounds 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.

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 interest (fee, leasehold, rental, or other) in an agricultural establishment. A person who has both leased such agricultural establishment to another person and granted that same person the right and full authority to manage and govern the use of such agricultural establishment is not an owner. See definition of "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.

Application Restrictions

- The use of this product is restricted to the methods described in this label.
- This product may only be used for the following:
  - o Crops/uses at locations that at the time of the application qualify for exemptions under the Montreal Protocol as identified in Table 1 [*Maximum Rates for Crops/Uses with Critical Use Exemptions (CUEs)*] of this labeling, or
  - o Crops/uses identified in Table 2 [*Maximum Application Rates for Quarantine Uses*] of this labeling, or
  - o Crop/uses identified in Table 3 [*Maximum Rates for Crops/Uses without Critical Use Exemptions (CUEs)*] of this labeling.
- Tarps must be used for all applications, except for deep shank orchard replant [California only] and hand-held tree-hole applications.
- The maximum application block sizes allowed are:
  - o 100 acres for tarped bedded and broadcast applications
  - o 40 acres for untarped deep applications (i.e., California orchard replant)
  - o 10 acres for outdoor hot gas applications
  - o 45,000 square feet for greenhouse hot gas applications

Product Information

This product will control the following soil-borne pests:

- Nematodes, including root-knot spp. *Tylenchulus, Pratylenchus, Xiphinema, Criconemoides,* and *Paratylenchus*.
- Soil-borne fungi, including *Pythium, Rhizoctonia, Phytophthora, Pyrenochaeta, Sclerotium, Armillaria,* and the club root organism, *Plasmodiophora*.
- Weeds and weed seeds, including seeds, roots, stolons, and bulbs of broadleaf weeds and grasses including quackgrass, annual bluegrass, broomrape, common lambsquarters, torpedograss and Bermuda grass. Not effective against mallow, dodder, and some species of clover.
- Insects in the soil at the time of treatment, including Wireworms, June beetle larvae, white grubs, and garden symphylans.

NOTE: Some difficulty has been experienced through the use of METHYL BROMIDE 98% on soil planted to the following crops: conifers, salvia, snapdragons, carnation, multiflora roses, Burford's Chinese holly, as well as certain other plants. Fumigate on a small scale until safety to all plants is determined under growing conditions.

Use Precautions

- Comply with all local regulations and ordinances. Obtain an application permit from Agricultural Regulatory Agencies as required.
- Users should handle this fumigant in the open, with the operator 'upwind' from the container where there is good ventilation.
- When fumigating soil from a tractor, 5 gallons of water must be carried on the tractor and placed where it is readily accessible. In addition to water available on the tractor, at least 5 gallons additional water must be available from the service truck. This water must be potable and in containers marked "Decontamination water not to be used for drinking".
- Keep pets, livestock, and other domestic animals out of the treated area during application and during tarp perforation and/or removal, if a tarp is used.
- Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertilizer and fumigant are applied to soils that are either cold, wet, acid, or high in organic matter. To avoid injury to plant roots, fertilize as indicated by soil tests made after fumigation. To avoid ammonia injury and/or nitrate starvation to crops, avoid using fertilizers containing ammonia salts and use only fertilizers containing nitrates until after the crop is well established and the soil temperature is about 65º F. Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

Certified Applicator Training

Any certified applicator supervising a soil fumigant application 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 document the date and location where the soil fumigant training program was completed.

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 application);
- Handling or disposing of fumigant containers;
- Cleaning, handling, adjusting, or repairing the parts of application 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). (NOTE: persons repairing and monitoring tarps are considered handlers for the duration listed below). 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.

Protection for Handlers

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 www.epa.gov/fumiganttraining.

For all handling tasks at least two handlers must be present.

Exception: After the application is complete, only one trained handler is required to perform fumigant site monitoring tasks outside of the buffer zone.

Exclusion of Non Handlers from the 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:
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 a minimum two handlers must have the appropriate air-purifying respirator and cartridges available (see *Respirator Fit Testing, Medical Qualification, and Training* section for additional requirements).

Exception: 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 who 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 reexamined by a qualified medical practitioner if their health status or respirator style or use-conditions change.
- Upon request by local/state/federal/tribal enforcement personnel, employers must provide documentation demonstrating how they have complied with these requirements.

Respiratory Protection and Stop Work Triggers:
Half-mask or full-facepiece air-purifying respirators must be worn during all handler tasks, and the following air monitoring procedures must be followed to ensure that the 5 ppm upper protection limit of the air-purifying respirator plus respirator cartridge is not exceeded:

- Air monitoring samples for methyl bromide must be collected at least every hour in the breathing zone of a handler performing a representative handling task. Breathing zone samples must be taken outside respiratory protection equipment and within a 10 inch radius of the handler's nose and mouth.
- 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., Matheson-Kitagawa, Draeger, or Sensidyne) must be used. The devices must have sensitivity of at least 1 ppm for methyl bromide. Persons using direct read detection devices must follow manufacturer's directions.
- If at any time (1) a handler experiences sensory irritation (tearing, burning of the eyes or nose) while wearing a half-mask or full-facepiece air-purifying respirator, or (2) any air sample is greater than 5 ppm for methyl bromide, then all handler activities must cease and handlers must be removed from the application block and surrounding buffer zone.
- Handlers can resume work activities if all of the following conditions exist, provided the appropriate air-purifying respirator is worn.
  - o Two consecutive air samples for methyl bromide taken at the handling site at least 15 minutes apart must be less than or equal to 5 ppm,
  - o Sensory irritation is not experienced, and
  - o Cartridges have been changed.
  - o During the collection of samples a full-facepiece air-purifying respirator must be worn by the handler taking air samples. Samples must be taken where the irritation was first experienced or where samples exceeded 5 ppm.

■ Hot gas tarped applications
  - o Handlers must wear SCBA to reenter the greenhouse/application block once the application has started for a minimum of 48 hrs after the application is complete to perform an emergency function such as a spill or leak or when corrective action is needed to reduce air levels.

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 they must be provided the PPE and other protections for handlers as required on this labeling and in the Worker Protection Standard for Agricultural Pesticides.

- Tarps must not be perforated until a minimum of 5 days (120 hours) have elapsed after the application is complete, unless a weather condition exists which necessitates early tarp perforation or removal (see *Early Tarp Removal for Broadcast Applications Only* and *Early Tarp Perforation during Flood Prevention Activities for Bedded Applications Only* requirements).

- 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 and 2 consecutive methyl bromide air monitoring samples taken at least 15 minutes apart are less than 5 ppm. Air samples must be taken in the breathing zone of the handler. If the 2 consecutive air monitoring samples indicate that methyl bromide levels are:
  - o Less than 1 ppm and no sensory irritation is experienced, no respiratory protection is required to begin tarp removal.
  - o Between 1 ppm and 5 ppm, then an air-purifying respirator is required to begin tarp removal.
  - o See the *Respiratory Protection and Stop Work Triggers and Personal Protective Equipment (PPE)* sections for additional requirements.

