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5785-11

RESTRICTED USE PESTICIDE

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

DIRECTIONS FOR USE OF THE PRODUCTS

METH-O-GAS® AND TERR-O-GAS® 100

EPA REGISTRATION NUMBERS:

- 5785-11**
- 5785-21**
- 5785-41**

ACCEPTED

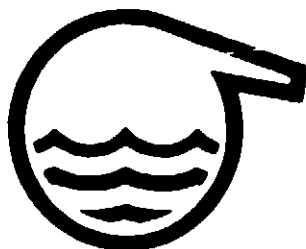
APR 10 1984

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5785-21

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



Great Lakes
Chemical Corporation

WEST LAFAYETTE INDIANA 47906

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STATEMENT OF WARRANTY AND LIABILITY

Seller warrants that this product complies with the specifications expressed in this label. Seller makes no other warranties; and disclaims all other warranties, express or implied, including but not limited to warranties of merchantability and fitness for the intended purpose. Seller's liability for default, breach, or failure under this label shall be limited to the amount of the purchase price. Seller shall have no liability for consequential damages.

The U.S. Environmental Protection Agency has established maximum amounts of pesticide 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. However, Great Lakes Chemical Corporation assumes no responsibility as to their accuracy.

Meth-O-Gas and Terr-O-Gas 100 may be used to control insects infesting various grains and non-food materials. Grains and other raw agricultural commodities which may be treated and application rates are given in Table I. Processed foods are found in Table II. Application rates for soil fumigations may be found in Table III. Dosage rates for structural fumigation and other pest sites are found in Table IV

I. SPACE AND COMMODITY FUMIGATION

A. Chamber Fumigation

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.

NOTE: Before introducing the fumigant, place warning signs and a red warning light on the door. Two people wearing full-faced gas masks with a MSHA/NIOSH approved black canister for organic vapors should be present when introducing the fumigant and opening the door after fumigation. All controls should be outside the chamber.

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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 insure complete vaporization).
3. See Table IV for specific commodities, rate of application and exposure time.
4. At the end of the exposure time, release the vacuum and change the air in the chamber at least two times. A vacuum of 15 in. Hg. should be drawn for this purpose.

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 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 the 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. Do not fumigate while strong winds are blowing.
5. Consult Tables I and II for specific commodities, rate of application and exposure time.
6. After 12 to 18 hours, open the unit and aerate 1 to 1½ hours. The truck, van or trailer may then be resealed for shipment.
7. Advise consignee to check the truck, van or trailer for proper aeration on arrival. Do not move trucks, vans or trailers during fumigation. They must be completely aerated before movement is allowed.

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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 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 the 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. Do not fumigate while strong winds are blowing.
5. Consult Tables I and II for specific commodities, rate of application and exposure time.
6. After 12 to 18 hours, open the unit and aerate for 1 to 1½ hours. The car may then be resealed for shipment.
7. Advise consignee to check the car for proper aeration on arrival. Do not move railcars during fumigation. They must be completely aerated before movement is allowed.

E. Grain Elevator Fumigation

The recirculation method is best for grain elevator fumigation since it allows more time for gas penetration in high resistance areas.

1. Seal structure carefully, using masking tape for small openings and polyethylene sheeting secured with masking tape for large openings.
2. 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 the 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.
3. Use the rate and exposure time shown in Table I or II for specific grains to be treated.
4. Fumigate by using a fan or blower to recirculate the methyl bromide through the perforated pipes or ducts at the bottom of the bin, up through the return duct. Or discharge the fumigant through polyethylene tubing in the head space at intervals of 100 ft. or less.
5. Check periodically for leaks with a suitable detector.
6. To aerate after fumigation, disconnect return air at the fan and discharge into outside air. Continue aeration until detection device shows the fumigant has dissipated. Use detection devices to check the elevator head space for possible pockets of methyl bromide.

