

PM21

10182-150

1021 File



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 14 1994

Zeneca Inc.
1800 Concord Pike
Wilmington, DE 19897

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Subject: Label Amendment Submission of 12/15/93 in Response to PR Notice 93-7
EPA Reg. No. 10182-150
VAPAM Soil Fumigant for All Crops

Dear Registrant:

The labeling cited above and submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted subject to the comments reflected on the enclosed sheet. A copy of your proposed labeling stamped "ACCEPTED WITH COMMENTS" is enclosed.

WHAT THIS ACCEPTANCE MEANS:

Based on your certification, the Agency has accepted the labeling changes that are necessary to comply with the Worker Protection Standard (WPS) labeling requirements of 40 CFR part 156, subpart K, described in PR Notices 93-7 and 93-11. Any other labeling changes submitted in connection with this amendment application but not directly related to compliance with the WPS have not been reviewed or accepted by the Agency. If you wish to make such changes, you must submit a separate amendment application proposing them. If your product is currently suspended, the acceptance of this labeling amendment does not affect the suspension in any way.

WHAT YOU NEED TO DO NEXT:

By the next label printing make all the specified changes to your labeling. Send to EPA one (1) copy of the final printed labeling:

- BEFORE selling or distributing any product bearing the final printed labeling
- AND
- WITHIN one year from date of this acceptance.



Recycled/Recyclable
Printed with Soy/Canola Ink on paper that
contains at least 50% recycled fiber

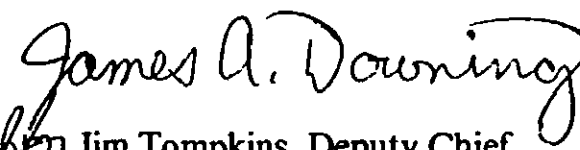
Submit the final printed labeling via the U.S. Postal Service to:

Document Processing Desk (FIN-LABEL)
Office of Pesticide Programs (7505C)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460-0001

Hand or courier deliveries of final printed labeling may be made to:

Document Processing Desk (FIN-LABEL)
Office of Pesticide Programs
Room 266A, Crystal Mall 2
1921 Jefferson Davis Highway
Arlington, VA 22202

Sincerely,


for Jim Tompkins, Deputy Chief
Registration Support Branch
Registration Division (7505W)

Attachment

Zeneca Inc.
1800 Concord Pike
Wilmington, DE 19897

VAPAM Soil Fumigant for All Crops
EPA Reg. No. 10182-150

Comments:

Correct typographical errors as marked.

User Safety Recommendations must either be placed in a box or printed on the label in a contrasting color from surrounding text.

The Agricultural Use Requirements section must either be placed in a box or printed on the label in a contrasting color from surrounding text.

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VAPAM®

Soil Fumigant Solution For All Crops

ACTIVE INGREDIENT:

Sodium methyldithiocarbamate (anhydrous) 32.7%

INERT INGREDIENTS: 67.3%

TOTAL 100.0%

Contains 3.18 lbs. active ingredient per gallon

EPA Reg. No. 10182-150
EPA Est. No. 10182-

_____ Gal. Net _____

KEEP OUT OF REACH OF CHILDREN

DANGER - PELIGRO

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

See Side Panel for Additional Precautionary Statements

This product is sold only for uses stated on its label. No express or implied license is granted to use or sell this product under any patent in any country except as specified: Country:
U.S.A.

Made in U.S.A.
ZENECA Ag Products
ZENECA Inc.
Wilmington, DE 19897

ACCEPTED
with COMMENTS
In EPA Letter Dated

APR 14 1994

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
10182-150

5.821

STATEMENT OF PRACTICAL TREATMENT

FIRST AID

Immediately start the procedures given below and contact a Poison Center, a physician, or the nearest hospital. Report the type and extent of exposure, describe the victim's symptoms, and follow the advice given.

IF ON SKIN: Immediately flush skin with large amounts of running water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

IF IN EYES: Immediately flush eyes with large amounts of running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get medical attention immediately.

IF INHALED: Remove to fresh air. If not breathing, clear the victim's airway and start mouth-to-mouth artificial respiration. If breathing is difficult, give oxygen, preferably with a physician's advice. Get medical attention immediately.

