

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Soil Chemicals Corporation
P.O. Box 782
Hollister, CA 95024

JUL 10 1992

Attn: Tom Duafala, Ph.D.

Subject: Revised Labeling for Aeration and Reentry
Methyl Bromide 98%
EPA Registration No. 8536-19

Your labeling package revised in accordance with your company's May 18, 1992 letter of commitment has been reviewed and the following comments apply.

Product Labeling

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable subject to the comments listed below. A stamped copy is enclosed for you records. Two copies of the finished labeling must be submitted to EPA before you distribute or sell the product. All products distributed or sold after August 1, 1992 must contain the revisions detailed in this letter.

1. On page one of the draft label, in the middle column under the heading "General Precautions":

- Expand the first sentence under the Aeration and Reentry" statement to read: "... below 5ppm (20mg/cu.m) and below 3ppm (12 mg/cu.m) for residential or commercial structures."

- Add an item #3: "For residential and commercial structural fumigations, specific USEPA instructions as detailed elsewhere in this product label and supplemental manual must be strictly followed."

2. On page two of the submitted draft label, in the left hand column, under the "General Instructions" heading:

- Revise "I. Space Fumigation Directions" to read: "I. Space And Structural Fumigation Directions".

- Expand the last sentence in item #5 to read: "... below 5ppm or below 3ppm for residential or commercial structures."

CONCURRENCES

SYMBOL	H2504C						
SURNAME	Tom Duafala						
DATE	JUL 10 1992						

- Change the heading of item #E to read: "Residential and Commercial Structural Fumigation (Including Warehouses and Food Plants):".

3. In the second column on page 2, revise the heading in the second statement to read: "AERATION AND REENTRY FOR RESIDENTIAL OR COMMERCIAL STRUCTURES".

4. All products distributed or sold by the registrant after August 1, 1992, and distributed or sold by any other person after September 1, 1992 must bear the approved labeling revised in accordance with EPA's comments. Distribution or sale of methyl bromide pesticide products for commercial or residential structural fumigation after these dates without the revised labeling will be a violation of FIFRA §12(a)(1)(E).

Additionally, the following conditions, as set forth in your May 18, 1992 letter of commitment, have been added to the above referenced registration:

1. Soil Chemicals Corporation will notify all its customers by certified mail that distribution or sale methyl bromide pesticide products bearing EPA Registration No. 8536-19, for residential or commercial structural fumigation will be prohibited after September 1, 1992 unless the product's labeling includes the July 1992 revised use directions. Such notification will include a copy of the approved revised labeling. Soil Chemicals Corporation will keep a copy of each notification and return receipt for two (2) years.

2. Soil Chemicals Corporation will offer to relabel methyl bromide pesticide products for its distributors, and if the distributors accept the offer, Soil Chemicals Corporation will relabel such products.

3. All products bearing EPA Registration No. 8536-19 distributed or sold by registrant after August 1, 1992 will bear the July 1992 revisions concerning aeration and reentry, and the fact sheet for commercial and residential structural fumigation.

If you should have any question concerning this letter, you may call Robert Travaglini on (703) 305-6909.

Sincerely,

R. G. Douglas

Ruth G. Douglas
Product Manager (32)
Antimicrobial Program Branch
Registration Division (H7504C)

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS
AND DOMESTIC ANIMALS:

DANGER

EXTREMELY HAZARDOUS LIQUID AND
VAPOR UNDER PRESSURE.

INHALATION MAY BE FATAL OR CAUSE
SERIOUS ACUTE ILLNESS OR DELAYED
LUNG OR NERVOUS SYSTEM INJURY.

DO NOT BREATHE VAPORS.

LIQUID OR EXCESSIVE 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
ODORANT. CHLOROPICRIN MAY BE IRRITATING TO THE
UPPER RESPIRATORY TRACT, AND EVEN AT LOW LEVELS
CAN CAUSE PAINFUL IRRITATION TO THE EYES, PRODUC-
ING TEARING. IF THESE SYMPTOMS OCCUR, LEAVE THE
FUMIGATION AREA IMMEDIATELY.

**OBSERVE THE FOLLOWING
PRECAUTIONS:**

GENERAL PRECAUTIONS

1. Do not get in eyes, on skin, or on clothing.
2. Do not spill or discharge contents outside of areas confined for treatment.
3. Comply with all local regulations and ordinances.
4. It is advisable to supply your physician with information on Methyl Bromide. Literature is available from your dealer or distributor.
5. Obtain medical assistance at once in case of illness after exposure, and do not allow conditions which could accidentally cause further exposure until recovery is complete. (See Note to Physician.)

RESPIRATORY PROTECTION:

If the concentration of methyl bromide in the working area, as measured by a direct-reading detector device (such as a Draeger gas detector) does not exceed 5 ppm (20 mg/cu.m), no respiratory protection is required. If this concentration is exceeded at any time, all persons in the fumigation area must wear protective clothing and a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator (such as a U.S. Divers' Survivair or comparable device).

Under normal soil fumigation conditions, the concentration of methyl bromide in the working area will not generally exceed 5 ppm as a time-weighted average and no respiratory protection is required. However, there is the possibility of a spill or leak during soil fumigation. Therefore a SCBA or combination air-supplied/SCBA respirator must be available and will be required for entry into an affected area in the event of a leak or spill.

CLOTHING PRECAUTIONS:

1. Wear loose clothing and socks that are cleaned after each wearing. Do not wear jewelry, gloves, or tight clothing when handling. Methyl bromide is heavier than air and may be trapped inside clothing and cause skin injury. If full-face respiratory protection is not required, wear goggles or full face shield for eye protection when handling liquid.
2. Following application, immediately remove clothing, shoes and socks. Do not reuse contaminated clothing or shoes until thoroughly cleaned and aerated. Contaminated clothing cannot be adequately decontaminated.
3. Do not wear gloves of any type or rubber protective clothing or footwear.
4. If liquid fumigant splashes or spills on your face, wipe them at once, as fumes will be an intolerable source of irritation.

