

5785-8

03/28/2002

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**RESTRICTED USE PESTICIDE  
DUE TO ACUTE TOXICITY**

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

**BROM-O-GAS® 0.5%**

SPACE AND STRUCTURAL FUMIGANT  
Contains 0.5% Chloropicrin

ACTIVE INGREDIENTS: .....By Wt.  
Methyl bromide.....99.5%

OTHER INGREDIENTS:  
Chloropicrin.....0.5%  
TOTAL 100%

This product weighs 14.4 pounds per gallon.

**DANGER • PELIGRO • POISON**

**KEEP OUT OF REACH OF CHILDREN**

**PRECAUTION AL USUARIO:** Si usted no le ingles, no use este producto hasta que la etiqueta le haya sido explicado ampliamente.

FIRST AID	
If inhaled	<ul style="list-style-type: none"> <li>• Move person to fresh air. Keep warm.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Do not give anything by mouth to an unconscious person. If not unconscious, rinse mouth out with water.</li> <li>• In all cases of overexposure, get medical attention immediately. Take person to a doctor or emergency treatment facility.</li> </ul>
If on skin or clothing	<ul style="list-style-type: none"> <li>• Immediately remove contaminated clothing, shoes, and any other item on skin.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• In all cases of overexposure, get medical attention immediately. Take person to a doctor or emergency treatment facility.</li> </ul>
If in eyes	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• In all cases of overexposure, get medical attention immediately. Take person to a doctor or emergency treatment facility.</li> </ul>

**HOT LINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-949-5167 for emergency treatment information.

**NOTE TO PHYSICIAN**

Early symptoms of overexposure 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.

SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS**

**DANGER**

Extremely hazardous liquid and vapor under pressure. Do not breathe vapor. Inhalation may be fatal or cause serious acute illness or delayed lung or nervous system injury. Liquid or vapor can cause serious skin or eye injury which may have a delayed onset. Do not get liquid on skin, in eyes or on clothing.

This product contains chloropicrin as a warning agent. Chloropicrin may be irritating to the upper respiratory tract, and even at low levels can cause painful irritation to the eyes, producing watering. If these symptoms occur, leave the fumigation area immediately.

**PROTECTIVE CLOTHING.** Methyl bromide may be trapped inside clothing and cause skin injury. Wear loose shirts, long trousers and socks that are cleaned after each wearing. Do not wear jewelry, gloves or other gas confining apparel. If full-face respiratory protection is not required, wear full face shield for eye protection when handling liquid. After exposure, immediately remove clothing, shoes and socks. Do not reuse contaminated clothing until thoroughly decontaminated. Drenched shoes cannot be adequately decontaminated.

**RESPIRATORY PROTECTION.** Respiratory protection equipment is required when using this product for certain applications. Refer to GLK 375C, Section 5, Space Fumigation for complete instructions on the requirements for respiratory protective equipment.

**ENVIRONMENTAL HAZARDS**

This pesticide is toxic to wildlife. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

**SPILL AND LEAK PROCEDURES.** Evacuate immediate area of spill or leak. Use a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator for entry into affected area to correct problem. Allow spill to evaporate. Do not permit entry into spill area by persons without appropriate respiratory protection, until concentration of methyl bromide is determined to be less than 5 ppm. Remove leaking containers to an isolated area and discharge contents under a polyethylene sheeting of 4 mil or greater thickness onto the soil surface and do not disturb for 48 hours.

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 pounds is exceeded.

**PHYSICAL AND CHEMICAL HAZARDS**

Contents under pressure. Do not use or store near heat or open flame. In fires fueled by other materials, this product may liberate hazardous gases. The use of this product with aluminum, magnesium, zinc and alkali metals will result in the liberation of toxic gases, and possible fire and explosion. In addition, severe corrosion of containers and equipment made of these metals will occur.

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**STORAGE, HANDLING, AND DISPOSAL**

**Storage and Handling.** Store in a secure manner either outdoors under ambient conditions or indoors in a well ventilated area. Post as a pesticide storage area. Do not contaminate water, food, or feed by storage. Store cylinders upright, secured to a rack or wall to prevent tipping. Containers should not be subjected 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 reuse. Replace safety cap and valve protection bonnet when cylinder is not in use. When cylinder is empty, close valve, screw safety cap on to valve outlet, and replace protection bonnet before returning to shipper. Only the registrant, or his designee, is authorized to refill cylinders. Do not use cylinders for any other purpose.

**Disposal.** Pesticide wastes are toxic. Improper disposal of excess pesticide is a violation of Federal law. If these wastes can not 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 of guidance. Return empty cylinders freight collect to the Great Lakes Chemical Corporation location from which shipment was made. Return partial cylinders only after consulting Great Lakes Chemical Corporation for proper shipping instructions. In either case, use delivering carrier when possible.

This product may be used for Space and Structural Fumigation only. This fumigant is a highly hazardous material and must be used only by individuals trained in its proper use. You must carefully read and understand GLK 375C in order to use this product. Observe all safety and precautionary instructions as set forth in GLK 375C. All fumigation directions, including dosage rates, exposure times and aeration periods, are given in GLK 375C.

**STATEMENT OF WARRANTY AND LIABILITY**

Seller warrants that this product complies with the specifications expressed in this label and GLK 375B. SELLER MAKES NO OTHER WARRANTIES; AND DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND



P.O. BOX 2200  
WEST LAFAYETTE, IN 47996-2200  
U.S.A.