F. Tarpaulin Fumigation

The stacked material should be placed on a concrete floor or other air-tight surface. If the floor is not air-tight, it may be made so by laying Sisal Kraft paper, tar paper or additional tarpaulin or polyethylene sheeting on it. Center 4 or 5 sacks on top of the stack to provide space for gas expansion. Place an evaporating pan with an anchored applicator tube in the center of the expansion dome. Cover and seal the stack with a gas tight tarpaulin or polyethylene sheeting of 4 mil. or greater thickness. Connect the tube to the gas cylinder. Release the fumigant. Use rate and exposure time shown in Table I, II or IV.

When fumigation is complete, partially remove the tarpaulin and leave it for 30 minutes. This allows partial aeration before the cover is completely removed.

G. 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 watchmen, padlocks, or warning posters during and after

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fumigation and/or notification of the nearest fire station. Notify anyone who would normally be in the area before fumigating.

1. Remove food and feed commodities before fumigation.
2. See Table IV 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 the 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 the eaves.
5. Take special care to seal partitions to adjacent storage or work areas in the building. When using tarps, the soil surface should be sealed by using sand or water snakes or by trenching and burying the edge of the tarp in the trench and covering with soil or sand followed by the application of water. When using sand snakes, the soil surface should be premoistened if necessary.
6. Doors and hatches on milling machinery should be opened prior to fumigation. These include elevator boots, conveyor lids, settling chamber doors, dust trunks, and any other openings that will allow fumigant into the equipment.
7. If possible, 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.

H. Shipboard, In Transit Ship Or Shiphold Fumigation

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

Prefumigation Procedures

1. Prior to fumigating a vessel for in transit cargo fumigation, the master of the vessel or his representative, and the fumigator must determine whether the vessel is suitably designed and configured so as to allow for safe occupancy by the ship's crew throughout the duration of the fumigation. If it is determined that the design and configuration of the vessel does not allow for safe occupancy by the ship's crew throughout the duration of the fumigation, then the vessel 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.
2. The person responsible for the fumigation must notify the master of the vessel, or his representative, of the requirements relating to personal protection equipment¹, detection equipment and 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. 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 the 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. During the fumigation or until a manned vessel leaves port or the cargo is aerated, the person in charge of the fumigation shall insure that a qualified person using gas or vapor detection equipment tests spaces adjacent to spaces containing fumigated cargo and all regularly occupied spaces for fumigation 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.
5. If the fumigation is not completed and the vessel aerated before the manned vessel leaves port, the person in charge of the vessel shall insure that at least two units of personal protection equipment¹ and one gas or vapor detection device, and a person qualified in their operation be on board the vessel during the voyage.

¹ Personal protection equipment means a full faced, black canister gas mask or respirator for the fumigant, jointly approved by the Mine Safety and Health Administration and the National Institute of Occupational Safety and Health.

6. See Table I or IV for specific commodities, rate of application and exposure time.

Precautions and Procedures During Voyage

Using appropriate gas detection equipment, monitor spaces adjacent to areas containing fumigated cargo and all regularly occupied areas for fumigant leakage. If leakage is detected, the area should be evacuated of all personnel, ventilated, and action taken to correct the leakage, before allowing the area to be occupied. Do not enter fumigated areas except under emergency conditions. If necessary to enter a fumigated area, appropriate personal protection equipment' must be used. Never enter fumigated areas alone. At least one other person, wearing personal protection equipment', should be available to assist in case of an emergency.

Precautions and Procedures During Discharge

If necessary to enter holds prior to discharge, test spaces directly above grain surface for fumigant concentration, using appropriate gas detection and personal safety equipment'. Do not allow entry to fumigated areas without personal safety equipment', unless fumigant concentrations are at safe levels, as indicated by a suitable detector.

II. SOIL FUMIGATION

Pests controlled: Nematodes, including root-knot spp., *Tylenchulus*, *Pratylenchus*, *Xiphinema*, *Criconemoides*, and *Paratylenchus*.

Soil-borne fungi, including: *Pythium*, *Rhizoctonia*, *Phytophthora*, *Pyrenochaeta*, *Sclerotinia*, *Sclerotium*, *Armillaria*, and the clubroot organism, *Plasmodiophora*.

Weeds and weed seed: seeds, roots, stolons, and bulbs of broadleaf weeds and grasses including quackgrass, annual bluegrass, broomrape, common lambsquarters, torpedograss and bermudagrass. Not effective against mallow, dodder, and some species of clover.

