



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

December 21, 1998

Lisa J. Strong
Regulatory Consultant
J. R. Simplot Company
P.O. Box 198
Lathrop, CA 95330

Subject: Review of Amended Labeling
Metam (Soil Fumigant)
EPA Reg. No. 7001-284
Your Submission Dated September 22, 1998

Dear Ms. Strong:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, is acceptable subject to the following comments:

1. For purposes of application for registration or amendment, copies of labeling should be submitted to the Agency on 8½" X 11" or mounted on 8½" X 11" paper.
2. Delete all references to "METAM 32.7" (under METAM TREATMENT GUIDELINES and FIELD APPLICATION TO BEDS OR ROWS - DRIP IRRIGATION) since your product name is "METAM".

A stamped copy is enclosed for your records. Please submit one (1) copy of your final printed labeling before you release the product for shipment. If you have any questions, then please contact Terri Stowe of my staff at (703) 305-6117.

Sincerely,

Mary L. Waller

Mary L. Waller
Product Manager (21)
Fungicide Branch
Registration Division (7505C)

Enclosure

20/15

Metam (Soil Fumigant)

ACTIVE INGREDIENT:	BY WT.
Sodium methyldithiocarbamate (anhydrous)	32.7%
INERT INGREDIENTS:	67.3%
TOTAL	100.0%

Contains 3.16 lbs. Sodium methyldithiocarbamate per gallon.

EPA Reg. No. 7001-284

EPA Est.

**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.)

STATEMENT OF PRACTICAL TREATMENT

FIRST AID: Immediately start the procedures given below and contact a Poison Control 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 20 minutes while removing contaminated clothing and shoes. Get medical attention immediately.

If In Eyes: Immediately flush eyes with large amount of running water for at least 20 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.

In Case of Emergency: Immediately call (24 hours) (800) 424-9300 CHEMTREC.

**PRECAUTIONARY STATEMENTS
DANGER**

HAZARDS TO HUMANS & DOMESTIC ANIMALS

Corrosive: Causes skin damage. May be fatal if 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.

PERSONAL PROTECTIVE EQUIPMENT

(1) Handlers Performing Direct-contact Tasks

Direct-contact task 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
- rinsate disposal
- cleanup of small spills
- preparing containers for aeration
- any other handling task not otherwise listed in(2) or (3) 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)

(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 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 if a pungent, rotten egg odor from this product can be detected outdoors.

- 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:

SATS

- a. Cartridges or canisters must be replaced daily or when odor or irritation from this product becomes apparent, whichever is sooner.
- b. Respirators must be fit-tested and fit-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, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not contaminate water by disposal of equipment washwaters.

USE PRECAUTIONS

All METAM uses described on this label are intended for soil preparation purposes only. All plant foliage and established plants growing on the treatment site will be damaged or destroyed.

Keep METAM 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 or where fumes may enter nearby dwellings. Do not use in greenhouses. Keep container tightly closed when not in use. Do not store near feed or food.

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.

Use only according to product label booklet and/or side panel instructions. Refer to supplemental labeling entitled METAM (Soil Fumigant) Booklet, for use directions for chemigation. Do not apply this product through any irrigation system unless the supplemental labeling on chemigation is followed.

CALIFORNIA ONLY: Application must be in compliance with Technical Information Bulletin, California "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 registration.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR 170. This Standard container requirements for the protection of agricultural workers on farms, forests, nurseries, 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 protective equipment, restricted-entry intervals, and notification to workers. The requirements in this book 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 trained 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.

NOTIFICATION: Notify workers of the application by warning them orally and by posting warning signs. The signs must state: (1) "DANGER/PELIGRO," (2) "PESTICIDES/PESTICIDAS," (3) "KEEP OUT/NO ENTRE," (4) the date and time of fumigation, (5) [FUMIGANT NAME AND CONCENTRATION], and (6) "name, address, and telephone number of the applicator." Post the WPS sign in compliance with 40 C.F.R. Part 170, and follow the WPS requirements pertaining to location, legibility, color, size, and timing of posting and removal.

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

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."

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PRODUCT INFORMATION

METAM 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.

METAM is recommended for the control of certain soilborne pests that attack ornamental, food and fiber crops causing reductions in yield and quality. NOTE: METAM will control only those pests in fumigation zone at the time of treatment. Reinfestation may be subsequent to the fumigant's dissipation from the soil.