- 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 application must be perforated.

- Tarps may be perforated manually ONLY for the following situations:
  - o 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.
  - o In fields that are 1 acre or less.
  - o 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 applications must be completed before noon.

- For broadcast applications, tarps must not be perforated if rainfall is expected within 12 hours.

- Early Tarp Removal for Broadcast Applications Only:
  - o 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:
  - o Tarp perforation is allowed before the 5 days (120 hours) have elapsed.
  - o Tarps must be immediately retucked and packed after soil removal.

- When perforating any tarp that qualifies for a 60% or greater reduction in buffer zone distance following broadcast shank applications:
  - o All handlers must wear an air purifying respirator when perforating the tarp; and
  - o Tarp removal must not begin until at least 2 hours after tarp perforation is complete and 2 consecutive air monitoring samples taken at least 15 minutes apart are less than 5 ppm. Air samples must be taken in the breathing zone of the handler. If the 2 consecutive air monitoring samples indicate that methyl bromide levels are:
    - Less than 1 ppm and no sensory irritation is experienced, no respiratory protection is required to begin tarp removal.
    - Between 1 ppm and 5 ppm, then an air-purifying respirator is required to begin tarp removal.

See the *Respiratory Protection and Stop Work Triggers* and *Personal Protective Equipment (PPE)* sections for additional requirements.

Entry Restricted Period and Notification

Entry Restricted Period

Entry into the application block (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 the application is complete.

NOTES:

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

Notification

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

- ☐ "DANGER/PELIGRO,"
- ☐ "Area under fumigation, DO NOT ENTER / NO ENTRE,"
- ☐ "Methyl Bromide Fumigant in USE,"
- ☐ "the date and time of fumigation,
- ☐ the date and time entry restricted period is over,
- ☐ "METHYL BROMIDE 98%", and
- ☐ Name, address, and telephone number of the certified applicator in charge of the fumigation.

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

Mandatory Good Agricultural Practices (GAPs)

The following GAPs must be followed during all fumigant applications.

Tarps (required for all applications, except for deep shank orchard replant [California only] and hand-held tree-hole applications)

- Tarps must be installed prior to starting hot gas applications.
- Tarps must be installed immediately after the fumigant is applied to the soil for bedded or broadcast applications.
- A written tarp plan must be developed and included in the FMP.
- Once a tarp is perforated, the application is no longer considered tarped.

Weather Conditions

- To determine if unfavorable weather conditions exist or are predicted (see *Identifying Unfavorable Weather Conditions* section) and whether an 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 the application if the time period from the start of the application until the application is complete is greater than 24 hours.
- 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.

Soil Temperature

- The maximum soil temperature at the depth of injection must not exceed 90° F at the beginning of the application.
- If air temperatures have been above 100° F in any of the three days prior to the start of the application, then soil temperature must be measured and recorded in the FMP. Record temperature measurements at the application depth or 12 inches, whichever is shallower.

Soil Moisture

- The soil must be moist 9 inches below the surface. The amount of moisture needed in this zone will vary according to soil type. Surface soil generally dries rapidly and must not be considered in this determination.
- Soil moisture must be determined using one of the following methods:
  - the USDA Feel and Appearance Method for testing (see below), or
  - an instrument, such as a tensiometer.
- Available water capacity must be equal to or greater than 50% for shank applications. If there is less than 50% available water capacity 9 inches below the surface, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 9 inches, soil moisture can be adjusted by discing or plowing before the start of the application. To conserve existing soil moisture, pretreatment irrigation or pretreatment tillage should be done as close to the start of the application as possible.
- Measure soil moisture at a depth of 9 inches at either end of the field, no more than 48 hours prior to the start of the application.

The USDA Feel and Appearance Method for estimating soil moisture as appropriate for the soil texture:

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

Soil Preparation

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

Soil Sealing

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

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

Bedded and Broadcast Shank Applications: Additional Mandatory GAPs

In addition to the GAPs required for all soil fumigation applications, the following GAPs apply for injection applications:

Soil Preparation

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

Application Depth and Spacing

- *For Tarped-Broadcast and Tarped-Bedded Applications:* The injection point must be a minimum of 8 inches from the nearest final soil/air interface. For tarped bedded applications, the injection depth must not be deeper than the lowest point of the tarp (i.e., the lowest point of the tuck).
- *For Untarped-Broadcast Applications (CA orchard replant only):* The injection point must be a minimum of 18 inches from the nearest final soil/air interface.
- Apply METHYL BROMIDE 98% with chisel equipment. The shank spacing should be equal to the application depth, but may be up to 1½ times the application depth, not to exceed 24 inches. When applying METHYL BROMIDE 98% with a Noble plow, use an outlet spacing of 9-12 inches along the sweeps.

Prevention of End Row Spillage

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

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

- Brass, carbon steel, or stainless steel fittings must be used throughout. Polyethylene tubing, polypropylene tubing, Teflon® tubing or Teflon® -lined steel braided tubing must be used for all low pressure lines, drain lines, and compressed gas or air pressure lines. All other tubing must be Teflon® -lined steel braided.
- Galvanized, PVC, nylon, or aluminum pipe fittings must not be used.
- All rigs must include a filter to remove any particulates from the fumigant and for pressurized systems a check valve to prevent backflow of the fumigant into the pressurizing cylinder or the compressed air system.
- Rigs must include a flow meter or a constant pressure system with orifice plates to ensure the proper amount of fumigant is applied.
- To prevent the backflow of fumigant into the compressed gas cylinder (e.g., nitrogen, other inert gas, compressed air), if used, applicators must:
  - Ensure that positive pressure is maintained in the compressed gas cylinder at not less than 200 psi during the entire time it is connected to the application rig, if a compressed gas cylinder is used. (*This is not required for a compressed air system that is part of the application rig, because if the compressor system fails, the application rig will not be operable.*)
  - Ensure that application rigs are equipped with properly functioning check valves between the compressed gas cylinder or compressed air system and the fumigant cylinder. The check valve is best placed on the outlet side of the pressure regulator, and is oriented to only allow compressed gas to flow out of the cylinder or compressed air out of the compressed air system.
  - A pressure relief valve must be installed between the regulator and the check valve to ensure a regulator failure does not over pressurize the fumigant cylinder.
  - Always pressurize the system with compressed gas or by use of a compressed air system before opening the fumigant cylinder valve.
- Before using a fumigation rig for the first time, or when preparing it for use after storage, the operator must check the following items carefully:
  - Check the filter, and clean or replace the filter element as required.
  - Check all tubes and chisels to make sure they are free of debris and obstructions.
  - Check and clean the orifice plates and screen checks, if installed.
  - Pressurize the system with compressed gas or compressed air, and check all fittings, valves, and connections for leaks using soap solution.
- Install the fumigant cylinder, and connect and secure all tubing. Slowly open the compressed gas or compressed air valve, and increase the pressure to the desired level. Slowly open the fumigant cylinder valve, always watching for leaks.
- When the application is complete, close the fumigant cylinder valve and blow residual fumigant out of the fumigant lines into the soil using compressed gas or compressed air. If the rig uses a centrifugal pump instead of compressed gas to inject fumigant into the soil, you may clear residual fumigant from the fumigant lines using an application wand connected to the system's low point via a drain hose. Place the wand in the soil until all residual fumigant has drained from the system.