WARNING SIGNS: Structural fumigation

1. 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 INGRESAR."
 - (3) The date of fumigation.
 - (4) Name of fumigant used.
 - (5) Name, address and telephone number of the applicator.
2. Do not remove a placard until the fumigated area is completely airtight. To determine whether airtightness is complete, each fumigated area must be monitored and shown to contain less than 2 ppm methyl bromide. If less than 1 ppm methyl bromide is detected, the placard may be removed.
3. Placards must be purchased with the applicator. Warning signs are available from your applicator.

SPILL OR LEAK PROCEDURE:

1. Evaluate the hazard area and area of the spill. If the concentration of methyl bromide is 5 ppm or less, no respiratory protection is required. If the concentration is greater than 5 ppm, all persons in the affected area must wear protective clothing and a NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirator. Allow spill to evaporate. Do not use water to clean up spill area. Do not touch or breathe vapors until the area is free of methyl bromide. Methyl bromide is determined to be less than 5 ppm when the reading on the detector is 5 ppm or less.
2. Contaminated soil, water, and other materials should be placed in a leak-resistant container. Do not allow these materials to be transported to a residential area.

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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.

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**METHYL BROMIDE 98%
FOR USE ONLY BY PROFESSIONAL FUMIGATORS**

ACTIVE INGREDIENTS:	
METHYL BROMIDE	98.00%
INERT INGREDIENTS:	
CHLOROPICRIN	2.00%
TOTAL	100.00%

This product weighs 14.4 pounds per gallon.



Soil
Chemicals
Corporation
PRODUCTS

P.O. BOX 782 • HOLLISTER, CA 95024

E.P.A. EST. 8536-CA-1,2,3,4
E.P.A. REG. NO. 8536-19

NET CONTENTS LBS.

KEEP OUT OF REACH OF CHILDREN

DANGER



PELIGRO

POISON

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

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

**STATEMENT OF PRACTICAL
TREATMENT**

IF INHALED: Get exposed person to fresh air. Keep warm. Make sure person can breathe freely. If breathing has stopped, give artificial respiration. Give oxygen if needed. Do not give anything by mouth to any unconscious person. Seek medical attention.

IF ON SKIN: Immediately remove contaminated clothing, shoes, and other items covering the skin. Wash contaminated skin area thoroughly with soap and water.

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes.

NOTE TO PHYSICIAN: Symptoms of acute exposure are dizziness, headache, nausea and vomiting, weakness, and collapse. Lung edema may develop 2-3 days after exposure, accompanied by coughing and sputum. These effects are the usual cause of death. Prolonged overexposure can result in blurred vision, staggering gait, and mental imbalance, with probable recovery after a period of no exposure. Flood bromide levels suggest the occurrence, but not the degree, of exposure. Treatment is symptomatic.

See Side Panel For Additional Precautionary Statements.

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PRECAUTIONS STRUCTURAL, TRANSPORTATION, OR SPACE FUMIGATION USE

GENERAL PRECAUTIONS:

1. Keep animals, children, and unauthorized people away from area under treatment until area is certified free of methyl bromide (See Aeration Statement).
2. When used for fumigation of enclosed spaces (houses and other structures, warehouses, vaults, showbars, greenhouses, trucks, vans, boxcars, 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 venting is conducted remotely (outside the area being fumigated).
3. Do not fumigate with this product when the temperature is below 40 degrees F.
4. Whenever possible, apply methyl bromide from outside of structure or car being fumigated. Make sure the fumigated area is properly sealed and posted. Do not move trucks, trailers, or vans during fumigation. They must be completely aerated before movement is allowed.

AERATION AND REENTRY:

1. After fumigation, treated areas must be aerated until the level of methyl bromide is below 5 ppm (20 mg/cu.m).
2. Do not allow entry into the treated area by any person before this time unless loose clothing and a respiratory protection device (SCBA or combination air-supplied/SCBA) is worn.

PRECAUTIONS SOIL FUMIGATION USE

PRIOR TO FUMIGATION:

1. Comply with all local regulations and ordinances. Obtain an application permit from Agricultural Regulatory Agencies as required.
2. Never fumigate alone. It is imperative always to have an assistant and proper protective equipment in case of accidents.
3. Drivers of application equipment must advise other workers of all precautions and procedures. In addition, drivers must instruct their helpers in the mechanical operation of the tractor and how to safely work with the tractor and driver while fumigating.
4. Handle this fumigant in the open, with the operator "up wind" from the container where there is good ventilation.
5. Check fumigant pressure system for leaks before beginning operation.
6. Two trained persons must be present during introduction of the fumigant.
7. 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 of additional water must be available from the service truck. This water must be potable and in containers marked "Fumigation water not to be used for drinking."
8. Field should be reasonably free of trash before starting the fumigation.

DURING FUMIGATION:

1. This fumigant should not be applied when there is an atmospheric inversion. Since uncomfortable concentrations of chloropicrin may drift to nearby areas, immediately cover treated area with plastic tarpaulin for a minimum of 48 hours when the injection depth is less than 10".
2. Do not lift injection shanks to turn at the end of a pass until fumigant has drained from system following closure of shutoff valve.
3. If trash is inadvertently pulled by the shanks to the ends of the field when fumigating, it must be covered by lifting the shanks, then covering the trash with polyethylene film before making the turn for the next pass.
4. When changing the cylinders, be certain they are turned off and fumigant system is not under pressure. Do not open the system when there are people or structures downwind where exposures above the permissible exposure levels could occur.

FOLLOWING FUMIGATION:

1. Post all treated areas with warning signs, available from your dealer or representative.
2. No children, unauthorized people, or animals should be in the fumigation area for 48 hours.
3. When tarpaulin is used, two trained persons must be present during removal of the tarpaulin.

SPILL AND LEAK PROCEDURE:

1. In case of a rupture of hose or fitting while applying fumigant, immediately stop tractor and motor. Evacuate immediate area of spill or leak. Use SCBA or combination air-supplied/SCBA respirator for entry into affected area to correct the problem. Approach from upwind to make necessary repairs.
2. Do not reenter area without respiratory protection until spill has been corrected or leak has been fixed.

NOTE CAREFULLY

Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy rates of fertilizer and fumigant are applied to soils that are either cold, wet, acid, or high in organic matter. To avoid injury to plant roots, fertilize as indicated by soil tests made after fumigation. To avoid ammonia injury and/or nitrate starvation to crops, avoid using fertilizers containing ammonia salts and use only fertilizers containing nitrates until after the crop is well established and the soil temperature is above 45 degrees F. Liming highly acid soils before fumigation stimulates nitrification and reduces the possibility of ammonia toxicity.