IF SWALLOWED: Immediately give several glasses of water but do not induce vomiting. If vomiting does occur, give fluids again. Have a physician determine if condition of patient will permit induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious or convulsing person.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE CALL 1-800-F-A-S-T-M-E-D (327-8633)

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

CORROSIVE: CAUSES SKIN DAMAGE. MAY BE FATAL IS ABSORBED THROUGH THE SKIN. Do not get on skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Harmful if swallowed. Harmful if inhaled. Irritating to eyes, nose, and throat. Avoid breathing vapor or spray mist. Irritating to eyes. Do not get in eyes.

~~**HARMFUL IF INHALED OR SWALLOWED. IRRITATING TO EYES, NOSE, THROAT AND SKIN.** Avoid breathing vapor or spray mist. Do not get in eyes, on skin, or clothing. Causes skin irritation. Prolonged contact may cause severe skin irritation. May be fatal if absorbed through skin. In case of contact, immediately remove contaminated clothing. Wash and dry clothing before reuse.~~

PERSONAL PROTECTIVE EQUIPMENT

(1) Handlers Performing Direct-Contact Tasks. Direct-contact tasks include:

- Mixing, loading, or fumigant transfer with or without dry-disconnect fittings.
- Equipment calibration or adjustment.
- Equipment cleanup and repair.
- Product sampling.
- Application or soil-sealing outside an enclosed cab.
- Any activity less than 6 feet from an unshielded pressurized hose containing this product.
- Spill cleanup.
- Removal of tarp or plastic film.
- Rinse disposal.
- Cleanup of small spills.
- Preparing containers for aeration.
- Any other handling task not otherwise listed in (2), (3), or (4) below.

Applicators and other handlers performing direct-contact activities must wear:

- Coveralls over long-sleeved shirt and long pants.
- Waterproof gloves.
- Chemical-resistant footwear plus socks.
- Chemical-resistant headgear for overhead exposure.
- Chemical-resistant apron when cleaning equipment, or when mixing, loading, or transferring without dry-disconnect fittings.
- Face-sealing goggles, unless full-face respirator is worn.
- A respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

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(2) Handlers in Enclosed Cabs. Applicators and other handlers in enclosed cabs must wear:

- Coveralls.
- Shoes and socks.

Plus: If pungent, rotten-egg odor of this product can be detected inside the enclosed cab, the handlers in the cab must wear:

- Face-sealing goggles, unless full-face respirator is worn.
- A respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

In addition: The PPE specified in (1) for direct-contact activities must be immediately available in the enclosed cab and must be worn if the handler leaves the enclosed cab to perform any direct-contact activity.

The enclosed cab must meet the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5)

(3) Handlers in Treated Areas While Entry is Restricted. While entry is restricted (see "Entry Restrictions" in the Agricultural Use Requirements box elsewhere in this labeling), only the following handling tasks may be performed in a treated area: ~~outdoors or in the entire greenhouse (or other enclosed structure) in which a treatment took place:~~

- Assessing/adjusting the soil seal.
- Assessing pest control, application technique, or application efficacy.
- ~~Operating ventilation equipment.~~
- Sampling air or soil for this product.

All other tasks are prohibited until the entry restriction is over.

Handlers performing the above tasks must wear:

- Coveralls over long-sleeved shirt and long pants.
- Waterproof gloves.
- Chemical-resistant footwear and socks.

Plus: ~~Handlers must wear (1) in a treated greenhouse before ventilation criteria have been met OR (2) if pungent, rotten egg odor of this product can be detected: outdoors or in a treated greenhouse after ventilation criteria have been met:~~

- Face-sealing goggles (unless full-face respirator is worn), and
- A respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

USER SAFETY REQUIREMENTS

1. **Respirator Requirements:** When a respirator is required for use with this product, the following criteria must be met:
 - a. Cartridges or canisters must be replaced daily or when odor or irritation from this product becomes apparent, whichever is sooner.