Insects in the soil at the time of treatment including: wireworms, June beetle larvae, white grubs, and garden symphylan.

Pretreatment Soil Preparation

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Plow 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. Residue 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 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.

NOTE: Fumigation may temporarily reduce nitrification in the soil thus increasing levels of ammonium nitrogen and soluble ammonium salts to potentially phytotoxic levels. Accumulation of ammonium is most likely to occur when maximum 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 30% 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 Meth-O-Gas or Terr-O-Gas 100 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 6-8 inches below the soil surface. The soil surface must be covered immediately after treatment with simultaneous film laying equipment or by sealing with a roller or cultipacker and covered within 20 minutes with polyethylene film or other suitable cover. Consult Table III for proper rate of application. For row applications use the same rate of application per acre as suggested in Table III. 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 small gas dome inflated plastic bags, crumpled fertilizer bags, burlap bags stuffed lightly with hay or straw, inverted baskets, 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.

1. Use one evaporator pan for each 300 to 400 square feet of area.
2. Anchor one end of each polyethylene applicator tube into an evaporating pan with tape or a suitable weight. This insures that the liquid will be directed into the evaporating pan.
3. Extend the free ends of the polyethylene applicator tubes outside of the area to be covered.
4. After the supports and tubing are in place, cover the area to be fumigated with a gasproof cover of polyethylene or coated fabric film.
5. Position the cover with its edges in a prepared furrow or trench.
6. Seal the outside edges with 6 to 10 inches of soil. Tamp the soil down so air will not pass through.
7. A. Connect applicator tubes to methyl bromide dispensers and puncture the cans. Any of the numerous dispensers available on the market may be used for application of methyl bromide. If the applicator is transferred from tube to tube, plug or crimp the end of the tube to prevent escape of methyl bromide from under the tarp. Another procedure is to place the cans in Simplex® openers spaced evenly over the area to be treated. After the cover is in place and sealed around the edge, push down on the cans, opening them to release the gas. These openers eliminate the need for evaporator pans and tubing.
B. Cylinders. Attach a polyethylene tube to the port valve of the cylinder and open. Use a cylinder dispenser or scale to meter small amounts.

Hot Gas Method

The "hot gas method" consists of using a commercially manufactured heat exchanger, or a copper coil immersed in a vessel containing hot water, to vaporize the fumigant before introduction. Meth-O-Gas in 1 and 1½ pound cans may be vaporized by submerging the punctured can in hot water while applying. Puncture the can in the conventional manner, immediately turning it upside down and submerging the punctured can with applicator attached into the hot water. Keep submerged until empty.

Additional hot water should be available or provisions made to reheat the water. The rapid vaporization of the fumigant will cool the original supply. Never apply heat directly to the can except by water baths. These methods may be useful where large amounts of fumigant are required and rapid vaporization is advantageous.

Dosage

Use one to two pounds of Meth-O-Gas and Terr-O-Gas 100 per 100 square feet for an exposure period of 24 hours when soil temperature is 60 F or higher. Methyl bromide penetrates the soil to the depth it has been plowed or ripped. When soil temperature is between 50 F and 60 F, extend the exposure period to 48 hours. Do not treat when soil temperature is below 50 F.

A. TREE SITE FUMIGATION DIRECTIONS (for use in Florida only)

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 to 8 inches. Seal fumigant with a drag or cultipacker following immediately behind chisels. Apply Meth-O-Gas or Terr-O-Gas 100 at the rate of 1 pound per 100 square feet. Immediately cover with a 4 mil tarp and expose to fumigation for 96 hours. This treatment will control disease to a depth of 4 feet. Remove cover and aerate 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 Meth-O-Gas & Terr-O-Gas 100, soil must be dry to a depth requiring treatment. This can be accomplished by a) planting sudangrass in the spring, irrigating until the grass has established itself, then withholding further irrigation; b) naturally, by allowing plants to grow without irrigation. When soil is dry, cut and remove grass, plants and debris. Rip soil to a depth of 36 inches and disc to smoothness.

Dosage 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. See Table III.