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ENVIRONMENTAL HAZARD

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 effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

For space fumigation use, monitor area immediately surrounding the fumigation site with a halide detector during exposure and aeration periods to establish that dangerous levels of the fumigant are not present (see Variation Statement for halide detector use). The high volatility of the fumigant permits it to be vented from space being fumigated and to dissipate rapidly with no hazard to surrounding areas with correct monitoring.

CHEMICAL HAZARD

Methyl bromide is practically nonflammable. There is no danger from fire or explosion in use concentrations. However, flame can change the chemical to produce some corrosive damage to items in the space being fumigated. Pilot lights and glowing wire heaters should be turned off.

Do not apply gas directly to metal surfaces because of possible corrosive effect on certain metals. Do not use containers or application equipment made of magnesium, aluminum, or their alloys. The following materials can develop an undesirable odor when encountered in structural fumigation and should be removed from the space being fumigated:

1. Foodstuffs: (a) Iodized salt; (b) Full-fat soy flour; (c) Any kinds of materials that contain reactive sulfur compounds, such as some soap powders, some baking sodas, and some salt blocks used for cattle licks.
2. Certain rubber goods: (a) Sponge rubber; (b) Foam rubber, as in rug padding, pillows, cushions, and mattresses; (c) Rubber stamps and other similar forms of reclaimed rubber.
3. Furs, horsehair, and pillows (especially feather pillows).
4. Leather goods (particularly white kid or any other leather goods tanned with sulfur processes).
5. Woolsens (extreme caution should be used in the fumigation of any angora woolsens, and some adverse effect has been noted on the fumigation of woolen suits, coats, blankets, hand-knit woolen socks, sweaters, shawls and woolen yarn).
6. Viscose rayons (these rayons processed or manufactured by a process in which carbon disulfide is used).
7. Paper: (a) Silver-polishing papers; (b) Certain writing papers cured by sulphide processes; (c) Carbonsens paper or blueprints.
8. Photographic chemicals as used in photo processing darkrooms (does not include camera film).
9. Cinder blocks, or sized concrete which occasionally picks up odors.
10. Any materials that may contain reactive sulfur compounds. THESE PRODUCTS MAY HINDER EFFECTIVENESS OF THE FUMIGANT: Charcoal materials (Charcoal absorbs the methyl bromide, reducing the effective concentration and contaminating the charcoal).
11. If there is a question whether a material may develop an odor, a test fumigation may be run with a small quantity of the material.

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DIRECTIONS FOR USE

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

STORAGE AND DISPOSAL

STORAGE AND HANDLING:

Store in dry, cool, well-ventilated area under lock and key. Protect as a pesticide storage area. Do not contaminate water, food, or feed by storage. Persons moving or handling containers should wear protective clothing. Open container only in a well-ventilated area wearing protective clothing, and respiratory protection if necessary. Store cylinders upright, secured to a rack or wall to prevent tipping. 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, forklift 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 onto valve outlet, and replace protection bonnet before returning to shipper. Only the registrant is authorized to refill cylinders. Do not use cylinders for any other purpose. Follow registrant's instructions for return of empty or partially empty cylinder.

RETURN OF CYLINDERS:

Cylinders are the property of:

Trical	Trical
8770 Highway 25	1029 Railroad Street
Hollister, CA 95023	Corona, CA 91720

and should be returned promptly by collect auto freight. Do not ship cylinders without safety caps or valve protection bonnets. When a cylinder is partially full and there is no further requirement for the product, contact Trical for return instructions.

SHIPPING:

This insectant is classified in the U.S. Department of Transportation Hazardous Materials Regulations as Methyl Bromide Liquid or Methyl Bromide and Nonflammable, Non-liquefied compressed gas mixture, liquid, class "B": poison (inhalation hazard), and no exemptions from specifications, packaging, marking, or labeling are allowed. Describe empty cylinders as having last contained Methyl Bromide Liquid or Methyl Bromide and Nonflammable, Non-liquefied compressed gas mixture, liquid (inhalation hazard). Do not ship with foods, feeds, or clothing.

DISPOSAL:

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

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REGISTERED
MADE IN U.S.A.

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

85X-19

GENERAL INSTRUCTIONS

THIS FUMIGANT IS A HIGHLY DANGEROUS MATERIAL AND SHOULD BE USED ONLY BY INDIVIDUALS TRAINED IN ITS PROPER USE. BEFORE USING, READ AND FOLLOW ALL LABEL PRECAUTIONS AND DIRECTIONS, INCLUDING THE ATTACHED SUPPLEMENT. ALL PERSONS WORKING WITH THIS FUMIGANT MUST BE KNOWLEDGEABLE ABOUT THE HAZARDS, AND TRAINED IN THE USE OF SHIPPED RESPIRATORY EQUIPMENT AND DETECTOR DEVICES, DECONTAMINATION PROCEDURES, AND PROPER USE OF THE FUMIGANT.

I. SPACE FUMIGATION DIRECTIONS

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 ENTAR.
3. The date of fumigation.
4. Name of fumigant used.
5. Name, address, and telephone number of the applicator.

Any person who transfers a treated commodity to another site without aeration must ensure that the new site is placarded until the commodity is aerated below the threshold concentration.

Only a certified applicator may remove placards and only when the concentration of methyl bromide in the treated site or commodity is below 5 ppm.

A. CHAMBER FUMIGATION:

Before introducing the fumigant, place warning signs on all doors. Two people should be present when introducing the fumigant and opening the door after fumigation. All controls should be outside the chamber.

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 the appropriate table. Vaporize the liquid in the chamber by spraying 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.

At the end of the exposure period, aerate by opening the exhaust port, turning on the exhaust fan and opening the chamber door slightly to permit fresh air to enter. NOTE: Always check completeness of aeration with detection devices before allowing unprotected persons to enter the chamber.

