

20 MAY 1988

Mark H. Reddick
Reddick Fumigants
P.O. Box 391
Highway 64 West
Williamston, NC 27892

Subject: Methyl Bromide Registration Standard
BRO-MEAN C-33
EPA Registration No. 37733-6
BRO-MEAN C-0
EPA Registration No. 37733-7
BRO-MEAN SOL
EPA Registration No. 37733-8
Your Letter of February 29, 1986

Dear Mr. Reddick:

Your submission has been reviewed and found to be acceptable for the products listed above subject to the following comment.

The "Environmental Hazard" statement required for end-use products is the same as that required for manufacturing-use products. See page 22 of the Methyl Bromide Registration Standard for the appropriate language.

Enclosed for these products is stamped, approved labeling. Incorporate the comments noted in this letter and submit five copies of finished printed labeling for our records.

Sincerely,

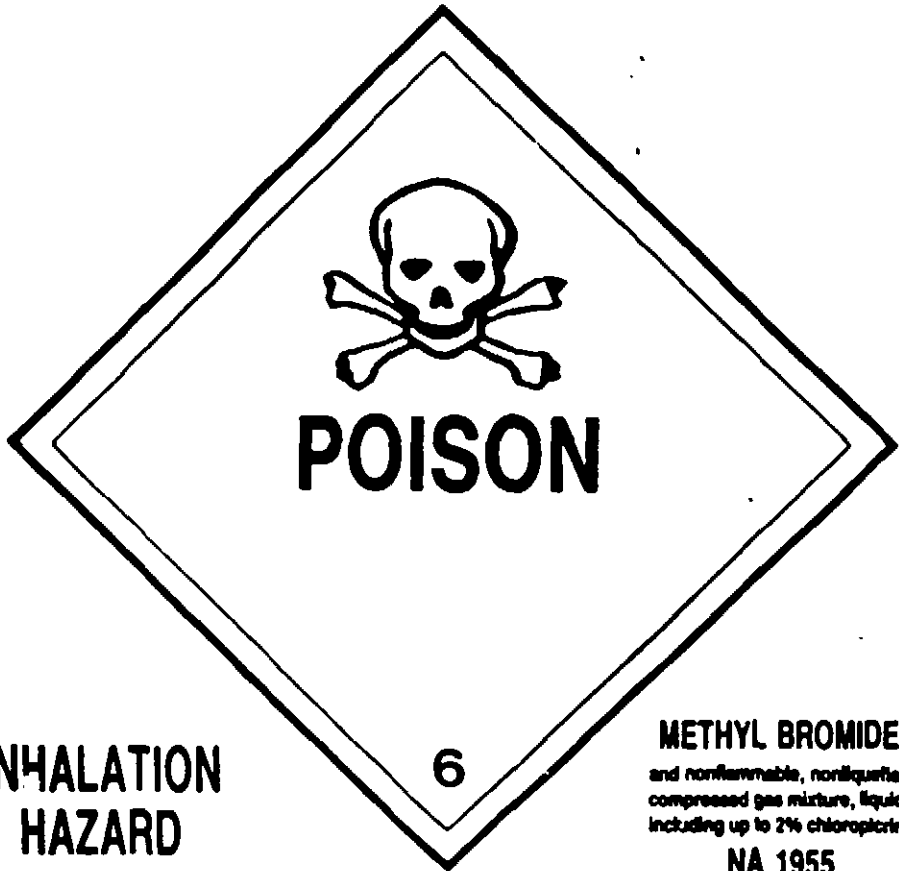
Jeff Kempter
Product Manager (32)
Disinfectants Branch
Registration Division (TS-767C)

TS-767C:DIS:WFrancis:wcf:Rm.711:557-7470:5-19-88

CONCURRENCES

SYMBOL							
SURNAME							
DATE							

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**INHALATION
HAZARD**

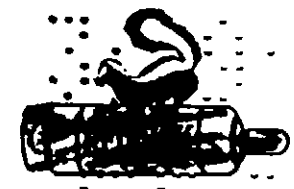
METHYL BROMIDE
and nonflammable, nonliquefied
compressed gas mixture, liquid,
including up to 2% chloropicrin
NA 1955

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, Reddick Fumigants, Inc. assumes no responsibility as to their accuracy nor for any loss due to excessive residues.