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- b. Respirators must be fit-tested and ⁺checked using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
2. **Dispose of Contaminated Clothing:** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.
 3. **Clean and Maintain PPE:** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each day's use.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not apply where runoff is likely to occur. Apply this product only as specified on the label.

USE PRECAUTIONS

Do not use around dwellings. ~~Keep children and pets out of treated area.~~ Keep off desirable lawns and plants. Do not apply within 3 feet of the drip line of desirable plants, shrubs or trees. Do not use ~~in confined areas without adequate ventilation OR~~ where fumes may enter nearby houses containing growing plants. Do not use in greenhouses ~~or any other enclosed structure or confined area.~~ Keep container tightly closed when not in use. Do not store near feed or food.

~~PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT~~

1. ~~The following protective clothing and equipment are required to be used by persons engaged in carrying out any operations that are likely to involve direct contact with VAPAM, including mixing/loading, equipment calibrations or adjustments, clean up and repair of application equipment (equipment includes but is not restricted to; chemigation equipment, shanks, tillers, drop lines, and holding tanks), sampling, cleanup of spills, fumigant transfer, and rinsate disposal, or by any other person engaging in activities likely to result in direct contact with the product. This protective equipment must also be used for any operations that are done within 6 feet of unshielded, pressurized hoses containing VAPAM.~~

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- a. ~~A properly FIT TESTED NIOSH or MSHA approved half face respirator with organic vapor cartridges plus non-venting chemical goggles, or a NIOSH or MSHA approved full face respirator with organic vapor cartridges.~~
 - b. ~~Body covering that has long sleeves and long pants. When a closed system is not used, mixers and loaders must also wear a chemical resistant apron or cloth overalls.~~
 - c. ~~Chemical resistant gloves and boots.~~
2. ~~The following protective clothing must be worn at all times by persons operating or monitoring application equipment or entering treated areas within 48 hours after completion of application. See: REENTRY AND WORKER SAFETY STATEMENT on this label.~~
- a. ~~Chemical resistant footwear.~~
 - b. ~~Body covering that has long sleeves and long pants.~~
3. ~~The following protective clothing and equipment must be immediately available at all times for use by persons operating tractor drawn ground application equipment, or monitoring application equipment, or entering treated areas within 48 hours after completion of application. See: REENTRY AND WORKER SAFETY STATEMENT on this label.~~
- a. ~~A properly FIT TESTED NIOSH or MSHA approved half face respirator with organic vapor cartridges plus non-venting chemical goggles, or a NIOSH or MSHA approved full face respirator with organic vapor cartridges. This equipment must be worn when the pungent, rotten egg odor of VAPAM is detected.~~
 - b. ~~Chemical resistant gloves. These must be worn when a person is engaged in carrying out any operation that is likely to involve direct contact with the product, including operations listed in Paragraph (1), above.~~

REENTRY AND WORKER SAFETY

~~Do not apply this product in such a manner as to directly, or through drift, expose workers or other persons. The area being treated must be vacated by unprotected persons. Do not enter treated area for 48 hours after application unless protective clothing is worn (Chemical resistant footwear and body covering with long sleeves and long pants; and respirator, if odor is detected, and chemical resistant gloves, if direct contact with product is involved.) Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.~~

~~Written or oral warnings must be given to workers who are expected to be in treated areas or in an area to be treated with this product.~~

~~Oral warnings must include the exact information specified in the written warnings. Indicate specific oral warnings which inform workers of areas or fields that may not be entered without specific protective clothing, period of time the field must be vacated and appropriate actions to take in case of accidental exposure. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers.~~

~~Written warnings must include the following information: **WARNING:** Area treated with metam sodium on (DATE) _____. Do not enter without appropriate protective clothing for~~

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~~48 hours after application. In case of accidental exposure, see STATEMENT OF PRACTICAL TREATMENT found on the VAPAM label.~~

- ~~• Posting is required if a tarp is not used to cover treated areas. Consult your State Department of Agriculture for further information.~~
- ~~• Posting is not required when a tarp is used to cover treated areas.~~

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DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

CALIFORNIA ONLY: Applications must be in compliance with Technical Information Bulletin - California "Metam Sodium - Guidelines for all Application Methods for Metam Sodium in California". This information bulletin may be obtained from your local pesticide dealer or a metam-sodium registrant.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements in this labeling about personal protection equipment (PPE), restricted-entry intervals, and notification to workers. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS).