FITNESS FOR THE INTENDED PURPOSE. Seller's liability for default, breach, or failure under this label shall be limited to the amount of the purchase price. Seller shall have no liability for consequential damages.

Many pesticidal chemicals are poisonous and may leave a toxic residue on the plants to which they are applied. The U.S. Environmental Protection Agency has established maximum amounts of such pesticidal chemicals that may remain on raw agricultural products at harvest, and it is the user's responsibility to see that there is no residue on such crops at harvest in excess of these amounts. The "Directions for Use" are based on the best available information, and if followed carefully should not leave excessive residues at harvest. However, Great Lakes Chemical Corporation assumes no responsibility as to their accuracy nor for any loss due to excessive residues.

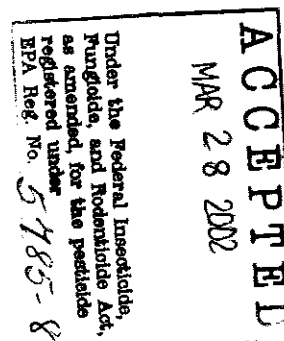
EPA REG. NO. 5785-8

EPA EST. NO. 5785-AR-01

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LOT NUMBER \_\_\_\_\_

BOG.5-1 REV.AR-8-Q



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DUE TO ACUTE TOXICITY**

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**DIRECTIONS FOR USE OF THE SPACE AND STRUCTURAL FUMIGANT PRODUCTS**

**BROM-O-GAS® 0.25%**  
**BROM-O-GAS® 0.5%**

EPA REGISTRATION NUMBERS  
5785-55 5785-8

**PRECAUCION AL USUARIO:** Si usted no lee Ingles, no use este producto hasta que la etiqueta le haya sido explicado ampliamente.

**READ THIS BOOKLET AND ENTIRE LABEL CAREFULLY PRIOR TO USE.  
USE THESE PRODUCTS ACCORDING TO LABEL INSTRUCTIONS.**



P.O. BOX 2200  
WEST LAFAYETTE, IN 47996-2200  
U.S.A.

\*Registered trademark of Great Lakes Chemical Corporation  
†Copy right 2001 Great Lakes Chemical Corporation  
BOG 25-3 REV GLK275C

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**STATEMENT OF WARRANTY AND LIABILITY**

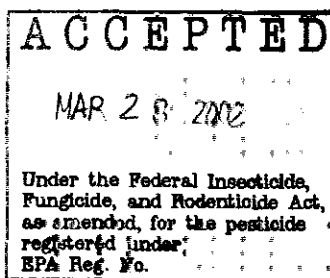
Seller warrants that this product complies with the specifications expressed in this label. SELLER MAKES NO OTHER WARRANTIES; AND DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE INTENDED PURPOSE. Seller's liability for default, breach or failure under this label shall be limited to the amount of the purchase price. Seller shall have no liability for consequential damages.

Many pesticidal chemicals are poisonous and may leave a toxic residue on the plants to which they are applied. The U.S. Environmental Protection Agency has established maximum amounts of such pesticidal chemicals that may remain on raw agricultural products at harvest, and it is the user's responsibility to see that there is no residue on such crops at harvest in excess of these amounts. The "Directions for Use" are based on the best available information, and if followed carefully should not leave excessive residues at harvest. However, Great Lakes Chemical Corporation assumes no responsibility as to their accuracy nor for any loss due to excessive residues.

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**STORAGE, HANDLING AND DISPOSAL**

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**Cylinders.** Cylinders should not be subjected 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.

When cylinder is empty, close valve, screw safety cap on to valve outlet, and replace protection bonnet before returning to shipper. Only the registrant, or his designee, is authorized to refill cylinders. Do not use cylinders for any other purpose.

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**Disposal.** Pesticide wastes are toxic. Improper disposal of excess pesticide 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.

Return empty cylinders freight collect to the Great Lakes Chemical Corporation location from which shipment was made. Return partial cylinders only after consulting Great Lakes Chemical Corporation for proper shipping instructions. In either case, use delivering carrier when possible. Dispose of empty cans in a sanitary landfill, or by other procedures approved by state and local authorities.

#### ENVIRONMENTAL HAZARDS

This pesticide is toxic to wildlife. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or public water unless this product is specifically identified and addressed in an NPDES permit. Do not discharge this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

#### SPILL AND LEAK PROCEDURES.

Evacuate immediate area of spill or leak. Use a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator for entry into affected area to correct problem. Allow spill to evaporate. Do not permit entry into spill area by persons without appropriate respiratory protection until concentration of methyl bromide is determined to be less than 5 ppm. Remove leaking containers to an isolated area and discharge contents under a polyethylene sheeting of 4 mil or greater thickness onto the soil surface and do not disturb for 48 hours.

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 pounds is exceeded.

#### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

This fumigant is a highly hazardous material and must be used only by individuals trained in its proper use. Before using, you must read and obey all label precautions and directions.

All persons working with this fumigant must be knowledgeable about the hazards, and trained in the use of required respiratory equipment and detector devices, emergency procedures, and proper use of the fumigant.

Directions for structural fumigation and other pest sites are found in SECTION I.

#### I. SPACE FUMIGATION DIRECTIONS.

THE FOLLOWING PRECAUTIONARY PROCEDURES MUST BE FOLLOWED FOR ALL USES ADDRESSED IN THIS SECTION.