The wand and drain hose must be free of dirt to allow proper drainage. At the end of the application season, disconnect all fumigant cylinders from the application rig. At the end of the season, seal all tubing openings with tape to prevent the entry of insects and dirt.

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

Planting Interval

Planting or transplanting must not occur until at least 14 days after the application is complete. If odors of the fumigant persist beyond this 14 day period (and after tarps are perforated and/or removed), delay planting and disc or plow the soil to help aeration. See *Tarp Perforation and/or Removal* section on this labeling for further requirements.

Pre-Plant Soil Fumigation in Greenhouses: Mandatory GAPs

- 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.
- Seal gaps through which gases could leak into adjacent enclosed areas.

Special Instructions for the Control of *Armillaria mellea* (Oak Root Fungus) for Orchard Replant Applications

To obtain the maximum control of *Armillaria mellea* with METHYL BROMIDE 98%, soil at the point of injection (36 inches) must be dry. This can be accomplished by: (a) planting Sudan grass in the spring, irrigating until the grass has established itself, then withholding further irrigation; (b) naturally, by allowing plants to grow without irrigation. However, to ensure sealing, the top 8 to 12 inches of soil must be moistened to comply with the GAPs by means of a sprinkler application of 1/4 to 1/2 inch of water, by natural rainfall, or other soil watering method prior to final preparation and application.

- When soil is dry, cut and remove grass, plants, and debris.
- Rip soil to a depth of 36 inches and disc to smoothness.
- Chisel Application: Space chisels up to 66 inches apart. Apply tarp immediately after application.
- Deep Injection Auger-Probe Treatment: Apply METHYL BROMIDE 98% to a depth of 36 inches or more below the soil surface.
- To ensure the proper time-concentration relationship to control oak root fungus for chisel applications, the soil should be left undisturbed for at least seven days after chisel application and at least one day for Deep Injection Auger-Probe Treatment.
- Replanting of trees, vines, or other deep-rooted orchard crops may begin 14 days later.

Maximum Application Rates

Table 1. Maximum Rates for Crops / Uses with Critical Use Exemptions (CUEs)

Crop / Use	Maximum Application Rate[1] (Lbs Product / Treated Acre)
Forest Nursery Seedlings	300 sandy soils 400 clay loam soils with less than 30% clay
Orchard Replant[2,5] (walnuts, almonds, stone fruit, table and raisin grapes, wine grapes)	300
Ornamentals[3,4]	200

[1]Do not exceed specified maximum application rates in Table 1. Row, bed or strip applications may be made at the treated acre application rates, but their broadcast equivalent rates will be proportionately less per acre depending on the spacing and width of treatment in the row, bed or strip.

[2]The maximum rate to control infestation of Oak Root Fungus (*Armillaria mellea*) and/or endoparasitic nematodes such as root-knot (*Meloidogyne* spp.), dagger (*Xiphinema* spp.), ring (*Criconemoides* spp.), lesion (*Pratylenchus* spp.), and pin (*Paratylenchus* spp.) nematodes is 400 lbs. methyl bromide/acre (cannot exceed 408 lbs. of Methyl Bromide 98% per acre). Documentation of the pest(s) must be included in the site-specific fumigation management plan.

[3] The maximum rate for greenhouse hot gas applications is 1.02 lbs. product/100 ft^2 and the application block may not exceed 45,000 ft^2.

[4] The maximum rate for fumigating potting mixes used for ornamentals (including decomposed compost, soil mixes and manure) is 1.02 lbs. product/100 ft^2.

[5] The maximum application rate when applying methyl bromide to individual tree holes using hand-held equipment is 1.02 lbs. product/100 ft^2 in light soils and 1.53 lbs. product/100 ft^2 in fine-textured soils.

Hot Gas Applications to Soil, Potting Mixes, and Tobacco Seedling Trays: Mandatory GAPs

The "hot gas method" consists of using a commercially manufactured heat exchanger or a copper coil immersed in a vessel containing hot water to vaporize the fumigant before introduction.

- All delivery tubes must be placed under the tarp in such a way that they do not move during the fumigant application.
- The fumigant must be introduced from outside of the greenhouse/application block (see *entry restrictions* and *respiratory protection* sections for further details).
- All fittings, connections, and valves must be checked for methyl bromide leaks prior to the start of application. If cylinders are replaced during the fumigation process, the connections and valves must be checked for leaks prior to continuing the application.
- The soil/potting mix material to be treated must be at least 60 °F but must not exceed 105 °F.
- Pile to a depth of 18 inches on a concrete floor or on wet ground. Piles two to three feet high can also be treated provided that rigid, perforated plastic tubes are vertically inserted into the pile at 18-inch intervals to assist penetration.
- Potting mixes in flats and tobacco seedling trays may also be treated. Arrange the flats or trays in loose criss-cross stacks no more than 5 feet high, then cover and seal with a tarp. Introduce the fumigant at the top and in the center of the stack. Use one injection point for each 100 cubic feet of volume.
- For applications in California, tarps must be included on the approved tarp list for methyl bromide applications in California issued by the California Department of Pesticide Regulation (www.cdpr.ca.gov/docs/emon/methbrom/tarps.pdf) in accordance with Title 3, California Code of Regulations, Section 6447(e). For all other applications, the tarps used must be at least 4 mil thickness or qualify for a buffer zone credit (to determine which tarps qualify for credits, see www.tarpcredits.epa.gov).
- Seal the edges of tarps by burying, covering with moist sand or soil, or by means of sand snakes.

Tree Replant Application Using Hand-held Equipment: Mandatory GAPs

In addition to the GAPs required for all soil applications, the following GAPs apply for tree replant applications. This application method is used when methyl bromide is applied to individual tree sites in an existing orchard where shank applications are not possible.

Site Preparation

- Remove the tree stump and primary root system in each individual tree-site with a back-hoe or other similar equipment, for example an auger.
- The hole must be backfilled with soil before application.

Application Depth

- The fumigant must be injected at least 18 inches into the soil.

System Flush

- Before removing the application wand from the soil, the wand must be cleared using nitrogen or compressed air.

Soil Sealing

- After the wand is cleared and removed from the soil, the injection hole must be either covered with soil and tamped or the soil must be compacted over the injection hole.