**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.



BRO-MEAN SOL
Preplant Soil Fumigant

ACTIVE INGREDIENTS:

Methyl Bromide	68.6%
Inert Ingredients	31.4%
Total	100.0%
This Product Weighs	10.5 lbs. Per Gallon

PRECAUCION AL USUARIO: Si usted no lee ingles, no usa este producto hasta que la etiqueta le haya sido explicada ampliamente
(TRANSLATION) TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you

**KEEP OUT OF REACH OF CHILDREN
POISON**
**DANGER
PELIGRO**

Statement of Practical Treatment
In all cases of overexposure, get medical attention immediately. Take person to a doctor or emergency treatment facility.
IF INHALED: Remove exposed person from contaminated area. Keep warm. Make sure person can breathe freely. If breathing has stopped, give artificial respiration. Do not give anything by mouth to an unconscious person. If not unconscious, rinse mouth out with water.
IF ON SKIN: Immediately remove contaminated clothing, shoes and any other item on 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.

**SEE SIDE PANEL
FOR ADDITIONAL PRECAUTIONARY STATEMENTS**

SOLD BY:
REDDICK FUMIGANTS, INCORPORATED
Williamston, North Carolina 27892, U.S.A.
Phone: (919) 792-1613

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**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 effects 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.

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 instability, with probable recovery after a period of re-exposure. Blood bromide levels suggest the occurrence, but not the degree, of exposure. Treatment is symptomatic.

PROTECTIVE CLOTHING. Methyl bromide may be trapped inside clothing and cause skin injury. Wear loose, long trousers and long-sleeved clothing and socks that are cleaned after each wearing. Do not wear jewelry, gloves or other gas sterilizing 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. Under normal conditions of use, no respiratory protection will be required. Because there is a possibility of a spill or leak, the following spill and leak procedures must be understood and followed.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and wildlife. Keep out of lakes, streams and ponds. Do not contaminate water by cleaning of equipment or disposal of wastes.

SPILL AND LEAK PROCEDURES. In case of a rupture of hose or fitting while applying fumigant, immediately stop tractor and vapor. Immediately evacuate 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. Approach from upwind to make necessary repairs. Do not reenter area without respiratory protection until a spill has evaporated or a leak has been repaired, and the methyl bromide concentration is determined to be less than 5 ppm. In case of a leaking container, remove to an isolated area and discharge contents under a polyethylene sheeting of 4 mil or greater thickness onto the soil surface in accordance with instructions under Soil Fumigation Directions.

Contaminated soil, water and other cleanup debris is a toxic hazardous waste. Report spill to the National Response Center (800-424-9307) if the reportable quantity of 1000 pounds is exceeded.

PHYSICAL OR CHEMICAL HAZARDS

Contents under pressure. Do not use or store near heat or open flame. In fire fused by other materials, BRO-MEAN SOL may liberate hazardous gases. The use of BRO-MEAN SOL with aluminum, magnesium, zinc and other 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. This fumigant is a highly hazardous material and should be used only by individuals trained in its proper use. Before using, read and follow all label precautions and directions. All persons working with this fumigant must be knowledgeable about the hazards, and trained in the use of required respirator equipment and detector devices, emergency procedures, and proper use of the fumigant.

STORAGE, HANDLING, AND DISPOSAL

Storage and Handling. Store in a locked, dry, cool, well-ventilated area. Treat 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, lings 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, secure 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 three states 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 Pesticide Fumigants, Inc. location from which shipment was made. Return partial cylinders only after consulting Pesticide Fumigants, Inc. for proper shipping instructions. In other cases, use delivering carrier when possible.

SOIL FUMIGATION DIRECTIONS. BRO-MEAN SOL may be used only for soil fumigation. The following precautionary procedures must be followed.

PRECAUTIONARY STATEMENTS. The following precautions must be followed PRIOR to soil fumigation.

- Comply with all local regulations and ordinances. Obtain an application permit from agricultural regulatory agencies as required.
- Never fumigate alone. It is imperative to always have an assistant present and proper protective equipment available in case of accidents.
- Persons in charge of all operations must advise other workers of all safety procedures and procedures. In addition, they must instruct their helpers in the mechanical operation of the equipment.
- Handle this fumigant in the open, with the operator "upwind" from the container when there is good ventilation.
- Check fumigant delivery system for leaks before beginning operation. Two trained persons must be present during introduction of the fumigant.
- 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 "Decontamination water, not to be used for drinking."
- All trash should be cleaned from the field before starting fumigation.

The following procedures must be followed DURING the soil fumigation operation.

- Two trained persons must be present during introduction of the fumigant.
- Do not make application of this fumigant when there is little or no air movement or there is an atmospheric inversion.
- Do not fill injection tanks to full at the end of a pass until fumigant has been purged or drained from system following closure of shut-off valve.
- If trash is inadvertently pulled up by the shanks when tilling, it must be covered with polyethylene film.
- When changing the cylinders, be certain they are turned off and fumigant system is not under pressure.

The following procedures must be followed AFTER soil fumigation.