When used for fumigation of enclosed spaces (e.g., dwellings and other structures, warehouses, empty grain bins or elevators, vaults, chambers, trucks, vans, railroad cars, ships, and other transport vehicles, and tarpaulin-covered areas), two persons trained in the use of this product must be present during introduction of the fumigant, initiation of aeration, and after aeration when testing for reentry. Two persons do not need to be present if monitoring is conducted remotely (outside the area being fumigated).

Do not fumigate with this product when the space or structure to be fumigated is below 40°F. Fumigation at different temperatures may be allowed or required under APHIS quarantine treatment schedules.

When using methyl bromide as a space fumigant, the applicator must placard or post all entrances to the fumigated area with signs bearing, in English and Spanish:

1. The signal word DANGER/PELIGRO and the skull and crossbones symbol.
2. The statement, "Area under fumigation, DO NOT ENTER/NO ENTRE".
3. The date of fumigation.
4. Name of fumigant used.
5. Name, address and telephone number of the applicator.

Do not remove a placard until the treated space is completely aerated. To determine whether aeration is complete, each fumigated site must be monitored and shown to contain less than 5 ppm methyl bromide. If less than 5 ppm methyl bromide is detected, the placard may be removed.

#### PROTECTIVE CLOTHING.

Methyl bromide may be trapped inside clothing and cause skin injury. Wear loose shirts, long trousers and socks that are cleaned after each wearing. Do not wear jewelry, gloves or other gas confining apparel. If full-face respiratory protection is not required, wear full-face shield for eye protection when handling liquid. After exposure, immediately remove clothing, shoes and socks. Do not reuse contaminated clothing until thoroughly decontaminated. Drenched shoes cannot be adequately decontaminated.

#### RESPIRATORY PROTECTION.

If the concentration of methyl bromide in the worker area, as measured by a pump and appropriate detector tubes (for example, Draeger, Kitagawa, and Sensidyne), does not exceed 5 ppm, no respiratory protection is required. If this concentration is exceeded at any time, all persons in the fumigation area must wear a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator or evacuate the area.

#### AERATION AND REENTRY.

After fumigation, treated areas must be aerated until the level of methyl bromide is below 5 ppm. Do not allow entry into the treated area by any person before this time, unless protective clothing and a respiratory protection device (NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator) is worn.

#### A. Chamber and Vault Fumigation.

All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

Load the chamber with the material to be fumigated, close exhaust ports, turn on circulating fan and close chamber door. Determine the proper rate of application and exposure time from Table I. Introduce the fumigant into the chamber by releasing it into the air stream in front of a blower or fan, passing it through a vaporizer, or allowing it to evaporate from a shallow pan. All controls should be outside the chamber.

At the end of the exposure period, aerate by opening the exhaust port, turning on the exhaust fan and opening the chamber door slightly or an inlet port to permit fresh air to enter. At the end of the aeration period, check fumigant concentration with a detection device before allowing unprotected persons to enter the chamber.

#### B. Vacuum Chamber Fumigation.

All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

1. Place articles to be fumigated in the steel chamber and draw the vacuum (25 to 27 inches Hg).
2. Release fumigant into the chamber (usually through a heating unit to insure complete vaporization).
3. See Table I for specific articles, rates of application and exposure times, as indicated by footnote "b".
4. At the end of the exposure time, release the vacuum and change the air in the chamber at least two times. A vacuum of 15 in. Hg should be drawn for this purpose. After purging chamber, check fumigant concentration with a detection device before allowing unprotected person(s) to enter.

#### C. Railroad Car, Truck, Van or Trailer Fumigation.

All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

1. Railroad car should be placed on seldom used trackage or siding so that it will not have to be moved while under fumigation. Park trailer or van out of traffic area; if possible on the lee side of a building to protect from winds. Do not fumigate while strong winds are blowing.
2. Seal the off-side door, ventilators and other openings. Seal from the inside, if possible.
3. Secure a perforated tube with the end closed to the ceiling to distribute fumigant evenly or use evaporating pan(s). Always apply fumigant from outside the vehicle.
4. Seal the door and placard vehicle.
5. Consult Table I for specific articles, rates of application and exposure times.
6. After the appropriate exposure period, open the unit and aerate 1 to 1 1/2 hours. The vehicle must be aerated to below 5 ppm before movement is allowed. The vehicle may then be resealed for shipment. DO NOT MOVE VEHICLES DURING FUMIGATION. FOR USED TIRES A PERIOD OF AERATION OF 2 TO 3 DAYS IS REQUIRED FOR THE GAS LEVELS TO FALL TO 5 PPM.

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#### D. Tarpaulin Fumigation.

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All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

The article or stacked articles should be placed on a concrete floor or other air-tight surface. If the floor is not air-tight, it may be made so by covering it with sisal kraft paper, tar paper or additional tarpaulin or polyethylene sheeting. Provide a space on top of the stack for a gas expansion dome to facilitate distribution. Evaporating pans are essential for the volatilization and uniform dispersion of fumigant except where a vaporizer is used. Shallow pans or basins made of plastic or metal (except aluminum) are satisfactory for this purpose. Use one evaporator pan for each 1000 cubic feet contained under the tarp. For delivery of this product from outside the tarpaulin, polyethylene tubing is required. Anchor one end of each polyethylene tube into an evaporating pan with tape or a suitable weight. This ensures that the liquid will be directed into the evaporating pan. Place evaporating pan(s) with anchored applicator tubing in the center of the expansion dome. Extend the free ends of the polyethylene tubes outside the area to be covered. Cover and seal the stack with a gas tight tarpaulin or polyethylene sheeting of 4 mil or greater thickness. Allow a margin of at least two feet at the base of the stack for sealing. Sweep around the stack to provide a clean surface for sealing the tarpaulin. Seal tarpaulin to floor by sand and/or water snakes, by taping or by means of moist soil or sand. Attach each polyethylene tube to a can applicator or cylinder valve outlet and release fumigant. Use a cylinder dispenser or scale to meter small amounts from cylinders. Special units are available for use of 1 and 1 1/2 pound cans that combine opener and evaporating pan functions, and are designed to be used with all parts under the tarpaulin. Use rates and exposure times shown in Table I. At the end of the exposure period, unseal opposite ends of the tarpaulin and allow to aerate for at least 30 minutes before completely removing the tarp. Check fumigant concentration with a detection device before allowing unprotected persons to enter the area.