Weeds and germinating weed seeds that are controlled include annual bluegrass, Bermudagrass, chickweed, dandelion, ragweed, henbit, lambsquarter, Amaranthus sp. (pigweed, careless weed), watergrass, Johnsongrass, nutgrass, wild morning glory, purslane, barnyardgrass, crabgrass, groundsel, prickly lettuce, pineappleweed, nettleleaf goosefoot, nightshade, Shepherdspruse, stinging nettle, Malva, London rocket, and fiddleneck. The best weed control is obtained when METAM 32.7 is applied to weeds that are actively growing.

The soilborne plant pathogenic fungi controlled include species of Verticillium, Rhizoctonia, Pythium, Phytophthora, Sclerotinia, as well as Sclerotium rolfsii, Armillaria mellea (Oak root fungus), and Plasmodiophora brassicae (Club root of crucifers).

The plant parasitic nematodes which METAM controls include root knot, lesion, dagger, lance, needle, pin, reniform, stunt, stubby root, sting, and spiral. NOTE: METAM will only control nematodes that are in the fumigated zone at the time of treatment. In Oregon and Washington, METAM will only suppress Meloidogyne chitwood.

Other pests controlled include symphylids or garden centipedes.

METAM TREATMENT GUIDELINES:

For optimum results from soil fumigation with METAM 32.7, certain procedures should be observed at designated times in the treatment program. Described in this section are important guidelines for each of the four stages of the treatment process:

- planning a METAM application
- field preparation prior to application
- application of METAM
- preparing for planting after application of METAM

Your sales representative will help you select the best treatment program for your particular needs.

PLANNING A METAM APPLICATION:

Time of Application:

METAM is applied after harvest and 14-21 days before a new crop is planted, in some areas of North America, fall applications are preferred because the fumes dissipate over the winter, allowing planting to begin as soon as favorable springtime conditions arrive.

Application Rate:

Apply 20 to 100 gallons of METAM per treated acre depending on crop, target pest, and soil properties. Soil properties to consider when determining the application rate include the depth of soil to be treated, soil texture, and percent organic matter.

Target Pest and Depth of Treatment:

When rate ranges for METAM 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.

Consult with state nematologist, entomologist and plant pathologist to determine if crop rotation is more feasible than fumigation. Note: METAM will only control pests, unless otherwise specified on this label, that are in the fumigated zone at the time of treatment.

For control of weeds and fungi causing seed or seeding diseases, treatment of only the top 2 to 4 inches of soil may be required. For control of nematodes and fungi which occur throughout the rhizosphere, treatment to depths greater than 4 inches may be required. For a given soil type, the required application rate will increase proportionately with the depth of treatment required. For example, if 25 gallons of METAM per acre is required to treat 4 inches, then 50 gallons of METAM will be required to treat to a depth of 8 inches. Choose the appropriate application method to distribute METAM evenly throughout the soil to the required depth.

Soil Characteristics:

Soil properties to consider when determining the application rate include the depth of soil to be treated, soil texture, and percent organic matter.

Except in the case of cover crops, plant material under the soil surface should be thoroughly decomposed before METAM is applied. Because of the absorbing effect of humus, soils with high levels of organic matter under the surface require higher than usual doses of METAM. For example, muck soils require twice the amount of fumigant that would be used in mineral soils.

Application rates will vary with the soil texture. For instance, heavy clay soils require more METAM than light sandy soils.

FIELD PREPARATION PRIOR TO APPLICATION:

Soil Cultivation:

Always cultivate thoroughly area to be treated to loosen soil and to break up clods. Then sprinkle or flood irrigate to moisten loosened soil needed. Immediately before treatment, cultivate lightly to break up sod crust.

Soil Temperature During Treatment:

At the time of fumigation, the soil temperature should be the range of 40°F to 90°F in the treated zone. Treated zone is defined at the depth of treatment that METAM achieves at the time of application. To prevent rapid evaporation of the product from the soil, avoid treating soil during times of the day when soil temperatures exceed 90°F two inches deep instead, make the application during the early morning hours when the soil temperature is coolest.

Measuring the Soil Moisture:

Application should be made under "good seed bed moisture conditions" that is, the soil moisture should be about 50-80% of field capacity. As a simple field test, squeeze a handful of soil into a ball and then gently try to break it apart with your fingers. If it breaks easily, the soil moisture content is sufficient. If it will not break apart or if water can be squeezed out, it is too wet. When necessary, 1-2 weeks prior to treatment sprinkle or flood irrigate the soil to increase the moisture content. The soil must be moistened to at least the desired treatment depth.