B. VACUUM CHAMBER FUMIGATION:

1. Place material to be fumigated in the steel chamber and draw the desired vacuum.
2. Release fumigant into the chamber (usually through a heating unit to ensure complete vaporization).
3. See Table 1 for specific commodities, rate of application and exposure time.
4. At the end of the exposure time, release the vacuum and charge the air in the chamber at least two times. A vacuum of 15 in. Hg. should be drawn for this purpose.

C. TRUCK, VAN, OR TRAILER FUMIGATION:

1. Seal the off-side door, ventilators and other openings from the inside.
2. Use a closed-ended, perforated tube to distribute fumigant evenly. Secure the tube to the ceiling so the perforations direct fumigant toward the floor and prevent it from spraying the ceiling. Always apply fumigant from outside the truck, van, or trailer.
3. Seal the door and place warning signs on both sides of the truck, van or trailer. Fumigated areas must be placarded on all entrances. Do not remove warning signs until the fumigated area is completely aerated and safe for entry, as indicated by a suitable detector.
4. Do not fumigate while strong winds are blowing.
5. Consult Table 1 for specific commodities, rate of application, and exposure time.
6. After 12 to 18 hours, open the unit and aerate 1 to 1 1/2 hours. The truck, van or trailer may then be revealed for shipment. DO NOT MOVE TRUCKS, VANS OR TRAILERS DURING FUMIGATION. THEY MUST BE AERATED TO BELOW 5 PPM BEFORE MOVEMENT IS ALLOWED.
7. Advise consignee to check the truck, van, or trailer for proper aeration on arrival.

D. RAILROAD CAR FUMIGATION:

1. Seal the off-side door, ventilators and other openings from the inside.
2. Use a closed-ended perforated tube to distribute fumigant evenly. Secure the tube to the ceiling so the perforations direct fumigant toward the floor and prevent it from spraying the ceiling. Always apply fumigant from outside the car.
3. Seal the door and place warning signs on both sides of the car. Fumigated areas must be placarded on all entrances with warning signs. Do not remove warning signs until the fumigated area is completely aerated and safe for entry, as indicated by a suitable detector.
4. Do not fumigate while strong winds are blowing.
5. Consult Table 1 for rate of application and exposure time.
6. After 12 to 18 hours, open the unit and aerate for 1 to 1 1/2 hours. The car may then be revealed for shipment. DO NOT MOVE RAILCARS DURING FUMIGATION. THEY MUST BE AERATED TO BELOW 5 PPM BEFORE MOVEMENT IS ALLOWED.
7. Advise consignee to check the car for proper aeration on arrival.

E. WAREHOUSE, STRUCTURAL, AND FOOD PLANT FUMIGATION:

Check with appropriate municipal and county authorities before fumigating to be completely familiar with local regulations. Ordinances may require witnesses, padlocks, or warning posters during and after fumigation and/or notification of the nearest fire station. Notify anyone who would normally be in the area before fumigation.

1. Remove food and food commodities before fumigation.
2. See Table 1 for rate of application and pests controlled.
3. Seal the building by closing all external openings, including roof ventilators, chimneys, drain pipes, tunnels, etc. Fumigated areas must be placarded on all entrances with signs containing at least the signal word DANGER and the Skull and Crossbones, and the words "Area under fumigation, do not enter until completely aerated" the date of fumigation, name of fumigant used, emergency telephone number for contact, and the name and address of the fumigator. Do not remove warning signs until the fumigated area is completely aerated and safe for entry, as indicated by a suitable detector.
4. Seal all floor and roof cracks and around bases.
5. Where possible, care to seal partitions to adjacent storage or work areas in the building. When using tarps, the soil surface should be covered by heavy sand or water soaked or by trenching and covering with soil or sand. Seal the surface of the tarp in the trench and covering with soil or sand. Seal surfaces should be pre-treated if necessary.
6. Doors and windows on milling machinery should be opened prior to fumigation. These include elevator cabs, conveyor lids, settling chamber doors, dust trunks, and any other openings that will allow fumigant into the equipment.
7. Clear adjoining buildings sharing a common wall. If they cannot be cleared, check frequently with an approved detector to insure the safety of the occupants.

F. TARPULIN FUMIGATION

Cracked material should be placed on a concrete floor or other smooth surface. If the floor is not airtight, it may be made airtight by using Bitol Proof Paper, tar paper, or additional tarpaulin or polyethylene sheeting on it. Center 4 or 5 sacks on top of the area to provide space for the expansion. Place an evaporating fan with a forced applicator tube in the center of the expansion area. Seal the area with a gas tight tarpaulin or polyethylene sheeting of equal or greater thickness. Contact the fumigator for details. Release the fumigant at the rate and exposure time indicated in Table 1. Fumigation is complete, partially remove the tarpaulin and aerate for 12 to 18 minutes. This allows partial aeration before the material is fully revealed.

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G. SHIPBOARD, IN-TRANSIT SHIP, AND SHIPHOLD FUMIGATION:

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

FUMIGATION 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 will not be fumigated unless all crew members are removed from the vessel. The crew members will 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 relating to the use of gas masks or respirators for the fumigator, including: 1) NIOSH/MSHA approved self-contained breathing apparatus (SCBA); 2) 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 sealed vessel leaves port or the cargo is airtight, the person in charge of the fumigation shall insure that a qualified person using gas or vapor 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 shall inform the master of the vessel, or his representative, of the leakage so that corrective action can be taken.
4. If the fumigation is not completed and the vessel airtight before the sealed vessel leaves port, the person in charge of the vessel shall insure that: 1) at least two NIOSH/MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied/SCBA respirators; 2) one gas or vapor detection device; and 3) a person qualified in their operation be on board the vessel during the voyage.
 - Using the appropriate gas detection equipment, monitor spaces adjacent to areas containing fumigated cargo and all regularly occupied areas for fumigant leakage. If leakage 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 surfaces for fumigant concentration, using appropriate gas detection and personal protection equipment. Do not enter without respiratory protection, unless fumigation concentrations are at or below 5 ppm, as indicated by a suitable detector.
5. See Table I for specific commodities, rate of application, and exposure time.

AERATION AND REENTRY:

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; (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 attic or 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 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 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 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. For structures with attic, an aeration fan must be inserted in the attic, sealed in a window or other exterior opening, and with the fan(s) operating so that air inside the structure is exhausted outside the structure. The aeration fan(s) 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 fan(s) 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. Measurements must be taken from an interior electrical outlet by inserting the detection device in the ground receptacle, or from other enclosed space within 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, 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.