#### E. Structural Fumigation.

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For the fumigation of buildings to kill wood-infesting insects and other pests.

All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

Check with appropriate municipal and county authorities before fumigating to be completely familiar with local regulations. Ordinances may require watchmen or locks during fumigation and/or notification of the nearest fire station.

**Preparation for Fumigation.** Remove the following items from the structure to be fumigated: 1) all food, animal feed and medicinals not sealed in metal or glass; 2) seeds, bulbs and live plants; 3) pets (including fish and birds); 4) furs; 5) horsehair articles; 6) rubber goods (natural latex); 7) carbonless carbon forms and blueprints; 8) automobiles; 9) cinder blocks; 10) articles containing sulfur.

Extinguish all open flames including pilot lights. Turn off electric heating elements. Open all interior doors, openings into attics and crawl spaces. Open cabinet doors and drawers. Windows should be open when tarpaulins are used.

For masonry or metal structures, seal all cracks and other air leaks with caulking material or tape, and seal cracks around doors, windows, vents and other openings. Wooden structures and others that cannot be readily sealed may be completely enveloped with an impervious tarpaulin. Seal securely all seams between tarps and seal the lower edges of the tarp to the ground with moist soil or with sand or water snakes. To prevent escape of gas through the ground and avoid injury to nearby plants, wet the soil to a depth of six inches for a distance of one foot outward from the edge of the tarp.

Consult Table I for dosage and exposure times.

Release the fumigant from outside the structure. The shooting hose must be made of chemically resistant material. For dwellings, release the fumigant in a non-carpeted area such as the attic, porch or carport. The shooting hose must be directed into a chemically resistant bucket or tub and attached firmly so it will not come loose. The airstream of a fan must be directed toward the receptacle end of hose to circulate the vaporized fumigant. Introduce the fumigant through a heat exchanger to the shooting hose. Maintain the temperature of the vaporized fumigant at 130°F. or higher. In addition to the shooting fan, use at least one fan for each 10,000 cubic feet of space. The fans should be directed up and positioned for maximum circulation. For an average size structure, the entire amount of fumigant may be released in one place. For a larger or more complex structure, release fumigant at two or more locations chosen to aid in the even distribution of the gas.

#### FUMIGATION FOR RESIDENTIAL OR COMMERCIAL STRUCTURES

##### Aeration and Reentry

At the end of the exposure period, after all tarpaulins or seals are removed from the structure, open all interior and exterior doors, windows, and vents that are operational. No person shall be allowed to reenter the structure unless wearing protective clothing and a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator until the following criteria are met:

1. A) If non-mechanical or natural ventilation is used, the structure must be aerated for a minimum of seven days from the time the tarpaulins are removed.
- B) After aeration is completed, the level of methyl bromide in the structure must be measured using a gas detector device with a minimum detection limit of 3 ppm for methyl bromide. Measurements must be taken from an interior electrical outlet by inserting the detection device in the ground receptacle, or from other enclosed space within the wall on an interior and a perimeter wall; and
- C) (i) The level of methyl bromide is less than 3 ppm from each area measured; or  
(ii) If the level of methyl bromide is 3 ppm or greater, the structure shall be aerated for an additional 24 hours. At the end of the 24 hour period, the level of methyl bromide must be measured from the areas previously sampled. These procedures must be repeated until the level of methyl bromide is below 3 ppm.

#### 2. If mechanical aeration is used:

A) For structures without attics, an aeration fan(s) must be inserted in a window or other exterior opening and sealed so that the air inside the structure is exhausted out of the structure. The aeration fan(s) must be capable of displacing 5,000 cubic feet of air per minute. To facilitate aeration, exterior openings, such as windows, vents, or an access door to the subarea, should be utilized. The structure must be aerated with the fan(s) operating for minimum of 72 hours;

B) After aeration is completed, the level of methyl bromide in the structure must be measured using a gas detector with a minimum detection limit of 3 ppm for methyl bromide. Measurements must be taken from an interior electrical outlet by inserting the detection device in the ground receptacle, or from other enclosed space within the wall on an interior and a perimeter wall; and

C) (i) The level of methyl bromide is less than 3 ppm from each area measured; or  
(ii) If the level of methyl bromide is 3 ppm or greater, the structure must be aerated for an additional 12 hours. At the end of the 12 hour period, the level of methyl bromide must be measured from the areas previously sampled. These procedures must be repeated until the level of methyl bromide is below 3 ppm.