ENTRY RESTRICTIONS:

Outdoors: Entry (including early entry that would otherwise be permitted under the WPS) by any person -- other than a correctly training and equipped handler who is performing a handling task permitted on this labeling -- is PROHIBITED from the start of application until 48 hours after application. In addition, if tarps are used for the application, non-handler entry is prohibited while tarps are being removed.

~~**Greenhouses:** Entry (including early entry that would otherwise be permitted under the WPS) by any person -- other than a correctly trained and equipped handler who is performing a handling task permitted on this labeling -- is PROHIBITED in the entire greenhouse (entire enclosed structure) from the start of application until 48 hours after application AND until one of the WPS ventilation criteria for air exchanges, mechanical ventilation, or passive ventilation has been met. In addition, if tarps are used for the application, non-handler entry is prohibited during tarp removal and until one the WPS ventilation criteria has been met.~~

NOTIFICATION:

Notify workers of the application by warning them orally and by posting fumigant warning signs. The signs must bear the skull and crossbones symbol and state: (1) "DANGER/PELIGRO," (2) "Area under fumigation, DO NOT ENTER/NO ENTRE," (3) the date and time of fumigation, (4) "VAPAM Fumigant in use," and (5) name, address, and telephone number of the applicator." Post the fumigant warning sign instead of the WPS sign

for this application, but follow all WPS requirements pertaining to location, legibility, size, and timing of posting and removal.

~~Greenhouses: Post the fumigant warning signs outside all entrances to the greenhouse.~~

~~Outdoors: Post the fumigant warning signs at entrances to treated area.~~

PPE FOR ENTRY DURING THE RESTRICTED PERIOD:

PPE for entry that is permitted by this labeling is listed in the "Hazards to Humans and Domestic Animals" section of this labeling."

PRODUCT INFORMATION

VAPAM® is a water soluble liquid. When applied to properly prepared soil, the liquid is converted into a gaseous fumigant. After sufficient interval of time the gas dissipates, leaving the soil ready for planting. VAPAM is recommended for the control of the following soilborne pests that attack ornamental, food and fiber crops: Weeds and germinating weed seeds [annual bluegrass, bermudagrass, chickweed, dandelion, ragweed, henbit, lambsquarter, *Amaranthus* spp. (pigweed, careless weed) watergrass, johnsongrass, nutsedge, wild morningglory and purslane] nematodes, symphylans, (garden centipede); and soilborne diseases (*Rhizoctonia*, *Phythium*, *Phytophthora*, *Verticillium*, *Sclerotinia*, oak root fungus and club root of crucifers).

APPLICATION DIRECTIONS

Before applying VAPAM, always cultivate thoroughly area to be treated, breaking up clods and loosening soil deeply and thoroughly. A week before treatment, moisten soil after cultivation to the desired depth; sprinkle or flood irrigate. See section "POTATOES: PACIFIC NORTHWEST AND NORTH CENTRAL STATES - FALL APPLICATION" where no-till stubble or cover crops exist for specific application directions. Immediately before application, cultivate lightly if the soil has crusted.

To prevent loss from evaporation, use only at times when air temperature is moderate and there is little wind movement. Soil temperature must be from 40°-90°F in the treated zone. Treated zone is defined as the depth of treatment that VAPAM achieves at the time of application. For other conditions, see section, "Cultivation & Planting After Application." Do not apply to the soil surface, as in the sprinkler method, when air temperature is over 90°F or when low humidity or high winds would cause loss of VAPAM before it can be drenched into the soil with additional water. Apply enough water to seal the fumes into the soil where they should be confined to achieve maximum fumigant benefit.

Where rates ranges for VAPAM are given, use the higher rate if pests (insects, nematodes, etc.) are present in high numbers or if the area to be treated has a history of pest problems.