Phytotoxicity:

METAM is phytotoxic. Protect valuable, nontarget plants by stopping soil applications of METAM at least 3 feet short of the drip line of trees, shrubs, and other desirable plants. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

APPLICATION OF METAM:

Apply METAM according to the methods and rates outlined under "USES, APPLICATION METHODS, & RATES" section below.

Use of Diluted METAM:

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

Odors During or After Application:

Strong odors during or after application are a signal that the fumigant is escaping and needs to be sealed in the soil. If increasingly strong odors are occurring, the application should be stopped immediately and not resumed until the source of the odor problem is identified and corrected. For sprinkler application or whenever possible with other application methods, a water seal should be applied immediately to the treated areas of the field.

Sealing METAM In Soil:

To be most effective, METAM should be sealed in the soil. Sealing methods include applying irrigation water or tarpaulins (plastic, paper or fabric) and packing soil with a roller or draft. Tarpaulins should be spread loosely over the treated area and secured to prevent removal by wind. They should remain in place for at least 48 hours. If tarped, the sealed area should be cultivated to a depth of 2 inches to aerate the soil seven days after treatment. When tarpaulins are used to seal the soil, wait at least 21 days before planting.

Application In Tank Mix With Liquid Fertilizer:

METAM may be injected in a mixture with liquid fertilizers. Since the composition of liquid fertilizers vary considerable, the physical compatibility of each fertilizer METAM tank mix should be checked by using the following procedure:

Mix a small quantity of METAM and liquid fertilizer in a glass container. METAM and fertilizer should be mixed in the same ratio as they will be applied to the field (i.e., if 40 gallons of METAM and 40 gallons of liquid fertilizer are to be applied per acre, then METAM and fertilizer should be mixed in the jar in a 40:40 or 1:1 ration). 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.

GENERAL PRECAUTIONS FOR IRRIGATION SYSTEMS:

When applying by chemigation methods the following directions or warnings must be observed:

Apply this product only through sprinkler; center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun solid set, or hand move; flood (basin); furrow; border, or drip irrigation systems. Do not apply through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not connect an irrigation system used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.

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.

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, inpatient clinics, nursing homes or near public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses.

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 letters of at least 2 1/2 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, followed by the 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 SPRINKLER IRRIGATION

- 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.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- 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.
- Application of more than recommended quantities of irrigation water may result in decrease product performance by removing the chemical from the zone of effectiveness.
- Do not apply when wind speed favors drift beyond the area intended for treatment.
- Use only sprinkler systems that give uniform coverage.

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

Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from backflow if water flow stops.

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

- 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.
- The pesticide injection pipeline must contain a functional, automatic quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 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.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- 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 DRIP (TRICKLE) IRRIGATION

- 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.
- The pesticide injection pipeline must contain a functional, automatic quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 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.
- The system must contain functional interlocking controls that automatically shut off the pesticide injection pump when the water pump motor stops.

• 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.

• 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.

CHEMIGATION SYSTEMS CONNECTED TO PUBLIC WATER SYSTEMS

NOTE: J. R. Simplot Company does not encourage connection of chemigation systems to public water systems. The following information is provided for users who have evaluated all alternative application and water source options before choosing to make such a connection.

A "public water system" is one that provides piped water for human consumption to the public, and the system also either has at least 2 service connections or regularly serves an average of at least 2 individuals daily at least 60 days a year.

• Chemigation systems connected to the public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There should be a complete physical break (air gap) between the outlet and of the fill pipe and the top or overflow rim of the reservoir tank measuring at least twice the inside diameter of the fill pipe.

• The pesticide injection pipeline must 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.

• The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

• 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.

• 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.

PREPARATION FOR PLANTING AFTER APPLICATION OF METAM

Effect of Rain:

If a METAM application is rained off less than 24 hours after treatment, lack of control at and near the soil surface may result.

Recontamination:

Precautions must be taken to prevent recontamination of treated soil with plant pathogenic fungi and plant parasitic nematodes. Use clean seeds and plants. Before farm equipment is driven into the treated area, it should be rinsed free of the untreated soil from other fields.