Special Instructions for Non-Tarp Nematode Control (Only for Deep Shank Orchard Replant and Hand-Held Tree-Hole Applications in California)

For control of nematodes including *Meloidogyne spp, Xiphinema spp, Criconemoides, Pratylenchus,* and *Paratylenchus*:

- Do not apply to soil where trees or vines will bear harvestable fruit within 12 months.
- A waiting period of at least 14 days must be observed between application and planting.
- Plow or rip the soil to the depth to which effective treatment is required.
- To ensure maximum fumigant penetration, the soil at the point of injection should not contain more than 5 to 15% moisture depending on soil type. However, to ensure sealing, the top 8 to 12 inches of soil must be moistened to comply with the GAPs by means of a sprinkler application of 1/4 to 1/2 inch of water, by natural rainfall, or other soil watering method prior to final preparation and application.
- Fumigate when the soil temperature is above 60 °F at the depth of 6 inches. Do not fumigate when soil temperature is below 50 °F or above 90 °F.
- Chisel Application: Apply with chisels spaced up to 66 inches apart, to a depth of up to 24 inches. In the row strip, treatments may be made by using a single shank. To fill in the chisel mark and seal the surface, disc and ringroll immediately after fumigant injection. Be sure that the disc and ringroller cover an area sufficiently beyond the chisel lines to affect a good seal.

NOTE: METHYL BROMIDE 98% without a tarp (ONLY FOR DEEP SHANK ORCHARD REPLANT AND HAND-HELD TREE-HOLE APPLICATION IN CA) or under very dry conditions at point of injection will not usually control most weed seeds. However, some control may be observed on deep-rooted perennials such as morning-glory (birdweed) and rhizomes of Johnson grass.

Table 2. Maximum Application Rates for Quarantine Uses

This product may be used as part of a quarantine program as described below.

Quarantine applications with respect to methyl bromide, are treatments to prevent the introduction, establishment and/or spread of quarantine pests (including diseases), or to ensure their official control, where: (i) Official control is that performed by, or authorized by, a national (including state, tribal or local) plant, animal or environmental protection or health authority; (ii) quarantine pests are pests of potential importance to the areas endangered thereby and not yet present there, or present but not widely distributed and being officially controlled. This definition excludes treatments of commodities not entering or leaving the United States or any State (or political subdivision thereof).

USDA-APHIS Quarantine Uses

This product may be used as a soil fumigant at any crop or non-crop site as part of a quarantine program established by the United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) under the Plant Protection Act (7 U.S.C. 7701 et seq.). Limitations including but not limited to application rates and methods and crops and cropping practices must be in accordance with those established by the USDA-APHIS quarantine program.

Other Quarantine Uses (not USDA-APHIS Quarantine uses)

Quarantine use of methyl bromide is restricted to fields used for the production of plant propagative material listed below and unplanted areas immediately adjacent thereto, where all production from the treated fields will be shipped to areas where a plant regulatory authority requires the source or the incoming material to be free of quarantine pests or be accompanied by a certificate issued by a plant regulatory official.

Forest Seedlings: Conifer and hardwood seedling for reforestation, Christmas tree seedlings

Nursery Stock: Roses, strawberry transplants, sweet potato slips, caneberry and blueberry nursery stock , fruit and nut trees, garlic transplants, onion transplants, vineyard stock, seed potato, tobacco seed beds, food crop transplants, and other wild or cultivated trees, shrubs, vines and forbs.

Ornamental Plants: Caladiums, chrysanthemums, flower bulbs, flowering plants, ornamental grasses, rhizomes, shrubs, trees, and other perennials and annuals.

Turf or Sod: For interstate and intrastate shipments to areas that require fumigation with methyl bromide to meet quarantine/phytosanitary requirements.

The maximum application rate for quarantine uses shall be 408 lbs of METHYL BROMIDE 98% per acre, or less if specified in the applicable quarantine/phytosanitary requirements.

The U.S. Federal, state, or local plant, animal, environmental protection or health authority requiring the quarantine application and the particular quarantine/phytosanitary requirement must be identified in the site-specific fumigant management plan. Additionally, the requirement for the treatment (e.g., the State or Federal law) must be listed in the site-specific fumigant management plan.

Table 3. Maximum Rates for Crops / Uses without Critical Use Exemptions (CUEs)

Crop / Use	Maximum Application Rate[1] (Lbs Product / Treated Acre)
Golf Course Tees, Greens, and Fairways[2]	400
Athletic Fields[2]	400
Tobacco Seedling Trays	3 Lbs / 1000 cu ft

[1] Do not exceed specified maximum application rates in Table 3.
[2] For resurfacing with the hot gas method only.

Calculating the Broadcast Equivalent Application Rate

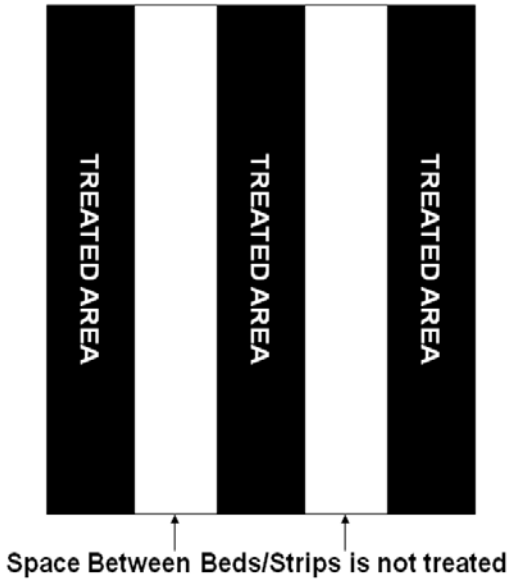
To calculate the broadcast equivalent rate for bedded or strip applications the following information is needed:

- 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 rati of total amount of product applied to the siz of the **total area treated** (e.g., the rate c product applied in the bed). For bedded c strip applications, the **total area treated** is th summation of the area (i.e., length x width) c each treated bed bottom or strip that is locate within the application block as shown by th black areas in Figure 1 (e.g., black areas ar 0.6A or 60% of the area within the applicatio block). The area of the space between th beds/strips is not factored in the total are treated.

The **application block size** is the acreag within the perimeter of the fumigated portio of a field (including furrows, irrigation ditche roadways). The perimeter of the applicatio block is the border that connects the outermo edges of total area treated with the fumigar product.

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

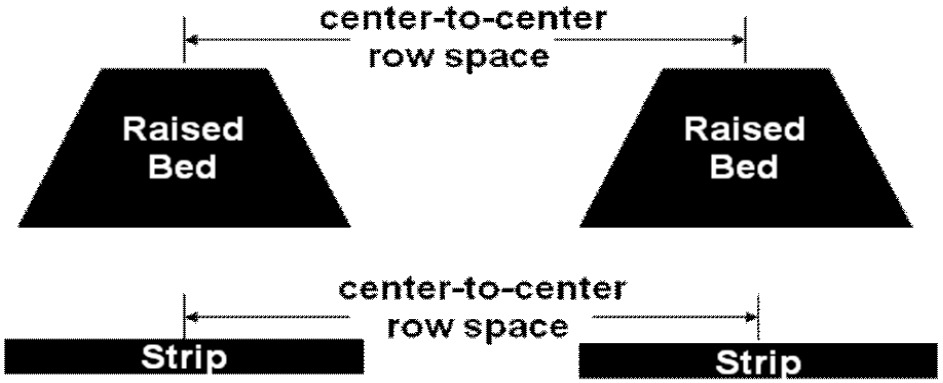


The "broadcast equivalent rate" must be calculated with the following formula:

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

- The bed width must be measured from the bottom of the bed.
- The center-to-center row spacing must be calculated 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 equation by **(total area of strips or beds + row spacing)/(application block size).** A sample calculation is provided below.