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...with fumigants in relation to the results...
 (1) and (2) above, the window cover, and interior...
 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 hour...
 for natural ventilation or an additional 12 hours for mechanical...
 ventilation. 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.

LEAKAGE GAS DETECTOR, METHYL BROMIDE DETECTOR: (Hand Pump and Detector)
 Methyl bromide may be detected at the leakage level of 3 ppm.
 Detectors are available from your dealer or distributor.

STRUCTURAL FUMIGATION FACT SHEET
 (See Supplemental Manual SFB-1 For Example of 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 Fumigation 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 document 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 owner and occupants of property to be fumigated with methyl bromide. You will also be given a copy of this fact sheet to keep.

II. SOIL FUMIGATION DIRECTIONS

WEED CONTROLLER: nematodes, including root-knot spp., Tylenchus, Ditylenchus, Heterodera, Criconemidae, and Paratylenchus.
SOIL BORN FUNGI, INCLUDING: Pythium, Rhizoctonia, Phytophthora, Sclerotinia, Sclerotium, Armillaria, and the clubroot organism, Plasmodiophora.

WEEDS AND WEED SEEDS: Seeds, roots, stems, and bulbs of broadleaf weeds and grasses including quackgrass, annual bluegrass, bromegrass, common lambsquarters, sandbush, and bermudagrass. Not effective against yellow, dodder, and some species of algar.

INSECTS IN THE SOIL AT THE TIME OF TREATMENT INCLUDING: wireworm, June beetle larvae, white grub, and garden symphyla.

PRETREATMENT SOIL PREPARATION:
 Plow or rip the soil to the depth to which effective treatment is required. The soil should be worked well from the ends of large lumps, besides from previous crops should be worked into the soil to allow for decomposition prior to fumigation. Soil moisture should be optimum for seed germination. Coarse texture soils can be fumigated with higher moisture content than fine textured soils. For best results, soil should be kept moist for at least 7-10 days prior to treatment. Do not fumigate if the soil temperature is below 50°F. For best results, fumigate when soil temperature is 60°F at the depth of 6 inches.

NOTE: Fumigation may temporarily reduce nitrification in the soil thus increasing levels of ammonium, nitrogen, and nitrite anionic salts to potentially phytotoxic levels. Accumulation of ammonium is most likely to occur when minimum rates of fumigant and fertilizer are applied to soils that are acidic, wet, cold, or high in organic matter. Apply only fertilizer containing at least 20% nitrate until the crop is well established and soil temperature is above 65°F then fertilize as indicated by soil test. To stimulate nitrification and to reduce possible ammonium toxicity, acid soils should be limed before fumigation.

FIELD FUMIGATION:
 For overall application of Methyl Bromide 99%, inject the product with a chisel type applicator having the chisels spaced no more than 12 inches apart and injecting the fumigant to a depth of 4-6 inches below the soil surface. The soil surface must be worked immediately after treatment with simultaneous film laying equipment or by sealing with a roller or mulcher and covered within 20 minutes with polyethylene 7.5 or other suitable cover. Consult Table II for proper rate of application. For row applications use the same rate of application per acre as suggested in Table II. The actual amount used per acre, however, will be proportional to the actual area treated.

RAISED TARP FUMIGATION METHOD:
 Support the center of the cover to provide a sealed gas dome. Inflated plastic bags, crumpled fertilizer bags, burlap bags stuffed lightly with hay or straw, inverted washers, flowerpots or bottles placed in the soil may be used for support.
 Evaporating pans are essential for the volatilization and uniform dispersion of fumigant. Shallow pans or basins made of plastic or tin are satisfactory for this purpose.

- Use one evaporating pan for each 200 to 400 square feet of area.
- Place one end of each polyethylene tube into an evaporating pan with legs or a suitable weight. This insures that the liquid will be drawn into the evaporating pan.
- Extend the free ends of the polyethylene tubes outside of the area to be covered.
- After the supports and tubing are in place, cover the area to be fumigated with a gas proof cover of polyethylene or coated fabric film.
- Seal the outside edges with 4 to 10 inches of soil. Tamp the soil down at edges will not pull loose.
- Attach a polyethylene tube to the cylinder valve outlet and open the cylinder dispenser or scale to cover small amounts.

HOT GAS METHOD:
 The hot gas method consists of using a commercially manufactured hot gas burner or a upper soil burner in which the soil is heated to vaporize the fumigant before introduction. This method may be useful where large amounts of fumigant are required and rapid vaporization is advantageous.

NOTE: Use one to two pounds of Methyl Bromide 99% per 100 square feet for an exposure time of 24 hours when soil temperature is 60°F or higher. For soil temperatures below 60°F, apply one to two pounds per 100 square feet when soil temperature is between 50°F and 60°F. Extend the exposure time to 48 hours. Do not treat when soil temperature is below 50°F.

A. TREE SITE FUMIGATION DIRECTIONS:
 (For Use in Florida Only)

...of resistant fumigation of citrus soil for control of...
 nematodes and citrus root-knot in Florida sandy soils. Trees which...
 are planted in this treated soil will not bear harvestable fruit for a...
 period of at least 12 months. Apply with special spread 17 inches...
 apart to a depth of 4 to 6 inches. Soil fumigant with a draw...
 applicator following immediately behind chisel. Apply Methyl Bromide...
 (B) at the rate of 1 pound per 100 square feet. Immediately cover with...
 a 6 mil tarp and expose to fumigation for 24 hours. This treatment...
 will control disease to a depth of 6 feet. Remove tarp and expose 2...
 weeks before setting transplants in treated area.



B. SPECIAL INSTRUCTIONS FOR THE CONTROL OF ARMILLARIA MELLEA (OAK ROOT FUNGUS) ON DECIDUOUS FRUITS AND NUTS, CITRUS, AND VINEYARDS

PRETREATMENT SOIL PREPARATION:
To obtain the maximum control of *Armillaria mellea* with Methyl Bromide 98% soil must be dry to a depth requiring treatment. This can be accomplished by: (a) planting underdrains in the spring, irrigating until the grass has established itself, then withholding further irrigation; (b) naturally, by allowing plants to grow without irrigation, then soil is dry, cut and remove grass, plants and debris. Rip soil to a depth of 18 inches and disc to smoothness.