1. Non-tarp Chisel Application (Not for Use in California). After the soil has been properly prepared, inject 400-870 pounds of Meth-O-Gas or Terr-O-Gas 100 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 shank. 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 ringroller 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 400-870 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 Auger-Probe Treatment. Use one pound of Meth-O-Gas or Terr-O-Gas 100 in light soils (two pounds in fine-textured soils) to a depth of 36 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.

Exposure and Aeration Period

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 Auger-Probe Treatment after which planting or replanting of trees, vines or other deep-rooted crops may begin 14 days later.
2. Meth-O-Gas or Terr-O-Gas 100 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.

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C. Non-Tarp Nematode Control

For control of nematodes including *Meloidogyne* spp., *Xiphinema* spp., *Cricconemoides*, *Pratylenchus*, and *Paratylenchus* on deciduous fruits, nuts, citrus and vineyards.

Pretreatment Soil Preparation

Plow 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 $\frac{1}{4}$ - $\frac{1}{2}$ inch of water prior to final preparation and application. Avoid treatment of soils that contain more than 30% clay or those with high organic content. For best results, fumigate when the soil temperature is 60° to 80°F. at the depth of 6 inches. Do not fumigate when soil temperature is below 50°F.

Dosage 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 400-870 pounds of Meth-O-Gas or Terr-O-Gas 100 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 shank. Chisels should have a wing welded on the back 2-4 inches 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 ringroller cover an area sufficiently beyond the chisel lines to effect a good seal.
2. Deep Injection Auger-Probe Treatment. Use one pound of Meth-O-Gas or Terr-O-Gas 100 per injection site in lighter soils; two pounds in fine textured soils. Use 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. Tamp or compact the soil at the point of injection.

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Meth-O-Gas or Terr-O-Gas 100 used without a tarp will not usually control most 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, soil mixes, and manure can be fumigated with Meth-O-Gas and Terr-O-Gas 100. Fumigation should take place outdoors or in a well ventilated area away from desirable 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 on a concrete floor or on wet ground. Piles two to three feet high can also be treated provided perforations are made in the pile surface at one foot intervals to assist penetration. Once the pile has been made, install supports to hold the cover a few inches above the pile surface to aid in proper fumigant diffusion. Place the outlet of the applicator tube or tubes in evaporating pans spaced about 30 feet apart on the pile surface. Cover with a polyethylene sheeting or other gas confining material of 4 mil. or greater thickness. Seal the edges by burying, covering with moist sand or soil or by means of sand snakes. Introduce the fumigant into the evaporating pans as a liquid or by means of the hot gas method. Consult Table III 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, then cover and seal as described above. Introduce the fumigant at the top and in the center of the stack into evaporating pans or by means of the hot gas method at a rate of 4 pounds per 100 cubic foot. Use one injection point for each 100 cubic feet of volume. Expose for 24-48 hours. Aerate for 24 hours.

11.1

TABLE I
APPLICATION SUMMARY
METH-O-GAS AND TERR-O-GAS 100
FOR STORED PRODUCTS PESTS INFESTING RAW AGRICULTURAL COMMODITIES
(NOT PROCESSED FOOD)