The activity of VAPAM is increased by the use of a tarp (plastic, paper or fabric) spread loosely over the treated area and secured to prevent removal by wind. Keep covered for a minimum period of 48 hours. Seven days after treatment, cultivate area to a depth of 2 inches to aerate the soil. To avoid crop injury, do not seed earlier than 21 days after application, when tarping method is used.

APPLICATION IN TANKMIX WITH LIQUID FERTILIZER: VAPAM may be injected in a mixture with liquid fertilizers. Since the composition of liquid fertilizers vary considerably, the physical compatibility of each fertilizer/VAPAM tankmix should be checked by using the following procedure:

Mix a small quantity of VAPAM and liquid fertilizer in a glass container. VAPAM and fertilizer should be mixed in the same ratio as they will be applied to the field (i.e., if 40 gallons of VAPAM and 40 gallons of liquid fertilizer are to be applied per acre, then VAPAM and fertilizer should be mixed in the jar in a 40:40 or 1:1 ratio). Agitate the liquids to attain a complete mixture. If a uniform mix cannot be made, the mixture should not be used. If the mixture remains uniform for 30 minutes, the combination may be used. Should the mixture separate after 30 minutes, but readily remix uniformly with agitation, the mixture can be used if adequate agitation is maintained in the tank.

DO NOT PLACE CAPS ON JAR, AS INCOMPATIBLE MIXES MAY EVOLVE HYDROGEN SULFIDE GAS.

USE PROMPTLY AFTER MIXING WITH WATER OR FERTILIZER. DO NOT ALLOW SOLUTION TO STAND. Flush all equipment with water after each day's use. Disassemble valves and clean carefully.

USE PRECAUTIONS FOR IRRIGATION SYSTEMS

- A. Apply this product only through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, or hand move; flood (basin); furrow; border; or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
- B. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
- C. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- D. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- E. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

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Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when chemigated area is open to the public such as golf courses or retail greenhouses.

Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas.

When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.

All words shall consist of letter of at least 2½ inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, following by an octagonal stop sign symbol of at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

This sign is in addition to any sign posted to comply with the Worker Protection Standard.

USE PRECAUTIONS FOR FLOOD (BASIN), FURROW AND BORDER IRRIGATION

1. Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.
2. Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
 - a. The system must contain a functional check valve, vacuum-relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
 - b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
 - c. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
 - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
 - e. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

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- f. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

USE PRECAUTIONS FOR SPRINKLER IRRIGATION

1. The system must contain a functional check valve, vacuum-relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Application of more than recommended quantities of irrigation water may result in decreased product performance by removing the chemical from the zone of effectiveness.
8. Do not apply when wind speed favors drift beyond the area intended for treatment.

USE PRECAUTIONS FOR DRIP (TRICKLE) IRRIGATION

1. The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

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5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

CULTIVATION AND PLANTING AFTER APPLICATION

On well-drained soils of light to medium texture which are not excessively wet or cold following application, planting may take place 14 to 21 days after treatment. If soils are heavy or especially high in organic matter or remain wet and/or cold (below 60°F) following application of VAPAM, an extended interval should be observed. Where dosages are greater than 100 gal. per acre, wait at least 60 days. On heavy, wet soils, light surface cultivation to break up crusting and promote drying of the soil should be done 5 to 7 days after application. This cultivation may be repeated as necessary. To avoid reinfesting treated soils, cultural practices should be such that untreated soils are not mixed with treated soils.

SPECIAL INSTRUCTIONS: When treating heavier field soils or soils containing high clay or organic matter, it is especially important that the soil be allowed to aerate and dry thoroughly after using VAPAM. During cold and/or wet weather, frequent shallow cultivations may aid the escape of VAPAM from the soil. If in doubt, transplant a seedling plant and examine for injury before planting crop.

USES, APPLICATION METHODS & RATES

FIELD APPLICATION—WHERE ENTIRE AREA IS BEING TREATED:

SOIL INJECTION: Using injectors, spread 5 inches apart or, using injector blades, inject VAPAM 4 inches deep into well-prepared soil. Follow immediately with a roller to smooth and compact surface. Light watering or a tarp after rolling helps prevent gas escape. For field use, 50 to 100 gal. VAPAM per acre is recommended.