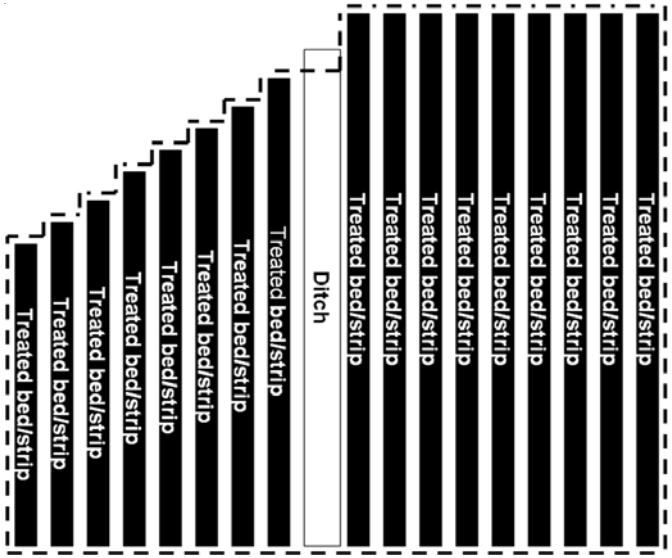
Figure 2. Center Row Spacing



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.



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

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

= 97.5 pounds product/acre

Table 4. Tarped Bedded Buffer Zone Distances (feet)

Broadcast Equivalent Application Rate (lb product/A)	Application Block Size (acres)																					
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40	50	60	70	80	90	100
26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
31	25	25	25	25	25	25	25	25	25	25	25	25	25	25	28	31	34	38	41	44	45	47
36	25	25	25	25	25	25	25	25	25	25	25	25	25	25	31	38	44	50	56	63	66	69
41	25	25	25	25	25	25	25	25	25	25	25	25	25	25	34	44	53	63	72	81	86	91
46	25	25	25	25	25	25	25	25	25	25	25	25	25	25	38	50	63	75	88	100	106	113
51	25	25	25	25	25	25	25	25	25	25	25	25	25	25	41	56	72	88	103	119	127	134
56	25	25	25	25	25	25	25	25	25	25	25	25	25	25	44	63	81	100	119	138	147	156
61	25	25	25	25	25	25	25	25	25	25	25	25	25	25	47	69	91	113	134	156	167	178
66	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	75	100	125	150	175	188	200
71	25	27	28	30	31	33	35	36	38	40	46	52	56	60	86	113	144	175	204	233	249	265
77	25	28	31	34	38	41	44	48	51	54	67	79	88	96	123	150	188	225	258	292	311	331
82	25	30	34	39	44	49	54	59	64	69	88	106	119	131	159	188	231	275	313	350	373	396
87	25	31	38	44	50	57	63	70	77	83	108	133	150	167	196	225	275	325	367	408	435	462
92	25	33	41	48	56	65	73	81	90	98	129	160	181	202	232	263	319	375	421	467	497	527
97	25	34	44	53	63	73	83	93	103	113	150	188	213	238	269	300	363	425	475	525	559	593
102	25	36	47	58	69	80	92	104	115	127	171	215	244	273	305	338	406	475	529	583	621	658
107	25	38	50	63	75	88	102	115	128	142	192	242	275	308	342	375	450	525	583	642	683	723
112	25	39	53	67	81	96	111	126	141	156	213	269	306	344	378	413	494	575	638	700	744	789
117	25	41	56	72	88	104	121	138	154	171	233	296	338	379	415	450	538	625	692	758	806	854
122	25	42	59	77	94	112	130	149	167	185	254	323	369	415	451	488	581	675	746	817	868	920
128	25	44	63	81	100	120	140	160	180	200	275	350	400	450	488	525	625	725	800	875	930	985
133	27	48	69	90	112	133	154	175	196	217	295	373	427	481	521	562	665	768	848	927	987	1047
138	29	52	76	100	123	145	168	190	212	235	315	396	454	512	555	598	705	811	895	979	1044	1109
143	31	57	83	109	135	158	182	205	228	252	336	419	481	542	588	635	744	854	943	1031	1101	1171
148	33	61	89	118	146	171	195	220	245	269	356	442	508	573	622	671	784	897	990	1083	1158	1233
153	35	65	96	127	158	183	209	235	261	287	376	465	535	604	656	708	824	940	1038	1135	1215	1295
158	37	70	103	136	169	196	223	250	277	304	396	488	562	635	689	744	864	983	1085	1187	1272	1357
163	38	74	110	145	181	209	237	265	293	321	416	512	588	665	723	781	904	1027	1133	1238	1328	1418
168	40	78	116	154	192	222	251	280	309	338	437	535	615	696	757	817	943	1070	1180	1290	1385	1480
173	42	83	123	163	204	234	265	295	325	356	457	558	642	727	790	854	983	1113	1228	1342	1442	1542
179	44	87	130	173	215	247	278	310	342	373	477	581	669	758	824	890	1023	1156	1275	1394	1499	1604
184	46	91	137	182	227	260	292	325	358	390	497	604	696	788	858	927	1063	1199	1323	1446	1556	1666
189	48	96	143	191	238	272	306	340	374	408	517	627	723	819	891	963	1103	1242	1370	1498	1613	1728
194	50	100	150	200	250	285	320	355	390	425	538	650	750	850	925	1000	1143	1285	1418	1550	1670	1790
199	56	108	159	211	263	298	333	369	404	440	556	673	776	879	957	1035	1185	1334	1471	1608	1735	1861
204	63	116	169	222	275	311	347	383	418	454	575	696	802	908	990	1071	1227	1383	1525	1667	1799	1932
209	69	123	178	233	288	324	360	396	433	469	594	719	828	938	1022	1106	1269	1433	1579	1725	1864	2003
214	75	131	188	244	300	337	373	410	447	483	613	742	854	967	1054	1142	1312	1482	1633	1783	1928	2073
219	81	139	197	255	313	350	387	424	461	498	631	765	880	996	1086	1177	1354	1531	1686	1842	1993	2144
224	88	147	206	266	325	363	400	438	475	513	650	788	906	1025	1119	1213	1396	1580	1740	1900	2058	2215
230	94	155	216	277	338	375	413	451	489	527	669	810	932	1054	1151	1248	1439	1629	1794	1958	2122	2286
235	100	163	225	288	350	388	427	465	503	542	688	833	958	1083	1183	1283	1481	1678	1848	2017	2187	2357
240	106	170	234	298	363	401	440	479	518	556	706	856	984	1113	1216	1319	1523	1728	1901	2075	2251	2428
245	113	178	244	309	375	414	453	493	532	571	725	879	1010	1142	1248	1354	1565	1777	1955	2133	2316	2498
250	119	186	253	320	388	427	467	506	546	585	744	902	1036	1171	1280	1390	1608	1826	2009	2192	2380	2569
255	125	194	263	331	400	440	480	520	560	600	763	925	1063	1200	1313	1425	1650	1875	2063	2250	2445	2640