Commodity	Insects Controlled	Tolerance (ppm)	Dosage (lbs./1000 cu. ft.)	Exposure Time (hrs.)
Almonds	confused flour beetle, saw toothed grain beetle.	200	3.5	24
Brazil Nuts	dermestids, Indian meal moth, rice weevil, Khapra	200	3.5	24
Bushnuts	beetle, drugstore beetle, cigarette beetle, warehouse	200	3.5	24
Butternuts	moth, rusty grain beetle, cadelle, groundnut bruchid,	200	3.5	24
Cashews	pecan weevil	200	3.5	24
Chestnuts		200	6	6
Chestnuts		200	3.5	24
Filberts		200	3.5	24
Hickory Nuts		200	3.5	24
Peanuts		200	3.5	24
Pecans		200	3.5	24
Pistachio Nuts		200	3.5	24
Walnuts		200	3.5	24
Apples	oriental fruit moth, codling moth, apple	5	5	2
Apricots	maggot, apple curculio, twig borer, melon	20	5	2
Blueberries	fruit fly, Mediterranean fruit fly, oriental	20	1-2	3-4
Cherries	fruit fly, cherry fruit fly, brown mite.	20	5	2
Nectarines	green peach aphid, scales, thrips	20	5	2
Peaches		20	5	2
Pears		5	5	2
Plums		20	5	2
Quinces		5	5	2
Strawberries		60(e)	2-3	3-4
Prunes	coffee bean weevil, Australian spider beetle, saw toothed and merchant grain beetles, dried fruit beetles, Indian meal moth, confused flour beetle, drugstore beetle, warehouse moth, common grain mite	20	5	2
Barley	granary weevil, lesser grain borer, rusty grain beetle.	50	5	12
Corn	angoumois grain moth, Indian meal moth, confused	50	2	24
Oats	flour beetle, rice weevil, saw toothed grain beetle.	50	3	24
Popcorn	lesser grain borer, cadelle, Khapra beetle, drugstore	240	1.5	2(a)
Rice	beetle, Australian spider beetle, cigarette beetle.	50	6	12(b)
Rice	warehouse moth, common grain mite, flat grain	50	3	24
Rye	beetle, Mediterranean flour moth, red flour beetle.	50	3	24
Rye	common bean weevil, copra beetle	50	6	12(b)
Sorghum (grain)		50	4	24
Dried Peas		125	4	24
Wheat		50	3	24
Copra		100	2.5	24
Beans (all) ✓	armyworms, cabbage looper, European corn borer	50	3.5	24
Beets (roots) ✓	Japanese beetle, pod borers, Oriental fruit fly,	30	3	4
Cabbage ✓	Mediterranean fruit fly, corn earworm, green stink	50	4	4(d)
Cantaloupe ✓	bug, sawbugs, spider mites, cabbage maggots, lygus	20	2	2
Carrots ✓	bug, melon aphid, pickleworm, carrot rust fly, stink	30	4	4

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TABLE II (Continued)

Commodity	Insect Controlled	Tolerance (ppm)	Dosage (lbs./1000 cu. ft.)	Exposure Time (hrs.)
Processed Grain ^(a)	flour beetle, grain beetle, mealworms, cigarette beetle, Indian meal moth	125	1.5	24
Spices And Herbs (dried)	saw toothed beetle, flat grain beetle, cigarette beetle, <i>trogoderma</i> spp., Indian meal moth, dried fruit beetle, Australian spider beetle, warehouse moth, confused flour beetle, rusty grain beetle, lesser grain borer, drugstore beetle	400	3	12

^(a) Corn grits and cracked rice

^(b) Processed grain from equipment fumigation

^(c) Processed grain used in production of fermented beverages

TABLE III

METH-O-GAS and TERR-O-GAS 100 SOIL FUMIGATION USES

<u>Treatment Site</u>	<u>RATE</u> <u>(Lbs/A)</u> ¹	<u>EXPOSURE</u> <u>Time (hrs.)</u>
Field soils to be planted to:		
Asparagus, broccoli, cauliflower, eggplants, lettuce, muskmelons, onions (dry bulb) peppers, pineapples, strawberries, tomatoes	180-240	24-48
Citrus, deciduous fruits and nuts, and vineyards	400-870 ²	24-48
	435-870 ³	24-48
Nursery soils:		
Turf, ornamentals, floral crops, forest tree seedlings, strawberry (non-food)	180-435	24-48
Greenhouse soils:		
Non-food crops	180-435	24-48
Tomato	180-240	24-48
Seed or transplant beds (non-food)		
	180-435	24-48
Tobacco	872	24-48
Potting mix	1#/Cu. Yd.	24-48

¹Use the higher labelled rates for muck and heavy clay soils

²Deep injection application.

³Topical application.