DOSEAGE AND METHOD OF APPLICATION:
This is a preplant or replant treatment. Crops which are planted in this treated soil will not bear harvestable fruit for a period of at least 24 months. Methods and rate of application are as follows:

1. Non-Tarp Chisel Application (not for use in California): After the soil has been properly prepared, inject 400-570 pounds of Methyl Bromide 98% per acre by chisel application with chisels spaced up to 66 inches apart to a depth of 24-30 inches. In the row strip, treatments may be made by using a single chisel. Chisels should have a wing welded on the back 2-4" above the chemical outlet to partially break the chisel mark. To fill in the chisel mark and seal the surface, disc and ringroll immediately after fumigant injection. Be sure that the disc and ringroll cover an area sufficiently beyond the chisel lines to effect a good seal.
2. Tarp Chisel Application: After the soil has been properly prepared, apply 400-570 pounds of fumigant per acre by chisels spaced up to 66 inches apart, as described above, and cover with adequate polyethylene film seal.
3. Deep Injection Sugar-Probe Treatment: Use one pound of Methyl Bromide 98% in light soils (two pounds in fine-textured soils) to a depth of 24 inches or more below the soil surface. Assume one injection site per 100 square feet (on a 10 ft. x 10 ft. grid pattern) with the injection in the center of the area to be treated.

HERBICIDE AND AERATION PERIODS:

1. To insure the proper time-concentration relationship to control oak root fungus for chisel applications, we recommend a seven day exposure period before removing the polyethylene film cover, and a one day interval with Deep Injection Sugar-Probe Treatment after which planting or replanting of trees, vines, or other deep-rooted crops may begin 14 days later.
2. Methyl Bromide 98% will not usually control weed seeds under very dry conditions. However, some control may be observed on deep-rooted perennials such as morningglory (bindweed) and rhizomes of Johnsongrass.

C. NON-TARP NEMATODE CONTROL:

For control of nematodes including *Helicoverpa* spp., *Hippineae* spp., *Cricoidae*, *Pratylenchus*, and *Paratylenchus* on deciduous fruits, nuts, citrus and vineyards.

PRETREATMENT SOIL PREPARATION:
Flow or rip the soil to the depth to which effective treatment is required. The soil should be worked until free of clods or large lumps and residue from previous crops should be worked into the soil to allow for decomposition prior to fumigation. To insure maximum fumigant penetration the soil at the point of injection should not contain more than 5-15% moisture depending on soil type. However, to improve sealing, the soil surface may be moistened by means of a sprinkler application of 1/4-1/2 inch of water prior to final preparation and application. For best results, fumigate when the soil temperature is above 50° F at the depth of 6 inches. Do not fumigate when soil temperature is below 50° F.

DOSEAGE AND METHOD OF APPLICATION:
This is a preplant or replant treatment. Do not apply to soil where trees or vines will bear harvestable fruit within 24 months. A waiting period of at least 14 days should be observed between application and planting. Methods and rate of application are as follows:

1. Chisel Application: After the soil has been properly prepared inject 400-570 pounds of Methyl Bromide 98% per acre by chisel application with chisels spaced up to 66 inches apart to a depth of 18-24 inches. In the row strip, treatments may be made by using a single chisel. To fill in the chisel mark and seal the surface, disc and ringroll immediately after fumigant injection. Be sure that the disc and ringroll cover an area sufficiently beyond the chisel lines to effect a good seal.
2. Deep Injection Sugar-Probe Treatment: Use one pound of Methyl Bromide 98% per injection site in lighter soils; two pounds in fine textured soils. Use one injector site per 100 square feet (on a 10 ft. x 10 ft. grid pattern) with the injector in the center of the area to be treated. Rip or compact the soil at the point of injection.

Methyl Bromide 98% used without a tarp will not usually control weed seeds. However, some control may be observed on deep-rooted perennials such as morningglory (bindweed) and rhizomes of Johnsongrass.

D. POTTING MIX FUMIGATION DIRECTIONS:

Potting mixes including decomposed compost, bark, peat, and refuse can be fumigated with Methyl Bromide 98%. Fumigation should take place outdoors or in a well-ventilated area over free disposable plants or occupied buildings. The material to be treated should have a temperature of 60° F or above, be loose, and moist enough for good seed germination. To insure a good seal, pile the material to a depth of 18 inches or a concrete floor or on wet ground. Pile to a height of 3 feet high. Can also be treated providing perforations are made in the pile surface at one foot intervals to assist penetration. When the pile has been made, install supports to hold the pile a few inches above the floor surface to aid in proper fumigant distribution. Place the outlet of the distribution tube at 18 inches in diameter, spaced about 10 feet apart on the pile surface. Cover with a polyethylene sheeting or other seal covering material, or a sil, or green or blackness. Seal the edges by turning covering with water and or sand or by means of sand or stones. Introduce the fumigant into the distribution pipe as a liquid or vapor by the hot gas method. Consult Table II for proper dosage and exposure time. Aerate for 24-72 hours before planting.

Potting mixes in flats may also be treated. Arrange the flats in loose criss-cross stacks no more than 5 feet high. The cover and seal, as described above. Introduce the fumigant at the top end in the center of the stack into evaporating pans or by means of the hot gas method at a rate of 1 pound per 100 cubic feet or one injector site per 100 cubic feet of volume. Aerate for 24-48 hours before planting.