3. A) For structures with attics, an aeration fan must be inserted in the attic access door and a window or other exterior opening, and both sealed so that air inside the structure is exhausted outside the structure. The aeration fans must be capable of displacing a minimum of 5,000 cubic feet of air per minute. To facilitate aeration, exterior openings, such as windows, vents, or an access door to the subarea should be utilized. The structure must be aerated with the fans operating for a minimum of 72 hours;

B) After aeration is completed, the level of methyl bromide in the structure must be measured using a gas detector device with a minimum detection limit of 3 ppm for methyl bromide residues. Measurements must be taken from within an interior electrical outlet by inserting the detection device in the ground receptacle, or other enclosed space within an interior and perimeter wall; and

C) (i) The level of methyl bromide is less than 3 ppm from each area measured; or  
(ii) If the level of methyl bromide is 3 ppm or greater, aeration must continue for an additional 12 hours. At the end of the 12 hour period, the level of methyl bromide must be measured from the areas previously sampled. These procedures must be repeated until the level of methyl bromide is below 3 ppm.

4. For structures with basements, in addition to the requirements of paragraphs 1, 2, and 3 above, the windows, vents, and interior doors of the basement must be open, and

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A) After aeration is completed, the level of methyl bromide in the basement must be measured using a gas detector device with a minimum detection limit of 3 ppm for methyl bromide residues. A measurement must be taken from an interior electrical outlet by inserting the detection device in the ground receptacle, or from other enclosed space within the wall on an interior wall. In the absence of an interior wall, a measurement must be taken of the ambient air in the basement; and

B) (i) The level of methyl bromide is less than 3 ppm; or

(ii) If the level of methyl bromide is 3 ppm or greater, the structure must be aerated for an additional 24 hours for natural ventilation or an additional 12 hours for mechanical aeration. At the end of the additional ventilation period, the level of methyl bromide must be measured from the area in the basement previously sampled. These procedures must be repeated until the level of methyl bromide is below 3 ppm.

#### Structural Fumigation Fact Sheet

A. The applicator must obtain a structural fumigation fact sheet which has been signed by, and provided to, the following persons:

- (1) an adult occupant of a single family dwelling prior to the parties entering into a fumigation agreement,
- (2) (a) The owner, manager, or designated agent of the building for multiple-family dwellings, provided he or she acknowledges in writing to the applicator that a copy of the Structural Fumigant Fact Sheet has been provided to an adult occupant of each unit prior to the parties entering into a fumigation agreement; or  
(b) An adult occupant of each unit in a multiple family dwelling prior to the parties entering into a fumigation agreement, or
- (3) the owner, manager, or designated agent for all structures or businesses other than family dwellings.

B. The structural Fumigation Fact Sheet shall state:

The purpose of this handout is to inform the consumer of possible health hazards associated with the use of the structural fumigant, methyl bromide. To make sure you have been given an opportunity to read this, applicators are required to obtain the signature of the owners and occupants of property to be fumigated with methyl bromide. You will also be given a copy of this fact sheet to keep.

Structural fumigants: Methyl Bromide

ATTENTION

Read This Fact Sheet Completely Before Signing

Fumigation involves the introduction of poisonous gases into every part of the structure, including inside the walls. Because overexposure to these gases can be harmful to people, your building will be ventilated before you will be allowed to return.

This fact sheet provides basic information about the structural fumigant, methyl bromide, as well as information about why and how buildings are fumigated, methyl bromide health risks, how to know if you are exposed, ways to minimize your exposure, and several phone numbers to call for more information.

New rules for structural fumigation have substantially increased the time between fumigant use and the time an occupant is allowed back into the building. Post-fumigation ventilation has also been improved significantly. These changes should be adequately protective, but you should know some basic facts about structural fumigants.

**Why Buildings Are Fumigated** - Houses and other structures are fumigated to kill insect pests living in walls or wood. There are sometimes other ways to deal with these pests, and building owners should investigate them. However, fumigation is sometimes the only method for handling extensive infestations of wood-destroying insects. You can discuss the possibility of alternatives with your pest control company.

**Why Buildings Are Fumigated** - There are two pesticides used for structural fumigations: methyl bromide and sulfuryl fluoride (known by the trade name, Vikane). Each has advantages and disadvantages in terms of their effectiveness in killing pests which professional fumigators can discuss with you. Your fumigator should also provide you with a list of items you need to remove from your home before the fumigation starts.

Methyl bromide is a gas. Before fumigation starts, the building to be fumigated is completely sealed and covered with a tarp to keep the gas in the building so it can penetrate wood to kill the pests. The tarp is left on for one to two days. Warning signs are posted around the building notifying people to keep out because the levels of the pesticide in the building during fumigation can kill a person.

After the tarp is removed, a professional fumigator will go into the building wearing a compressed air tank and mask and open the doors and windows. Powerful fans may also be set up to pull fresh air into the building.

It is now required that buildings fumigated with methyl bromide be aired out for a minimum of 72 hours after the tarp is removed. Then, the fumigators are required to measure the levels of methyl bromide inside the walls of buildings to make sure they are below three parts per million before you are allowed to go back in.

The ventilation procedures make it unlikely that any remaining fumigant in the living space will be a health hazard after the house is cleared for reoccupancy. However, you should be aware of the symptoms of overexposure to methyl bromide, since it is sensible to be cautious when dealing with a potentially hazardous chemical.

Small pockets of fumigant can remain in dead air space between walls and inside cabinets, and in porous material such as furniture, and may enter into the living space for a few days after fumigation. That's why a mandatory aeration period is required after the tarp is removed. Your building should not be cleared for reoccupancy until it is safe for you to reenter.

**How Do You Know Whether You Are Exposed** - Methyl bromide is a colorless, odorless gas, so a warning agent is added which causes watery eyes and a scratchy throat. If you experience these symptoms in a building that has been recently fumigated, you should leave immediately and call the pest control company to have your building retested. You should also consult with your physician.