TABLE I (Continued)

Commodity	Insects Controlled	Tolerance (ppm)	Dosage (lbs./1000 cu. ft.)	Exposure Time (hrs.)
Grapefruit ⁽²⁾	<i>anastrepha</i> spp., <i>proeulia</i> spp., <i>leptoglossus</i> spp.,	30	3	2
Grapes	<i>megalometis</i> spp., <i>naupactus</i> spp., <i>listroderes</i> spp.,	20	4	2
Kumquat	<i>conoderus</i> spp., <i>brevipalpus</i> spp., ants, aphids, citrus	30	3	2
Lemons	scale, citrus mites, leaf rollers, white flies, thrips,	30	3	2
Lime	California orangedog, mealybugs, orange tortrix	30	3	2
Oranges		30	3	2
Tangelos		30	3	2
Tangerines		30	3	2

⁽¹⁾ Consult APHIS Treatment Manual for additional rates and commodities.

⁽²⁾ Tolerance of fruit to methyl bromide may vary with different varieties. Check with local authorities or Great Lakes Chemical Corporation before treating.

(a) Chamber fumigation

(b) Khapra beetle quarantine

(c) Pink bollworm quarantine

(d) Must be used in accordance with the plant quarantine program of the USDA

(e) Pre- and post-harvest.

TABLE II
PROCESSED FOOD
METH-O-GAS AND TERR-O-GAS 100

Commodity	Insect Controlled	Tolerance (ppm)	Dosage (lbs./1000 cu. ft.)	Exposure Time (hrs.)
Apples (dried)	saw toothed beetle, merchant beetle, dried fruit	125	1	24
Apricots (dried)	beetle, Indian meal moth, confused flour beetle,	125	1	24
Cherries (dried)	Australian spider beetle, cigarette beetle, warehouse moth, common grain mite, coffee bean weevil,	125	1	24
Dates	carob moth	125	1	24
Figs (dried)		250	1	24
Peaches (dried)		125	1	24
Prunes (dried)		125	1	24
Raisins (dried)		125	1	24
Cheese (parmesan and roquefort)	cheese mites, cheese skipper, cheese maggot	325	1-2	12-24
Eggs (dried)	larder beetle	400	1-2	12-24
Ham Houses	cheese skipper, larder beetle, red legged ham beetle, mites	325	1-2	12-24
Processed Foods	saw toothed beetle, flat grain beetle, flour beetle, cigarette beetle, Indian meal moth	125	1-2	12-24
Processed Grain ^(a)	confused flour beetle, rice weevil, granary weevil, saw toothed grain beetle, rusty grain beetle, lesser grain borer, cadelle, Khapra beetle, drugstore beetle, Australian spider beetle, cigarette beetle	125	1.5	24
Processed Grain ^(b)	flour beetle, saw toothed grain beetle, Mediterranean flour moth	125	1-2	12-24

TABLE I (Continued)

Commodity	Insects Controlled	Tolerance (ppm)	Dosage (lbs./1000 cu. ft.)	Exposure Time (hrs.)
Citron	bug, bean leaf beetle, Mexican bean beetle,	30	3	2
Cucumbers	diabrotica beetle, cucumber beetle, squash bug, false	30	2.5	4
Eggplant	chinch bug, loopers, symphylans, blister beetles, onion	20	3	4
Honeydew	maggot, onion thrips, mealybugs, pepper maggot,			
Melons	Colorado potato beetle, potato psyllid, squash bug,	20	2.5	2
Jerusalem	squash vine borer, earwigs, darkling beetle			
Artichokes		30	3.5	4
Muskmelons		20	2.5	2
Okra		30	3.5	2(c)
Onions		20	3	6
Parsnips				
(roots)		30	3	4
Peas				
(with pods)		50	3	2
Sweet Corn		50	3	4
Peppers		30	4	2
Pimentos		30	2.5	3
Pineapples		20	2	4
Potatoes		75	3	6
Pumpkins		20	2.5	2
Radishes		30	3	4
Rutabagas		30	3	6
Squash				
(summer)		30	4	2
Squash				
(winter)		20	4	2
Squash				
(zucchini)		20	2.5	3
Sugar Beets				
(roots)		30	3	4
Sweet Potatoes		75	3.5	4
Tomatoes		20	3	4
Turnips				
(roots)		30	3	4
Watermelons		20	2.5	2
Yams		30	3.5	4
Cipolini Bulbs	<i>Exosoma lusitanica</i>	50	4	4
Cocoa Beans	cocoa moth, cigarette beetle, confused flour beetle, warehouse moth, flat grain beetle, coffee bean weevil	50	1.5	12(a)
Cotton Seed	<i>Pectinophora spp.</i> , Khapra beetle, boll weevil, saw toothed grain beetle	200	8	24(b)(c)
Garlic	<i>Brachycera spp.</i> , <i>dyspessa ulula</i> , brown wheat mite, onion maggot, onion thrips	50	3	4
Horseradish				
(roots)	<i>baris lepidi</i>	30	3	4
Salsify Roots	armyworm, flea beetle, leafhoppers, stink bugs, tarnished plant bug	30	3	3
Hay (alfalfa)	Alfalfa weevil, cereal leaf beetle	50	3	24