SPRINKLER SYSTEM: Use only those sprinkler systems which give large water droplets to prevent excess loss. Use 75 to 100 gal. VAPAM per acre. For control of shallow pests (top 1 ft. or less of soil), run sprinklers 5 to 10 min. In next 10 to 20 min., inject into the sprinkler system all VAPAM needed for the area covered. On very light soils keep surface moist by sprinkling for 2 or 3 days. For control of pests deeper than 18 inches in the soil., divide VAPAM into 3 or more equal parts and apply at intervals during the sprinkling period.

CHECK OR FLOOD IRRIGATION: Meter VAPAM at a steady rate into water during irrigation. Use 50 to 100 gal. VAPAM per acre, depending upon the kind of pest and depth desired, in 3 to 18 inches of water per acre.

ROTARY TILLER: Spray or sprinkle diluted VAPAM immediately in front of tiller. Use 1 qt. VAPAM in 2½ gal. water per each 100 sq. ft. Follow immediately with a roller to smooth and compact the soil surface. Light watering or a tarp after rolling will help prevent gas escape.

FIELD APPLICATION TO BEDS OR ROWS:

SOIL INJECTION: VAPAM, at the rate of 75 to 100 gallons per treated acre (1½ to 2 pints per 100 sq. ft.) may be injected into preformed plant beds following the directions given above under soil injection. If a wider treated band is desired, space 2 or more injectors (shanks, blades, fertilizer wheels, etc.) at intervals of 5 inches to cover the desired treating width. Roll immediately.

If VAPAM is injected into established plant beds through plastic tarps to terminate growth of a previous crop, and to fumigate the bed in preparation for planting a subsequent crop, the terminated crop should not be used for any food or feed purpose after VAPAM has been applied.

Drip Irrigation: VAPAM must be applied through a drip irrigation system to wet the soil thoroughly in the area being treated.

Meter 25 to 75 gallons VAPAM per treated acre into the drip system during the entire irrigation period. APPLICATION MUST BE CONTINUOUSLY SUPERVISED. THIS IS VERY IMPORTANT: WEED ELIMINATION WILL NOT BE SATISFACTORY IF TOO MUCH WATER IS APPLIED. An adequate concentration of VAPAM must be present at the time of weed seed germination in order to be effective. Further directions for use are as follows:

1. Ground must be in seed-bed condition, no clods larger than ½" in diameter.
2. Beds must be listed, shaped and ready for planting.

3. Soil moisture must be at 50% of field capacity in the top 2-3" at time of VAPAM application.

TANKMIX WITH TILLAM® 6E HERBICIDE (TOMATOES ONLY): A tankmix of VAPAM soil fumigant plus TILLAM 6E herbicide may be used to provide the additional benefit of residual weed control. The mixture must be applied preplant to tomatoes if all directions and precautions pertaining to both VAPAM and TILLAM 6E are followed. Apply through a spray blade, by shank injection, low pressure boom sprayer or (Western Region only) through solid set sprinkler systems. Maintain constant agitation of the mixture throughout the filling and spraying period.

SOIL COVERING METHODS: (Bed-over methods). VAPAM may be sprayed or dripped onto the soil immediately ahead of bedshaping equipment. Cover the VAPAM with soil to a depth of 3 to 6 inches. The soil should be rolled and compacted immediately. The recommended rate of VAPAM is 50 to 100 gal. per treated acre, approximately equivalent to 1 to 2 pints per 100 sq. ft. of treated bed.

TREATMENT OF ORCHARD TREE REPLANT SITES: After removing dead or diseased tree and as much of the root system as possible, make a shallow basin over the planting site. Add VAPAM to the stream of water while filling the basin. Use 1 qt. VAPAM per 100 sq. ft. in sufficient water (depending on soil type) to penetrate at least 6 ft. If water is tanked to the planting site, add VAPAM to the water and mix before filling basin.

POTATOES: PACIFIC NORTHWEST AND NORTH CENTRAL STATES* - Fall Application. To suppress nematodes and *Verticillium dahliae* (Early Maturity Disease) in potatoes, use 50 to 100 gallons of VAPAM per treated acre. Inject into the sprinkler system (Refer to USE PRECAUTIONS FOR IRRIGATION SYSTEMS, Part A) all of the VAPAM needed for the area covered and apply in a minimum of 1 acre inch of water. VAPAM may be applied where crop stubble or vegetation exists without prior tillage, provided there is adequate soil penetration of VAPAM.