Table 5. Tarped Broadcast Buffer Zone Distances (feet)

Broadcast Equivalent Application Rate (lbs product/A)	Application Block Size (acres)																					
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40	50	60	70	80	90	100
46	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
56	25	25	25	25	25	25	25	25	25	25	33	42	48	54	60	67	74	81	89	96	102	108
66	25	25	25	25	25	25	25	25	25	25	42	58	71	83	96	108	123	138	152	167	179	192
77	25	25	25	25	25	25	25	25	25	25	50	75	94	113	131	150	172	194	216	238	256	275
87	25	25	25	25	25	25	25	25	25	25	58	92	117	142	167	192	221	250	279	308	333	358
97	25	25	25	25	25	25	25	25	25	25	67	108	140	171	202	233	270	306	343	379	410	442
107	25	25	25	25	25	25	25	25	25	25	75	125	163	200	238	275	319	363	406	450	488	525
117	25	30	34	39	43	46	49	51	54	57	114	170	213	255	297	339	391	443	495	548	592	636
128	25	34	43	52	61	67	72	78	83	89	152	216	263	309	356	402	463	524	585	645	697	748
138	25	39	52	66	80	88	96	104	112	120	191	261	313	364	415	466	535	605	674	743	801	859
148	25	43	61	80	98	109	120	130	141	152	230	307	363	418	474	530	607	685	763	841	906	970
158	25	48	70	93	116	130	143	157	170	184	268	352	413	473	533	593	680	766	852	939	1010	1082
168	25	52	80	107	134	150	167	183	200	216	307	398	463	527	592	657	752	847	941	1036	1115	1193
179	25	57	89	120	152	171	190	210	229	248	345	443	513	582	651	720	824	927	1031	1134	1219	1305
189	25	61	98	134	170	192	214	236	258	280	384	489	563	636	710	784	896	1008	1120	1232	1324	1416
199	25	66	107	148	189	213	238	262	287	311	423	534	613	691	769	848	968	1089	1209	1330	1428	1527
209	25	70	116	161	207	234	261	289	316	343	461	580	663	745	828	911	1040	1169	1298	1427	1533	1639
219	25	75	125	175	225	255	285	315	345	375	500	625	713	800	888	975	1113	1250	1388	1525	1638	1750
230	36	88	140	191	243	275	307	339	370	402	533	664	756	849	941	1034	1181	1327	1474	1620	1742	1864
240	48	101	155	208	261	295	329	362	396	430	566	702	800	898	995	1093	1249	1405	1560	1716	1847	1977
250	59	114	169	224	280	315	350	386	421	457	599	741	844	947	1049	1152	1317	1482	1647	1811	1951	2091
260	70	127	184	241	298	335	372	410	447	484	632	780	888	995	1103	1211	1385	1559	1733	1907	2056	2205
270	82	140	199	257	316	355	394	433	472	511	665	818	931	1044	1157	1270	1453	1636	1819	2002	2160	2318
281	93	153	214	274	334	375	416	457	498	539	698	857	975	1093	1211	1330	1522	1714	1906	2098	2265	2432
291	105	166	228	290	352	395	438	480	523	566	731	895	1019	1142	1265	1389	1590	1791	1992	2193	2369	2545
301	116	180	243	307	370	415	460	504	549	593	764	934	1063	1191	1319	1448	1658	1868	2078	2289	2474	2659
311	127	193	258	323	389	435	481	528	574	620	797	973	1106	1240	1373	1507	1726	1945	2165	2384	2578	2773
321	139	206	273	340	407	455	503	551	600	648	830	1011	1150	1289	1427	1566	1794	2023	2251	2480	2683	2886
332	150	219	288	356	425	475	525	575	625	675	863	1050	1194	1338	1481	1625	1863	2100	2338	2575	2788	3000
342	157	228	300	372	443	495	546	597	649	700	894	1089	1236	1383	1530	1677	1925	2173	2420	2668	2886	3105
352	164	238	313	387	461	514	567	620	672	725	926	1127	1278	1428	1579	1730	1988	2245	2503	2761	2985	3209
362	170	248	325	402	480	534	588	642	696	750	958	1166	1320	1474	1628	1782	2050	2318	2586	2855	3084	3314
372	177	257	338	418	498	553	609	664	720	775	990	1205	1362	1519	1677	1834	2113	2391	2669	2948	3183	3418
383	184	267	350	433	516	573	630	686	743	800	1022	1243	1404	1565	1726	1886	2175	2464	2752	3041	3282	3523
393	191	277	363	448	534	592	650	709	767	825	1053	1282	1446	1610	1774	1939	2238	2536	2835	3134	3381	3627
403	198	286	375	464	552	612	671	731	790	850	1085	1320	1488	1656	1823	1991	2300	2609	2918	3227	3480	3732
413	205	296	388	479	570	631	692	753	814	875	1117	1359	1530	1701	1872	2043	2363	2682	3001	3320	3578	3836

Buffer zone distances cannot be greater than 1/2 mile (2,640 feet). If after applying applicable credits the buffer zone distances are still greater than 1/2 mile (2,640 feet) the application is prohibited.

Table 6. Deep Untarped Buffer Zone Distances (feet)

Broadcast Equivalent Application Rate (lbs product/A)	Application Block Size (acres)															
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40
44	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
77	25	25	25	25	25	25	25	25	25	25	57	88	107	125	144	163
110	25	25	25	25	25	25	25	25	25	25	88	150	188	225	263	300
137	25	40	55	70	85	95	105	115	125	135	215	295	353	410	463	515
164	25	54	83	111	140	160	180	200	220	240	340	440	515	590	658	725
192	25	68	110	153	195	225	255	285	315	345	465	585	678	770	855	940
219	25	81	138	194	250	290	330	370	410	450	588	725	838	950	1050	1150
247	45	113	180	248	315	361	407	453	499	545	705	865	995	1125	1245	1365
274	65	143	220	298	375	428	481	534	587	640	820	1000	1150	1300	1438	1575
302	85	174	263	351	440	499	558	617	676	735	938	1140	1308	1475	1633	1790
330	100	200	300	400	500	565	630	695	760	825	1050	1275	1463	1650	1825	2000
357	131	238	344	450	556	626	696	766	836	906	1156	1406	1616	1825	2019	2213
385	163	275	388	500	613	688	763	838	913	988	1263	1538	1769	2000	2213	2425
411	194	313	431	550	669	749	829	909	989	1069	1369	1669	1922	2175	2406	2638