- Post all treated areas with warning signs until aeration is complete.
- Two trained persons must be present during removal of the tarpaulin, if used.
- Keep all animals and unauthorized people away from area during removal of tarpaulin, if used.

APPLICATION METHODS. BRO-MEAN SOL is to be used only as a preplant soil fumigant.

A. Turfgrass Methods on Field, Nursery, Turf, Greenhouses, and Seed or Transplant Bed Use.

Pass aerated soil through in soil of area of treatment. Plant geriatric nematodes, including root-knot, root lesion (mosaic), cyst, citrus burrowing, and root-lesion, lance, spiral ring, sting, stubby root, dagger, and sheath and stunt (cyst).

Soil-borne disease and insect pathogens, including the fungi Pythium, Rhizoctonia, Fusarium, and Phytophthora, and the nematode Tylenchulus and the citrus nematode Tylenchulus.

Woods, including broad-leaf weeds such as broomrape and lamb-quarters and grasses such as barnyardgrass, annual bluegrass, topsoilgrass and quackgrass. Not effective against hard seed weeds, such as radish, double-spurred spurge, and certain leguminous weeds. Insects, including cutworms, cutworms, grubs, rootworms, and soil garden symphyla.

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NOTE: Fumigation may temporarily reduce nitrification in the soil thus increasing levels of ammonium nitrogen and soil nitrification. Accumulation of ammonium salts to potentially phytotoxic levels. Ammonium salts should be applied to the soil in a most likely to occur when maximum rates of fumigation. No fertilizer are applied to soils that are acidic, wet, cold or high in organic matter. Apply only fertilizer consisting of at least 30% nitrate until the crop is well established and soil temperature is above 65°F. Then fertilize as indicated by soil test. Acid soils should be limed before fumigation to stimulate nitrification and to reduce possible ammonium toxicity.

Pre-treatment Soil Preparation. Plow or rip or otherwise till the soil to the depth to which effective treatment is required. The soil should be worked until free of clods or large lumps. Residues from previous crops should be worked into the soil to allow for decomposition prior to fumigation. Soil moisture should be adequate for seed germination. Coarse textured soils can be fumigated with higher moisture content than fine textured soils. For best results, soil should be kept moist for at least four 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. to 80°F. at the depth of 6 inches.

1. Overall Application. Inject BRO-MEAN SOL with a chisel type applicator having the chisels spaced no more than 12 inches apart and injecting the fumigant to a depth of 6-8 inches below the soil surface. The soil surface must be covered with polyethylene film immediately after treatment with simultaneous film laying equipment or by seeding with a roller or cultipacker and covered within 30 minutes with polyethylene film or other suitable cover. Consult dosage rate table for proper rates of application and exposure periods. At the end of the exposure period, remove tarpaulins and aerate for two weeks before introducing transplants or vegetative plant parts. Crop seeds may be planted after 96 hours following end of exposure period.

2. Row or Bed Application. Apply the broadcast rate to the area actually treated, i.e., the area delineated by the film mask. Consult the dosage rate table for treatment rates.

Use one or more chisels per bed spaced not more than 12 inches apart, depending on the area to be treated. Inject the fumigant 6-8 inches below the surface of the bed and simultaneously cover with polyethylene film or other suitable cover. At the end of the exposure period, remove tarpaulins and aerate for two weeks before introducing transplants or vegetative plant parts. Crop seeds may be planted after 96 hours following the end of exposure period. Where polyethylene film is to be utilized as mulch, aeration is accomplished by making holes in the film on spacings appropriate for the crop to be planted.

B. Special Instructions for Florida Citrus. Preplant or replant fumigation of citrus soil for control of Phytophthora and citrus nematodes in Florida sandy soils. Trees which are planted in this treated soil will not bear harvestable fruit for a period of at least 24 months. Apply with chisels spaced 12 inches apart to a depth of 6-8 inches and seal immediately with 4 mil polyethylene film. Apply BRO-MEAN SOL at the rate of 1 1/2 to 2 pounds per 100 square feet. Expose to fumigation for 96 hours. This treatment will control diseases to a depth of 4 feet. Remove cover and aerate for two weeks before setting transplants in treated soil.

C. Special Instructions for Greenhouse Soil Fumigation. The use of methyl bromide and chloroform in confined spaces presents a potential hazard to humans and plant life. Special precautions must be taken in order that these potential hazards be minimized. It is the responsibility of the individual supervising the fumigation operation to see that all safety precautions are strictly observed. Before the fumigation operation commences, the supervisor of the fumigation job shall have conducted proper training of all personnel involved in the fumigation (includes use of safety equipment, removal of persons from the area not directly involved in the fumigation, and inspected the equipment to ensure proper application).