*Not for use in California.

EARLY MATURITY DISEASES OF POTATOES IN OREGON: Apply 40 gals. VAPAM per acre using thin shank injector rig with shanks spaced 5 inches apart.

NOTE: VAPAM will only control nematodes which are in the treated zone at time of treatment. VAPAM has no soil residual and reinfestation of a field can occur from numerous sources such as deep nematode populations, potato seed pieces, equipment contamination and blowing soil.

TOBACCO PLANT BEDS: Fall applications are recommended wherever possible. Read and follow DIRECTIONS FOR USE carefully. Treatment in the South should generally be made before November 30.

- A. **TARP METHOD:** Prepare the bed 5 to 7 days before application to ensure best conditions for weed seed germination and fumigant action of VAPAM. The bed should be free of clods, level and in good tilth. Apply 1 to 1½ gal. of VAPAM in a minimum of 40 gal. of water per 100 sq. yds. Apply uniformly over the entire bed. Cover the bed immediately with a plastic cover. Keep covered no less than one day, but no more than

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two days. The cover need not be tented, but should be secured to prevent wind from uncovering the treated area. Seven days after date of VAPAM application, loosen the treated soil to a depth of 2 inches. Do not seed tobacco earlier than 21 days after VAPAM application.

- B. **DRENCH METHOD:** Apply 2½ gal. VAPAM in 150 to 200 gal. of water per 100 sq. yd. Application may be made with sprinklers, sprayers with nozzles or any suitable equipment. Follow directions given above for Field Applications.

SYMPHYLAN CONTROL: Soil should be in good seedbed condition to a depth of 8 to 10 inches. Maintain adequate moisture during spring season. Treat during July-August when symphylans are in the upper soil surface. Apply 20 gal. VAPAM per treated acre (0.4 pints per 100 sq. ft.) using blade or chisel injectors spaced 5 inches apart. Inject below level of symphylan concentration, usually 6 to 8 inches. Pack soil immediately after application.

PEPPERMINT: Verticillium wilt control. When infection is limited to small spots in a field, spread can be reduced by treating the soil with 100 gal. VAPAM per treated acre (2 pints per 100 sq. ft.) using injector blade or thin shank injector rig with injectors spaced 5 inches apart.

STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food or feed by storage or disposal.

STORAGE: Store in a cool, dry place. Keep container closed when not in use. Do Not Store Below 0°F. Product crystallizes at lower temperatures. Warm or store at higher temperatures and mix to redissolve crystals and assure uniformity before use.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

IMPORTANT: Read the Entire Directions for Use and the Conditions of Sale and Warranty before using this product.

CONDITIONS OF SALE AND LIMITED WARRANTY

The Directions for Use of this product are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as timing and method of application, weather and crop conditions, mixture with other chemicals not specifically recommended or other influencing factors in the use of the product, all of which are beyond the control of the seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Seller harmless for any claims relating to such factors.

Seller warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label, subject to the inherent risks referred to above, when used in accordance with directions under normal conditions of use. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller and Buyer and User assume the risk of any such use. **SELLER DISCLAIMS ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING ANY WARRANTY OF FITNESS OR MERCHANTABILITY.**

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When Buyer or User claims losses or damages resulting from the use or handling of this product (including claims based on contract, negligence, strict liability or other legal theories), Buyer or User must promptly notify in writing Seller of any claims to be eligible to receive either of the remedies set forth below. The EXCLUSIVE REMEDY OF BUYER OR USER and the LIMIT OF LIABILITY of Seller will be, at the election of Seller, refund of the purchase price paid for product bought, or replacement of amount of product used. SELLER SHALL NOT BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT AND SELLER'S SOLE LIABILITY AND BUYER'S AND USER'S EXCLUSIVE REMEDY SHALL BE LIMITED TO THE REFUND OF THE PURCHASE PRICE.

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