TABLE IV
 METH-O-GAS AND TERR-O-GAS 100
 APPLICATION SUMMARY FOR STRUCTURAL PEST CONTROL AND OTHER SITES¹

<u>Treatment Site</u>	<u>Pests</u>	<u>Volume</u>	<u>Rate</u> (#/1000 cu. ft.)	<u>Exposure</u> <u>Time</u> (hrs)
Dwellings , Garages and Barns	termites (drywood & dampwood), bedbugs, cockroaches, silverfish, powder post beetle, death watch beetle, carpenter ants,		1-3	24
	<u>rats and mice</u>		<u>4-5 oz.</u>	<u>12-18</u>
Warehouses (empty)	cockroaches, confused flour	Less than 100,000 cu. ft.	1-3	24
Feed Rooms (empty)	beetle, rice weevil, granary	100-500,000 cu. ft.	1-1½	24
Grain Bins,	weevil, saw toothed grain beetle,	500-1,000,000 cu. ft.	1-1½	24
	rusty grain beetle, lesser grain borer, cadelle, khapra beetle, drugstore beetle, larder beetle, carpet beetle, copra beetle, coffee bean weevil, groundnut bruchid, common bean weevil, dried fruit beetle, golden spider beetle, Australian spider beetle, cigarette beetle, angoumois grain moth, Mediterranean flour moth, warehouse moth, Indian meal moth, common grain mite	over 1,000,000 cu. ft.	1	24
	<u>rats and mice</u>		<u>4-5 oz.</u>	<u>12-18</u>
Bags, Boxes and Crates (empty)	cockroaches, confused flour beetle		1½-3 ^(a)	24
	rice weevil, granary weevil, saw toothed grain beetle, rusty grain beetle, lesser grain borer, cadelle, khapra beetle, drugstore beetle, larder beetle, carpet beetle, copra beetle, coffee bean weevil, groundnut bruchid, common bean weevil, dried fruit beetle, golden spider beetle, Australian spider beetle, cigarette beetle, angoumois grain moth, Mediterranean flour moth, warehouse moth, Indian meal moth, common grain mite		2-3 ^(b)	2
	<u>rats and mice</u>		<u>4-5 oz.</u>	<u>12-18</u>
Furniture	termites (drywood & dampwood),		1-3 ^(a)	24
	bedbugs, cockroaches, silverfish, powder post beetle, death watch beetle, carpenter ants, clothes moth, cigarette beetle, drugstore beetle, carpet beetle		2-3 ^(b)	2
Lumber and Wood Products	termites (drywood & damrwood), powder post beetle, round and flat headed borers, carpenter ants and bark beetles		1-3 ^(a) 2-3 ^(b)	24 2
Greenhouses (empty)	mealybugs, scale insects and mites		3	4
Mushroom houses (empty)	mushroom flies		2	24
Poultry houses (empty)	poultry mites, bedbugs		2	24

Bales Tobacco	drugstore beetle, cigarette beetle tobacco beetle, tobacco moth	2-3 (a) 4 (b)	48-72 4
Baled Cotton	pink bollworm, boll weevil	3 (a) 4 (b)	24 2

¹At temperatures below 60°F., increase the dosage by 1/2 pound per 1,000 cu. ft. for every 10°F. drop in temperature or use an approved procedure to heat the fumigant. Do not fumigate when temperature is below 50°F.

- (a) Atmospheric
- (b) Vacuum Chamber (25-27")

NOTE: Remove food and feed commodities not listed in Tables I & II before fumigating dwellings.