Table 7a. Outdoor Tarped Hot Gas Buffer Zone Distances (feet)										
		Application Block Size (square feet)								
		7,500	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000
Broadcast Equivalent Application Rate (lb product/100 square feet)	0.26	25	25	25	25	25	25	25	25	35
	0.38	25	25	25	25	25	40	55	63	78
	0.51	25	25	25	25	25	55	85	100	120
	0.64	25	25	48	73	88	120	150	168	193
	0.77	25	25	70	120	150	185	215	235	265
	0.89	25	30	110	160	193	235	265	293	323
	1.02	25	35	150	200	235	285	315	350	380

Table 7b. Outdoor Tarped Hot Gas Buffer Zone Distances (feet)											
		Application Block Size (acres)									
		1	2	3	4	5	6	7	8	9	10
Broadcast Equivalent Application Rate (lbs product/A)	44	25	25	25	25	25	30	35	40	45	50
	77	25	56	88	119	150	170	190	210	230	250
	110	25	88	150	213	275	310	345	380	415	450
	137	85	160	235	310	385	430	475	520	565	610
	164	140	228	315	403	490	545	600	655	710	765
	192	195	295	395	495	595	660	725	790	855	920
	219	250	363	475	588	700	775	850	925	1000	1075
	247	285	411	538	664	790	874	958	1042	1126	1210
	274	325	463	600	738	875	968	1061	1154	1247	1340
	302	345	500	655	810	965	1066	1167	1268	1369	1470
	330	375	544	713	881	1050	1160	1270	1380	1490	1600
	357	415	596	778	959	1140	1259	1378	1497	1616	1735
	385	450	644	838	1031	1225	1353	1481	1609	1737	1865
	411	490	696	903	1109	1315	1451	1587	1723	1859	1995

Buffer Zone Distances

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

Applications in California:

Where a Restricted Materials Permit is required for soil fumigation [pursuant to citation for California law], use the buffer zone distance for the application block that is specified in the Restricted Materials Permit issued by the County Agricultural Commissioner, provided that the buffer zone distance is equal to or greater than the buffer zones distance specified in the December 8, 2004 California Department of Pesticide Regulation Methyl Bromide Field Fumigation Guidance Manual (see http://www.cdpr.ca.gov/docs/county/training/methbrom/mebrman.pdf) in accordance with Title 3, Division 6, Subchapter 4 of the California Code of Regulations in effect on January 1, 2011.

In all other cases, determine the buffer zone distance for your application using the directions under *Applications outside California*.

Applications outside California:

- 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 ½ mile (2,640 ft), then the application is prohibited.
- For all other applications, Tables 4, 5, 6, 7a, 7b, or 8, as appropriate for the method of application 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.

Table 8. Greenhouse Hot Gas Buffer Zone Distances (feet)																			
		Application Block Size (square feet)																	
		1,000	2,000	3,000	4,000	5,000	7,500	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000
Broadcast Equivalent Application Rate (lb product/100 square feet)	0.26	25	25	25	25	25	25	25	25	25	25	25	50	50	75
	0.38	25	25	25	25	25	31	38	63	75	88	100	125	138	163
	0.51	25	25	25	25	25	38	50	100	125	150	175	200	225	250
	0.64	25	25	28	33	38	63	88	138	175	200	238	275	300	325
	0.77	25	25	30	40	50	88	125	175	225	250	300	350	375	400
	0.89	25	33	45	60	75	119	163	213	263	300	350	400	425	450
	1.02	25	40	60	80	100	150	200	250	300	350	400	450	475	500

Buffer Zone Requirements

A buffer zone must be established for every fumigant application. The following describes the 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 Exemption for Transit on Roadways* section).
  - o 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.
- For broadcast shank applications using any tarp that qualifies for a 60% or greater reduction in buffer zone distance:
  1. The buffer zone period begins at the start of the application and ends after the tarps have been removed from the application block.
  2. As an alternative to (1) above, two buffer zone periods may be established where the first buffer zone period begins at the start of the application and lasts for a minimum of 48 hours after the application is complete. The second buffer zone period begins when the tarps are perforated and ends after the tarps have been removed from the application block.
- For all other applications, the buffer zone period begins at the start of the application and lasts for a minimum of 48 hours after the application is complete.

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

Buffer zone proximity

- Before the start of application, the certified applicator must determine whether their buffer zone will overlap any methyl bromide buffer zone(s).
- To reduce the potential for off-site movement from multiple fumigated fields, buffer zones from multiple methyl bromide 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* has 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:
  1. The storage buildings are not occupied during the buffer zone period, and
  2. 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,
     - o The buffer zone period has ended, and
     - o The certified applicator or handler(s) under his/her supervision has monitored the structures and has not experienced any sensory irritation upon re-entry. Entry by occupants and other non-handlers must not occur until two consecutive air samples for methyl bromide have been taken in the structure at least 1 hour apart and both samples indicate less than 1 ppm methyl bromide.
- 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 methyl bromide 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 Exemption 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 granted by the appropriate state and/or local authorities responsible for management and operation of the area.

Certified applicators must comply with all local laws and regulations.

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

Buffer Zone Credits

The buffer zone distances for METHYL BROMIDE 98% 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.

- See www.tarpcredits.epa.gov for a list of tarps that have been tested and determined to qualify for buffer reduction credits. Only tarps listed on this website qualify for buffer reduction credits.
- 15% reduction in buffer zone distance, IF potassium thiosulfate (KTS) is applied at a minimum rate of 300 pounds per acre.
- 10% reduction in buffer zone distance, IF the organic content of the soil in the application block is $\geq$ 1% - 2%; a 20% reduction in 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 the buffer zone distance, IF the clay content of the soil in the application block is greater than 27%.

Examples of Buffer Zone Calculations with Credits Applied

If the buffer zone is 50 feet, and the application qualifies for a buffer zone 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 zone 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.
  - o Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
  - o 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.
  - o 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:
  - o The printed side of the sign must face away from the application block toward areas from which people could approach.
  - o 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).
  - o 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.
  - o Signs must be removed within 3 days after the end of the buffer zone period.
  - o 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/index.htm
  - o The Buffer Zone signs must contain the following information:
    - ☐ The 'Do Not Walk' symbol
    - ☐ DO NOT ENTER/NO ENTRE,
    - ☐ Methyl Bromide Fumigant [METHYL BROMIDE 98%] 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 the 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 start of the application until the buffer zone period expires, a certified applicator or handler(s) under his/her supervision must:

- Monitor with a direct read device for methyl bromide in areas between the buffer zone perimeter and residences and businesses that trigger this requirement.
- Monitoring with a direct read device must begin the evening on the day of application and continue until the buffer zone period expires with a minimum of at least 8 samples 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,

- the handler monitoring experiences sensory irritation, or
- an air sample is greater than or equal to 1 ppm for methyl bromide.