**Methyl Bromide Health Risks** - Methyl bromide enters your body as a gas when you breathe it. Exposure which may occur from touching treated surfaces is insignificant.

**Nervous system, eyes, and respiratory irritations:** Overexposure to methyl bromide can cause blurred vision, headache, and nausea. At higher concentrations, it can cause tremors, sleepiness, convulsions, pneumonia, and excess fluid in the lungs. These symptoms may not appear for 12 to 24 hours. If you experience these symptoms in a recently fumigated building, you should leave immediately and call the pest control company to have the building retested. You should also call your personal physician. Physicians are encouraged to report suspected pesticide-related illnesses to the EPA.

**Birth defects:** In recent animal studies, methyl bromide caused birth defects when pregnant animals were exposed under experimental conditions. There is no evidence that methyl bromide affects human reproduction, although some chemicals which cause birth defects in animals may also cause birth defects in humans. Any person, including pregnant women, should avoid unnecessary exposure.

**Other effects:** It is not known whether long-term exposure to methyl bromide causes cancer. Experiments in animals are underway to study this, although tests so far are negative. However, even if methyl bromide were shown to cause cancer over a lifetime of exposure in animals, it is unlikely that your exposure from the one-time fumigation of your building would be high enough to cause a significant risk of cancer.

**Ways To Reduce Your Exposure If You Are Having Your Building Fumigated** -

- Carefully evaluate all your pest control alternatives.
- Talk over your treatment program in advance with the pest control company, so you fully understand what will be done, and what you need to do.
- Carefully follow the instructions you are given about items you are to remove from your building.
- Stay out of the treated building for at least three days after the tarp is removed. If you have additional concerns, you may choose to be away for an extra period of time after the building is cleared for reoccupation.
- If you are interested or concerned, you can ask your pest control company to show you the records of the air monitoring it did before your building was cleared for reoccupation.
- You may wish to increase ventilation by opening doors and windows.
- If you have symptoms of exposure, or you believe that the aeration was not done properly, you should leave the building and contact the pest control company and your physician. You may also wish to call one of the phone numbers listed below.

For information about pesticides, the U. S. Environmental Protection Agency has a toll-free information services, the National Pesticide Telecommunications Network Hotline, which can be reached at 1 (800) 858-7378.

In a medical emergency, call 911, or contact the nearest Poison Control Center. See "Crisis Hotlines" listed near the front of the white pages in your phone book.

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If you feel uncomfortable entering the structure, or if you do not fully understand the potential hazards, you should call the company that performed the fumigation:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

Telephone: \_\_\_\_\_

I acknowledge receiving a copy of this methyl bromide fact sheet. (You will sign one copy for the company doing the fumigation, and get a second copy to keep for later reference.)

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please print your name here: \_\_\_\_\_

Your address: \_\_\_\_\_

FOR FUMIGATION OF RESIDENTIAL AND COMMERCIAL STRUCTURES, THESE DIRECTIONS SUPERSEDE ANY OTHER DIRECTIONS ON THE LABEL CONCERNING AERATION AND REENTRY.

**F. Warehouse, Grain Elevator, Food Processing Plant, Restaurants, and Other Empty Building Fumigation.**

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All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

Check with appropriate municipal and county authorities before fumigating to be completely familiar with local regulations. Ordinances may require watchmen or locks during fumigation and/or notification of the nearest fire station.

**Preparation for Fumigation.** Remove the following items from the structure to be fumigated: 1) all food, animal feed and medicinals not sealed in metal or glass; 2) seeds, bulbs and live plants; 3) pets (including fish and birds); 4) furs; 5) horsehair articles; 6) rubber goods (natural latex); 7) carbonless carbon forms and blueprints; 8) automobiles; 9) cinder blocks; 10) articles containing sulfur.

Extinguish all open flames including pilot lights. Turn off electric heating elements. Open all interior doors, openings into attics and crawl spaces. Open cabinet doors and drawers. Windows should be open when tarpaulins are used.

1. See Table I for rates of application and pests controlled.
2. **Sealing the Building.** The most important part of the fumigation is the preparation and sealing of the structure. A thorough sealing job is necessary. Avoid fumigating under windy conditions.

Sealing of the building begins with the closing of all external openings to the building. Wrap roof ventilators, chimneys and other large openings with a tarpaulin or plastic sheet and seal with duct or other appropriate tape. Screened openings may also be sealed with a wide, commercial masking or duct tape. Cleaning of the surfaces to be taped and the use of commercial spray-on adhesives will improve sealing.

For masonry or metal structures, seal all cracks and other air leaks with caulking material or tape, and seal cracks around doors, windows, vents and other openings. Wooden structures and others that cannot be readily sealed may be completely enveloped with an impervious tarpaulin. Seal securely all seams between tarps and seal the lower edges of the tarp to the ground with moist soil or with sand or water snakes. To prevent escape of gas through the ground and avoid injury to nearby plants, wet the soil to a depth of six inches for a distance of one foot outward from the edge of the tarp.

Exterior doors and windows should be wedged tight, locked, and sealed. Large exterior doors may require additional efforts to seal properly. Broken window panes should be replaced. Check for cracks around the eaves, in the floor and roof, and seal them.