Two persons trained in the use of this product must be present during introduction of the fumigant, initiation of aeration, and other aeration when testing for reentry. Two persons do not need to be present if monitoring is conducted remotely (outside the area being fumigated). If the concentration of methyl bromide and/or chloroform in the worker area, as measured by a pump and appropriate detector tubes, does not exceed 5 ppm (methyl bromide). No respiratory protection is required. If these concentrations are 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 equivalent the area.

Application of BRO-MEAN SOL to greenhouse soils is by the same method as for field soils (see Sections A.1. and A.2. above). Consult dosage rate table for proper rates of application and exposure periods. If a wind is blowing, all injection should be made upwind from a previous injection site. Immediately after injection of the fumigant and tarping, a qualified person, wearing protective equipment, should monitor the tarped area with a halide detector. If excessive leaks are found, seal the source of the leak immediately.

During this operation, all windows and doors should be open and fans operating to maximize ventilation. The greenhouse must be placarded on all entrances 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 the fumigant used (i.e., BRO-MEAN SOL)
5. Name, address and telephone number of the applicator

Aeration and Reentry. After fumigation, treated areas must be aerated until the level of methyl bromide is below 5 ppm and of chloroform is below 5.1 ppm. Do not allow entry into the treated area before this time, unless a respiratory protection device (i.e., MSHA approved self-contained breathing apparatus (SCBA) or combination air-supplied SCBA respirator and proper protective clothing is worn. Do not remove the placards until the treated area is aerated to below the levels indicated above. When aeration is complete, the placards may be removed by a certified applicator or someone under his/her supervision.

D. Non-Tarp Complete Control. All precautionary procedures, as outlined immediately following Soil Fumigation Directions, must be followed.

This method controls plant parasitic nematodes present in soil at the time of treatment. Refer to Section A for information regarding Pre-treatment Soil Preparation.

1. Preplant or replant treatment for citrus, vineyards and deciduous fruit and nut. 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.

After the soil has been properly prepared, inject S80-1270 (chloroform) BRO-MEAN SOL per acre by chisel application with chisels spaced up to 60 inches apart to a depth of 24 to 36 inches. In the citrus treatments only be made by using a single chisel. Chisels of soil have a wing attached on the back 2 to 4 inches above the chisel cut outlet to partially block the chisel mark. To fill the chisel mark on the surface, disced and cultipacker immediately after fumigation injection. Be sure that the disc and cultipacker cover an area at least 33 inches beyond the chisel line. Refer to Table II for dosage rates and exposure times.

2. For preplant soil treatment of field crops grown on raised beds, inject BRO-MEAN SOL with one chisel per row at 130-175 pounds per acre of treated area. Chisels must be equipped to deliver 1/3 of the chosen rate at a depth of 16 to 20 inches plus 1/3 of the rate at a depth of 6 to 16 inches, relative to the surface of the soil prior to injection. A wing should be attached to the back of the chisel at a point between the two levels of fumigant discharge to seal the chisel track. To minimize collection of trash on chisels, a disc coultter may be mounted ahead of each chisel Shank to slice a clean path. Immediately or within 30 minutes, a ridge of soil must be tilled over the treated strip to a height of at least 10 inches relative to the soil surface prior to injection. Certain subsoiling or "ripper-ripper" equipment is especially well-suited for these applications with modifications for delivery of fumigant. Allow at least 6 to 7 days before seeding or transplanting. Lusted ridges may be partially flattened by bed-shapers or transplanters before planting if soils is taken to prevent introduction of non-treated soil into the fumigated zone.

BRO-MEAN SOL

Treatment Site	Rate ^a & Method ^b	Exposure Time
Field Soils to be Planted to: Asparagus, bean, cauliflower, eggplant, tomato, muskmelon, cress (dry bulb), pepper, parsnips, artichokes, turnips	200-300 lb/A (FT)	24-48 hr
Field Citrus	1.5-2.0 lb/100 SF (FT) ^c	96 hr
Citrus, vineyards and deciduous fruit and nut	500-1270 lb/A (NTC)	7 days
Greenhouse and Greenhouse Soils, Seed and Transplant Beds and Trays Non-bed crop	200-625 lb/A (FT)	24-48 hr
Tobacco	525 lb/A (FT)	24-48 hr
Tomato (Broadcast Crop)	200-300 lb/A (FT)	24-48 hr

^a Use higher rates indicated for moist and heavy clay soils.
^b Method of application:
 FT = Injection with chisels plus covered with tarpaulin.
 NTC = Non-tarp chisel injection with subsoiler-tillager equipment.
 NTC = Non-tarp chisel injection 24-36 rows deep.
^c May not bear harvestable fruit within 24 months.
^d Also requires 6 mil tarp.