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**TABLE I
METHYL BROMIDE 98%
APPLICATION SUMMARY FOR
STRUCTURAL CONTROL AND OTHER SITES***

TREATMENT SITE	PESTS	RATE lbs/1000 cu. ft.	EXPOSURE TIME (hrs)
Warehouses (empty)	cockroaches, confused flour beetle, rice weevil, granary weevil, saw toothed grain beetle, rusty grain beetle, lesser grain borer, cadelle, khapra beetle, drugstore beetle, larder beetle, carpet beetle, coffee 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	1-3	24
Less than 100,000 cu. ft.		1-1 1/2	24
100,000 - 500,000 cu. ft.		1-1 1/2	24
500,000 - 1,000,000 cu. ft.		1-1 1/2	24
Over 1,000,000 cu. ft.		1	24
	rate and size	4-5 oz	12-18
Bags, Bins, and Crates (empty)	cockroaches, confused flour beetle, rice weevil, granary weevil, saw toothed grain beetle, rusty grain beetle, lesser grain borer, cadelle, khapra beetle, drugstore beetle, larder beetle, carpet beetle, coffee 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 1/2-2 (a) 2-3 (b)	24 2
	rate and size	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	1-2 (a) 2-3 (b)	24 2
Lumber and Wood Products	termites (drywood & dampwood), powder post beetle, round and flat headed borers, carpenter ants and bark beetles	1-2 (a) 2-3 (b)	24 2
Greenhouses (empty)	mealybugs, scale insects, mites	2	4
Mushroom houses (empty)	mushroom house mushroom flies	2	24
Poultry houses	poultry mites, bedbugs	2	24
Tobacco	drugstore beetle, cigarette beetle, tobacco moth	2-3 (a) 4 (b)	48-72 4
Saled Cotton	pink bollworm, boll weevil	3 (a) 4 (b)	24 2

* At temperatures below 50°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 50°F.
 - Precaution:
 - Lactus Crater (21-27)
 - Leave food and feed containers before fumigating dwellings.

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**TABLE II
METHYL BROMIDE 98%
SOIL FUMIGATION USES**

TREATMENT SITE	RATE lbs/A*	EXPOSURE TIME (hours)
Field soils to be planted to: Asparagus, cucumbers, cauliflower, eggplants, lettuce, mushrooms, radishes, soy beans, spinach, strawberries, strawberries, tobacco	180-240	24-48
Field soils to be planted to: Cucumbers, eggplants, radishes, soy beans, and spinach	400-870** 435-870***	24-48 24-48
Asparagus	180-435	24-48
Asparagus	180-435	24-48
Asparagus	180-240	24-48
Seed of transplants, beds, nurseries	180-435 872	24-48 24-48
Asparagus	1 lb/Cu Yd	24-48

* Rate should be based on soil and heavy clay soils
 ** Rate should be based on soil
 *** Rate should be based on soil

WARRANTY

NOTICE: Seller warrants that the product conforms to its chemical description and is suitable for the purposes stated on the label, when used in accordance with the directions under normal conditions of use. Seller does not warrant any other use or any of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. Express or implied, extends to the use of this product in accordance with the directions or under abnormal conditions. Seller shall not be liable for any loss or damage resulting from the use of this product in any manner not reasonably foreseeable to seller.

Supplemental Manual,

MB-1

ACCEPTED
with COMMENTS
in EPA Letter Dated:

JUL 10 1982

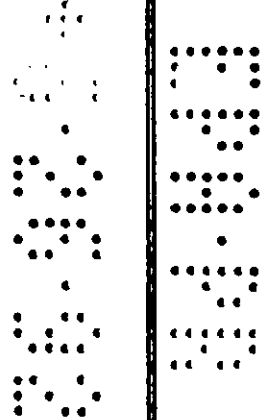
Under the Federal Insecticide,
Fungicide, and Rodenticide Act as
amended, by the pesticide
registered under EPA Reg. No.

8536-19

METHYL BROMIDE

SAFETY

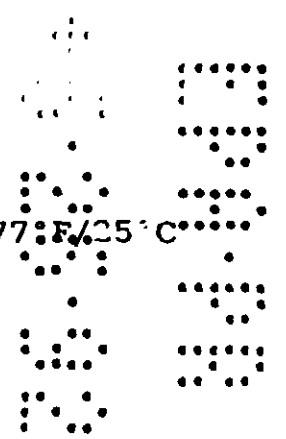
INFORMATION



PHYSICAL PROPERTIES

Methyl Bromide at ambient temperature is a colorless and odorless gas. It is a water white liquid below its boiling point. Commercially, Methyl Bromide is handled in liquified form under pressure.

PROPERTY	VALUE
Molecular Weight	94.94
Pounds per gallon, liquid	14.4 @ 0°C
Specific Gravity, Liquid	1.732 @ 32°F/0°C (H ₂ O = 1)
Percent Volatile	100% (by volume)
Boiling Point	38.4°F/3°C
Critical Temperature	194.00 °C
Refractive Index, n.	1.4432 @ -20°C
Vapor Pressure	1400 mmHg @ 68°F/20°C
Viscosity, cP.	0.397 @ 0°C
Flash Point	None
Flammable Limits (At S.T.P.).	Lel 10%, Uel 15% with high energy ignition source
Freezing Point	-94.1 °C
Autoignition Temperature	537 °C
Odor	None
Solubility in Water	1.34 gms/100 ml @ 77°F/25°C



HANDLING PRECAUTIONS TO AVOID SKIN CONTACT WITH METHYL BROMIDE

If carelessly handled, methyl bromide may be spilled on the skin surface. Since methyl bromide has a very low boiling point, very rapid evaporation takes place and within a few seconds the methyl bromide will entirely disappear from the surface of exposed skin. From such casual contacts, little or no difficulty need be anticipated. However if methyl bromide is spilled on clothing, gloves, or other materials covering the skin, such coverings may keep the methyl bromide in close and continuous contact with the skin. Since there is no particular sensation produced by such contact, methyl bromide may be maintained in contact with the skin for extended periods of time without an awareness that this has occurred.

Where methyl bromide has remained in contact with the skin for some time, a blister commonly forms which is not unlike the blisters resulting from thermal burns or severe chilling. Where blister formation has resulted from contact with methyl bromide, experience has shown that these seem to respond best to treatment when left intact. The blistered area is covered with a sterile petrolatum dressing which should be changed as required.

No one should be permitted to handle methyl bromide while wearing gloves, bandages, or occlusive dressing. Finger rings should be removed before handling the liquid product. Since methyl bromide will penetrate ordinary rubber gloves, these also should not be used. Where methyl bromide has been spilled on the clothing, such clothing should be removed immediately and thoroughly cleaned and aerated before being re-worn.

The results of brief skin contact by methyl bromide are mild, very simply treated, and accompanied by no serious after effects.