Special care should be taken to seal off adjacent storage or work areas in a building that are not to be fumigated. Adjoining buildings sharing a common wall should be cleared of occupants before fumigation. If this is not feasible, spread a glossy-type building paper along the adjoining wall to prevent spread of the fumigant into undesired areas. Sisal kraft and asphalt-laminated paper, plastic film, and heavily oiled kraft or wrapping paper are appropriate. In all such cases where the adjoining building is occupied, it should be checked frequently with a suitable gas detector during fumigation to ensure the safety of the occupants. Check local regulations for specific requirements.

Doors or hatches on milling machinery should be opened prior to fumigation. These include elevator boots, conveyor lids, settling chamber doors, dust trunks and any other openings that will allow fumigant into the equipment. Inside doors, cabinets, lockers, and drawers should also be opened to facilitate treatment and aeration. "Dead" spouts are particularly difficult to penetrate and should be opened before the fumigation.

3. **Fumigating the Structure. Inside Release.** Cylinders should be placed by a team of two people and the location of each cylinder in the building should be mapped. The cylinders should be arranged so that the fumigators can walk away from the released gas as they open each subsequent cylinder.

Because this product is heavier than air, it is advisable to increase slightly the amount of fumigant released on the top floor. Cylinders should be placed within a room for best distribution into all areas. Cylinders should be placed in an upright position and the shipping caps removed. Because this product is heavier than air, it is sometimes advisable to attach standpipes (or curved pipes directed slightly upward) to the cylinder valves in order to reduce stratification at lower levels. If standpipes are used, they should be equipped with "T" fittings to direct the gas laterally and to prevent direct contact with the ceiling.

Fans are recommended to distribute the fumigant more quickly and to aid in aeration of the structure after the exposure period. The choice of fan for a given situation may depend upon experience or research data. Generally, one 16 inch fan for every 50,000 cubic feet of space will be sufficient. It is often possible to use heating system fans or other installations already in the building for improved circulation or distribution of the fumigant.

All fans should be running while the gas is being released, and left running until uniform distribution has been accomplished. They may be turned off from outside the building or by using timers.

Prior to fumigation, extinguish all open flames and turn off all high temperature electrical equipment including laboratory ovens, pilot lights, gas refrigerators, oil burners, etc. This product in the presence of intense heat from such sources may generate some hydrobromic acid which may be injurious to commodities and equipment.

Place warning signs or placards on all entrances to the building. Signs and placards should conform to all local, state, and federal regulations. It is best to inform police, fire and health officials that a fumigation process is about to begin. Observe the location of the nearest outside telephone for use in case of an emergency.

Practice or review the shooting procedure so that the operation will be done efficiently and safely. Respiratory protection equipment should be checked for leaks and other problems before the "practice session". While wearing respiratory protection, quickly open and close the cylinder valves to make certain they are in working order and, thus, avoid delay during the actual release.

Operators should not be in the building longer than 30 minutes while releasing the gas. If it is impossible for one crew to do it within this time period, additional experienced crews should be used. Two people should work together while the gas is being released and when clearing the structure.

Fumigators should always remain in sight of each other from the time they open the first cylinder until the time they leave the building together. While the fumigant is being released, it is advisable to have additional people, with respiratory protection equipment ready, waiting outside to assist if necessary. One member of the team should record the release of the fumigant from each cylinder so that none are missed. Lock and seal the last exit. If guards are used, they should remain on duty during release, exposure, and aeration periods to prevent unauthorized entry.

4. **Fumigating the Structure. Outside Release.** Releasing the fumigant from outside the space to be fumigated is possible in some situations and will probably minimize applicator exposure to the fumigant. Prepare the building as outlined previously.

Secure the ends of each "shooting" line or hose to each point where the fumigant is to be released, using evaporating pans or plastic sheeting to prevent possible damage to some surfaces. Run each line to the cylinder(s) located outside the area to be treated. Connect each line to the cylinder(s) or manifold.

Lock and seal the last exit. If guards are used, they should remain on duty during release, exposure, and aeration periods to prevent unauthorized entry.

Open the valves to release the fumigant. Respiratory protection equipment must be available in the event of a major leak or equipment failure.

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5. **Aerating the Building.** When the exposure period is complete, aeration generally should be started by opening previously sealed doors and windows on the ground floor. Ventilators accessible from the outside should be opened at this time.

After partial aeration, a team of at least two trained people with appropriate respiratory protection should begin opening windows, starting at the lower floors, and working upward. Fans should be on to assist aeration. Aeration is usually complete in four hours depending upon weather conditions and cross ventilation. No one should be allowed inside the building without respiratory protection until the methyl bromide concentration is below 5 ppm in the worker area.

Contact the police, fire and health officials previously notified of the fumigation and inform them that it has been completed.

#### G. Shipboard, In Transit Ship or Shiphold Fumigation.

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IMPORTANT. Shipboard, in transit ship or shiphold fumigation is also governed by the U.S. Coast Guard Regulations. Refer to and comply with those regulations prior to fumigation.

All precautionary procedures as outlined immediately under SPACE FUMIGATION DIRECTIONS must be followed.

#### Prefumigation Procedures.

1. Prior to fumigating a vessel for in transit cargo fumigation, the master of the vessel or his representative, and the fumigator must determine whether the vessel is suitably designed and configured so as to allow for safe occupancy by the ship's crew throughout the duration of the fumigation. If it is determined that the design and configuration of the vessel does not allow for safe occupancy by the ship's crew throughout the duration of the fumigation, then the vessel must not be fumigated unless all crew members are removed from the vessel. The crew members must not be allowed to reoccupy the vessel until the vessel has been properly aerated and a determination has been made by the master of the vessel and the fumigator that the vessel is safe for occupancy (5 ppm or below).