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 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:

- o The location of the application block.
- o Fumigant(s) applied including the active ingredient, name of the fumigant product(s), and the EPA Registration number.
- o Contact information for the applicator and property owner.
- o Time period in which the application is planned to take place (must not range more than 4 weeks).
- o 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).
- o 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(s),
- 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 plan that 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:
  - o there is an incident,
  - o sensory irritation is experienced outside of the buffer zone, and/or
  - o there are equipment/tarp/seal failures 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 supervising the application 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
  - o Name,
  - o Phone number,
  - o Pesticide applicator license and/or certificate number,
  - o Specify if commercial or private applicator,
  - o Employer name,
  - o Employer address, and
  - o Date and location of completing EPA approved soil fumigant training program.
- General site information
  - o Application block location (e.g., county, township-range-section quadrant), address, or global positioning system (GPS) coordinates
  - o Name, address, and phone number of application block owner
  - o 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
  - o Target application date/window,
  - o Fumigant Product Name, and
  - o EPA registration number.
  - o Identify if application:
    - Qualifies for a critical use exemption (CUE) at time of application and is listed in Table 1,
    - Qualifies for a quarantine exemption and is listed in Table 2, or
    - Does not qualify for a CUE and is listed in Table 3.
  - o If application qualifies for a quarantine exemption, identify:
    - U.S. Federal, state, or local plant, animal, environmental protection or health authority requiring the quarantine application and the particular quarantine/phytosanitary requirement
    - Requirement for the treatment (e.g., the State or Federal law)
  - o Documentation of pest(s) for control of (if applicable):
    - Oak Root Fungus (*Armillaria mellea*) and/or endoparasitic nematodes such as root-knot (*Meloidogyne* spp.), dagger (*Xiphinema* spp.), ring (*Criconemoides* spp.), lesion (*Pratylenchus* spp.), and pin (*Paratylenchus* spp.) nematodes for orchard replant
- Tarp Plan (if tarp is used)
  - o Schedule for checking tarps for damage, tears, and other problems,
  - o Minimum size of damage that will be repaired,
  - o Factors used to determine when tarp repair will be conducted,
  - o Equipment/methods used to perforate tarps,
  - o Target dates for perforating tarps, and
  - o Target dates for removing tarps.
- Soil conditions
  - o Description of soil texture and moisture in application block,
  - o Method used to determine soil moisture, and
  - o Soil temperature measurement if air temperatures were above 100° F in any of the 3 days prior to the application.

- Buffer zones
  - o Application method,
  - o Injection depth,
  - o Application rate from lookup table on label,
  - o Application block size from lookup table on label,
  - o Credits applied and measurements taken (if applicable),
    - Tarp brand name, lot number, thickness, manufacturer, batch number, and part number
    - Potassium thiosulfate
    - Organic matter content
    - Clay content
  - o Buffer zone distance, and
  - o 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
  - o Person(s) who will post and remove (if different) Fumigant Treated Area and Buffer Zone signs, and
  - o Location of Buffer Zone signs.
- Emergency Preparedness and Response Measures (if applicable)
  - o Fumigant site monitoring (if applicable):
    - When and where it will be conducted
  - o 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)
- 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).
  - o Name and phone number of persons contacted by the certified applicator, and
  - o Date contacted.
- Handler (including Certified Applicators) Information and PPE
  - o Names, addresses and phone numbers of handlers
  - o Names, addresses, and phone numbers for employers of handlers
  - o Tasks that each handler is authorized and trained to perform
  - o Date of PPE training for each handler
  - o Applicable handler PPE including:
    - Long-sleeved shirts/long pants, shoes, socks
    - Chemical-resistant apron
    - Chemical-resistant footwear
    - Protective eyewear (not goggles)
    - Chemical-resistant gloves
    - Air-purifying respirators
      - Respirator make, model, type, style, size, and cartridge type
    - SCBAs
      - Respirator make, model, type, style, size
    - Other PPE
  - o For handlers: Confirmation of receipt of Fumigant Safe Handling Information.
  - o 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.
  - o For handlers designated to wear respirators (air-purifying respirator or SCBA):
    - date of medical qualification to wear a respirator,
    - date of respirator training, and
    - date of fit-testing for the respirator.
  - o Unless exempted in the *Protection of Handlers* section, verify that:
    - at minimum 2 handlers have the appropriate respirators and cartridges during handler activities, and
    - the employer has confirmed that the appropriate respirator and cartridges/canisters are immediately available for each handler who will wear one.
- Air monitoring plan
  - o For monitoring after tarp perforation is complete and before tarp removal begins, indicate:
    - Monitoring equipment to be used, and
    - Timing of monitoring.
  - o For monitoring the breathing zone, indicate:
    - Representative handler tasks to be monitored,
    - Monitoring equipment to be used, and
    - Timing of the monitoring.
  - o For monitoring residential structures within the buffer zone (for re-entry), indicate:
    - Monitoring equipment to be used,
    - Timing of the monitoring, and
    - Monitoring location.
- Good Agricultural Practices (GAPs)
  - o Identify (e.g., list, attach applicable label section) applicable mandatory GAPs.
- Pesticide Product Labels and Material Safety Data Sheets (MSDS)
  - o 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 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 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
  - o 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).
  - o 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):
  - o Date of tarp damage discovery,
  - o Location and size of tarp damage,
  - o Description of tarp/tarp seal/tarp equipment failure, and
  - o Date and time of tarp repair completion.
- Tarp perforation/removal details (if applicable):
  - o Date and time tarps were perforated,
  - o Date and time tarps were removed, and
  - o Record if tarps were perforated and/or removed early. Describe the conditions that caused early tarp perforation and/or removal.
- Complaint details (if applicable):
  - o Person filing complaint (e.g., on-site handler, person off-site),
  - o If off-site person, name, address, and phone number of person filing complaint, and
  - o 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:
  - o 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, implement Emergency Response Plan).
  - o 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, implement Emergency Response Plan).
- Fumigant Treated Area and Buffer Zone Signs:
  - o 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.

Spill and Leak Procedures

In case of a rupture of hose or fitting while applying fumigant, immediately stop tractor and motor. Evacuate everyone from the immediate area of the spill or leak. Wear the personal protective equipment specified in the *Personal Protective Equipment (PPE)* section of this labeling for entry into affected area to correct problems. Approach from upwind to make necessary repairs. Do not enter area without the required PPE until the spill has evaporated or the leak has been fixed. Contaminated soil, water, and other cleanup debris is a toxic hazardous waste. Report spill to the National Response Center (800-424-8802) if the reportable quantity of 1000 lbs. is exceeded.

NOTICE: Contains methyl bromide, a substance which harms public health and the environment by destroying ozone in the upper atmosphere.