FOOD COMMODITIES

Methyl bromide has been used successfully for many years for the fumigations of a wide variety of commodities. The tolerances of various commodities for methyl bromide, however, vary considerably. Therefore, unless the tolerance of a given commodity for methyl bromide is known, consult Federal or State Experiment Station authorities or your dealer before fumigation is performed.

Precautions for the use of methyl bromide for fumigation of processed food and feedstuffs:

Overdosing and/or overexposure of any food or feedstuff commodity should be avoided. When the prior history is not known, or in those instances where a repeated fumigation is necessary, the commodity

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should be analyzed for bromide residues before fumigation to make certain the proposed treatment will not result in residues that will exceed the tolerances established by the E.P.A. Special care must be exercised to determine whether methyl bromide fumigation of edible commodities will not result in above-tolerance bromide residues.

DETECTION EQUIPMENT

Detection equipment is a valuable aide to the fumigator. It can be used to help determine the success of a fumigation as well as protect the fumigator from over-exposure. There are several types of detection equipment available. Of the equipment described here, only the detector tubes can be used to clear an area for re-entry.

THERMAL CONDUCTIVITY GAS DETECTORS

This instrumentation is excellent for periodic determination of interior gas concentrations from outside the building. They are not, however, sensitive enough to determine the health hazards presented by low concentrations of methyl bromide. For more complete information, consult the U.S.D.A., the instrument manufacturers, or your Pesticide dealer. Units are available from Gow-Mac Instrument Company, 100 Kings Road, Madison, New Jersey 07940, and the Robert K. Hassler Company, Box 177, Altadena, California 91001.

THE HALIDE GAS DETECTOR

The Halide Gas Detector, which operates with a gas flame, is the easiest and most useful means of determining the presence or absence of harmful concentrations of methyl bromide gas. The detector consists of a torch which heats a copper plate, and an air tube through which the air to be tested is passed over the hot copper plate. If air contains methyl bromide, a green or blue flame will be seen in the torch, depending on the concentration.

If used properly, it will help to eliminate some of the practical hazards to the fumigator, and detect excessive leaks in a building. Halide detectors are available from refrigeration supply houses and some hardware stores.

Please note that the Halide Gas Detector operates with an open flame and, therefore, can be a hazard where dust or other flammable materials are present. However, this type of detector can be used to determine whether areas in or around a mill are free from hazardous concentrations of the gas by simply drawing the air and gas from the building through 1/4" (.635cm) plastic or copper tubing to suitable outside areas where the use of this instrument is safe. For instance, areas in and around the top of a building can be checked from atop the roof, or gas from areas around the bottom of the building can be checked on the ground out-of-doors.

DETECTOR TUBES

This method uses a small hand held pump and methyl bromide detector tubes. Methyl bromide is drawn through small chemical reagent tubes in which the methyl bromide is decomposed by an oxidizing agent to liberate bromine. The bromine concentration is then indicated by intensity of color formed in reaction with o-tolidine. The detector tubes are capable of measuring methyl bromide concentrations of 2.5-500 ppm. Methyl bromide detector tubes and pumps listed below are available from safety supply distributors.

1. Gastex pump, part number F-2417534, detector tube #136.
2. Draeger pump, part number CH 304, detector tube #67-28211.
3. Matheson-Kitagawa pump, part number 8014K, detector tube #157Sb.

CONDITIONS OF EXPOSURE TO METHYL BROMIDE

Methyl bromide should be handled and applied only by individuals who are thoroughly trained in its proper use. The use of concentrations which vary from those recommended can result in injury to the user and/or damage to the commodities being fumigated.

Exposure of individuals to hazardous concentrations of methyl bromide can be avoided when using proper fumigation procedures. Under accidental conditions, however, such exposure may occur. Following are possible symptoms of methyl bromide exposure:

- Nausea and vomiting
- Dizziness or headache
- Profound weakness
- Slurred speech
- Blurring vision
- Staggering gait
- Difficult breathing
- Convulsions

At the first sign of any of the above symptoms, immediately get out of fumigation area and into the fresh air. It is advisable for the entire crew of men on a fumigation job, working under the same conditions, to stop immediately if one of their members becomes sick. This is advise based on the possibility that if one man is being over-exposed, they all are.

Take the affected operator to a physician, or call a physician immediately. Under no conditions should this operator re-enter a methyl bromide atmosphere until he has received the approval of a physician. Since there is a possibility that the other members of the crew have also been unnecessarily exposed to the gas, they too should refrain from re-entering the building. Another experienced crew should be called to complete the fumigation.

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SUGGESTIONS FOR ATTENDING PHYSICIAN

Overexposure to methyl bromide may produce serious effects on the central nervous system and it will also cause lung irritation. The resulting symptoms will be proportionate to the concentration of the material and the duration of the exposure.

1. Nausea and vomiting may require an antiemetic and it may be necessary to give it parenterally if vomiting is severe.
2. Cardiac embarrassment may result in hypotension and it may be necessary to use a vasopressor.
3. Respiratory embarrassment should be treated with oxygen and it may be necessary to use oxygen under pressure. Ethyl alcohol vapor added to the oxygen may be considered if there is pulmonary edema, and the use of bronchodilators may be necessary if there is broncho-constriction.
4. If respiration fails, artificial respiration should be immediately instituted, preferably by mouth-to-mouth method.
5. Quick acting barbiturates should be used to control excitement or convulsions.
6. Patient should be hospitalized for at least 48 hours and observed for late respiratory and central nervous system effects.

There is some evidence that severe pneumonia may react dramatically to the employment of corticosteroid medication. Experience to date seems to indicate that if the individual survives the more serious effects of acute exposure, his recovery in all probability will be complete but may require a considerable period of time, depending on the severity of the exposure. In case of chronic intoxication resulting from prolonged or repeated exposure, where lung involvement is not a factor, the primary effect of methyl bromide is on the nervous system.

Recovery from such effects can be expected to be slow but, in all probability, will be complete. Thus, the importance of early diagnosis and the cessation of exposure is emphasized.

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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.

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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 EPA.

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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 service, 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.

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 the 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

LABELING FOR END-USE PRODUCTS:

The label language for Fumigation of Residential and Commercial structures: Aeration and Reentry would be the same as for manufacturing-use products except the introductory paragraph concerning formulation into end-use products would be omitted.