2. The person responsible for the fumigation must notify the master of the vessel, or his representative of the requirements: 1) relating to the use of respiratory protection equipment; 2) relating to the use of detection equipment; and 3) that a person qualified in the use of this equipment must accompany the vessel with cargo under fumigation. Emergency procedures, cargo ventilation, periodic monitoring and inspections, and first aid measures must be discussed with and understood by the master of the vessel or his representative.

3. During fumigation, or until a manned vessel leaves port or the cargo is aerated, the person in charge of the fumigation shall ensure that a qualified person using gas detection equipment tests spaces for fumigant leakage. If leakage of the fumigant is detected, the person in charge of the fumigation shall take action to correct the leakage, or inform the master of the vessel, or his representative, of the leakage so that corrective action can be taken.

Using appropriate gas detection equipment, monitor spaces adjacent to areas containing fumigated cargo and all regularly occupied areas for fumigant leakage. If methyl

bromide concentration above 5 ppm is detected, the area should be evacuated of all personnel, ventilated, and action taken to correct the leakage, before allowing the area to be reoccupied. Do not enter fumigated areas except under emergency conditions. If necessary to enter a fumigated area, wear a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator (personal protection equipment). Never enter fumigated area alone.

At least one other person, wearing personal protection equipment, should be available to assist in case of an emergency. If necessary to enter holds prior to discharge, test spaces directly above cargo surface for fumigant concentration, using an appropriate gas detector and while wearing personal protection equipment. Do not enter without respiratory protection, unless fumigation concentration is at or below 5 ppm, as indicated by a suitable detector.

4. If the fumigation is not completed and the vessel aerated before the manned vessel leaves port, the person in charge of the vessel shall ensure that there be on board the vessel during the voyage: 1) at least two NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirators; 2) one gas detection device; and 3) a person qualified in their operation.

5. See Table I for specific commodities, rates of application and exposure times.

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TABLE I

APPLICATION SUMMARY FOR STRUCTURAL  
PEST CONTROL AND OTHER SITES<sup>1</sup>

TREATMENT SITE	PESTS	VOLUME	RATE (lb/1000ft <sup>3</sup> )	EXPOSURE TIME (hrs)
Structures:				
Dwellings	termites (drywood & dampwood), bedbugs, cockroaches, silverfish, powder post beetle, death watch beetle, carpenter ants		1-3	16-24
	rats and mice		4-5 oz.	12-18
Warehouses (empty)	cockroaches, confused flour beetle, rice weevil, saw toothed grain beetle, lesser grain borer, cadelle, khapra beetle, drugstore beetle, larder beetle, carpet beetle, copra beetle, coffee bean weevil, groundnut bruchid, common bean weevil, dried fruit beetle, golden spider beetle, Australian spider beetle, cigarette beetle, angoumois grain moth, Mediterranean flour moth, warehouse moth, Indian meal moth, common grain mite	Less than 100,000 cu.ft.	1-3	16-24
Feed Room (empty)		100,000-500,000 cu.ft.	1-1.5	16-24
Grain Bins (empty)		500,000-1,000,000 cu.ft.	1-1.25	16-24
Poultry Houses (empty)	poultry mites, bedbugs	over 1,000,000 cu.ft.	1	16-24
	rats and mice		2	16-24
			4-5 oz.	12-18
Materials:				
Bags, Boxes and crates (empty)	cockroaches, confused flour beetle, rice weevil, granary weevil, saw toothed grain beetle, rusty grain beetle, lesser grain borer, cadelle, khapra beetle, carpet beetle, copra beetle, coffee bean weevil, groundnut bruchid, common bean weevil, dried fruit beetle, golden spider beetle, Australian spider beetle, cigarette beetle, angoumois grain moth, Mediterranean flour moth, warehouse moth, Indian meal moth, common grain mite		1.5-3 <sup>2</sup>	16-24
			2-3 <sup>2</sup>	2
	rats and mice		4-5 oz.	12-18
Furniture	termites (drywood & dampwood), bedbugs, cockroaches, silverfish, powder post beetle, death watch beetle, carpenter ants, clothes moth, cigarette beetle, drugstore beetle, carpet beetle		1-3 <sup>2</sup>	16-24
			2-3 <sup>2</sup>	2
Lumber and Wood Products	termites (drywood & dampwood), powder post beetle, round and flat headed borers, carpenter ants and bark beetles		1-3 <sup>2</sup>	16-24
			2-3 <sup>2</sup>	2
Used Tires	Mosquitoes		2 <sup>2</sup>	16-24
Baled Tobacco	drugstore beetle, cigarette beetle, tobacco beetle, tobacco moth		2-3 <sup>2</sup>	48-72
			4 <sup>2</sup>	4
Baled Cotton	pink bollworm, boll weevil		3 <sup>2</sup>	16-24
			4 <sup>2</sup>	2

<sup>1</sup> At temperatures below 60°F, increase the dosage by 1/2 pound per 1,000 cu. ft. for every 10°F drop in temperature or use an approved procedure to heat the fumigant.  
Do not fumigate when temperature is below 40°F.

<sup>2</sup> For dwellings, do not use methyl bromide formulations containing 2% or more chloropicrin.

<sup>3</sup> Atmospheric

<sup>4</sup> Vacuum Chamber (25-27") Remove food and feed commodities before fumigating dwellings.

Warning: Tires may off-gas for 2 to 4 days. During this period, gas levels may exceed 5 ppm. Tires must be free of water during fumigation

b/b