Interval Between Treatment and Planting

Because METAM is harmful to living plants, an appropriate interval must be observed between soil fumigation and planting. On well drained soils which have a light to medium texture and which are not excessively wet or cold following application, planting can begin 14-21 days after treatment. If soils are heavy or especially high in organic matter, or if they remain wet and/or cold (below 60°F) following application, a minimum interval of greater than 21 days should be observed, extending until the soil is sufficiently dry to allow for cultivation.

Aeration Before Planting

Important: When treating heavier field soils, including soils high in clay or organic matter, should be allowed to aerate and dry thoroughly after treatment with METAM. During cold and/or wet weather, frequent shallow cultivation can aid the escape of METAM from the soil.

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 soil, cultural practices should be such that untreated soils are not mixed with treated soils.

Testing for Dissipation of METAM

After the waiting period has passed, if there is any question about the complete escape of METAM from the soil, transplant seedlings into the treated soil. If the plant develops normally without any signs of chemical injury, crop planting can begin.

USES, RATES AND APPLICATION METHODS

FIELD APPLICATION—where entire area is BEING TREATED

SOIL INJECTION: Use injectors (shanks, blades, fertilizer wheels, plows, etc.) to apply METAM at the rate of 40 to 100 gallons METAM per treated acre. Follow immediately with a bedshaper, roller press wheel, or similar device, or cover with an adequate amount of soil to seal the fumigant into the soil. Light watering or a tarp after rolling helps prevent gas escape.

Example: Apply METAM through injectors placed 4 inches below surface and 5 inches apart.

SPRINKLER SYSTEM: Use only those sprinkler systems which give large water droplets to prevent excess loss. Using an injector pump or gravity metering device, apply 75 to 100 gallons METAM per treated acre in a minimum of one acre inch of water. For control of shallow pests (top 12" or less of soil profile), use 20 to 100 gallons per acre. Inject the METAM in enough water to reach the desired treatment depth. The product should be continuously metered into the irrigation system throughout the entire application period. Flush the system with only enough water to clear lines. If the soil surface dried quickly, reseal it with 20 minutes of water once a day for the next day or two. On very light soils, keep surface moist by sprinkling for 2 or 3 days. Follow use precautions in "CHEMIGATION" section above.

Application Over Cover Crops:

METAM can be applied through sprinkler irrigation systems over cover crops such as alfalfa, clover, and such grasses as rye, oats, wheat, and sudan grass. When the product is applied over covers, no cultivation of the soil is required before the application of METAM.

Effect of Air Temperature and Winds on Sprinkler Application:

When using a sprinkler application method, apply METAM only when the air temperature is below 90°F (32°C). This precaution is recommended to guard against evaporation of the product. Either low humidity or high winds can also cause the evaporation of METAM before it can be drenched into the soil. To prevent wind drift of the fumigant, apply only when wind conditions are suitable.

Runoff of Treatment Solution:

To prevent runoff of treatment solution during sprinkler application, do not exceed the infiltration rate of the solution into the soil. Should runoff occur, isolate it from growing crops and water sources. Once collected, reapply it to the treated area.

CHECK, FLOOD (BASIN), FURROW and BORDER IRRIGATION: Meter METAM at a steady rate into water during irrigation. Use 50 to 100 gallons METAM per treated acre, depending upon the kind of pest and depth desired, in 3 to 18 inches of water per acre. Follow use precautions in "CHEMIGATION" section above.

DISC APPLIED METHOD: Spray dilute METAM immediately in front of disc. Use 20 to 100 gals. METAM per treated acre. Follow immediately with a bedshaper, roller press wheel, or similar device, or cover with an adequate amount of soil to seal the fumigant into the soil.

FIELD APPLICATION TO BEDS OR ROWS:

SOIL INJECTION: METAM may be injected, at the rate of 75 to 100 gallons METAM per treated acre (1 1/2 to 2 pints per 100 sq. ft. of treated soil), 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.) to cover the desired treating width. Roll immediately. Light watering or a tarp after rolling helps prevent gas escape.

Note: If METAM 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 METAM has been applied.

DRIP IRRIGATION: During pre-irrigation, check drip tape for uniform distribution and repair if necessary. Apply 20 to 75 gallons METAM per treated acre (0.4 to 1.5 pints per 100 sq. ft. of treated soil) using enough water to thoroughly wet entire desired treatment zone. During the entire irrigation period, inject METAM continuously into drip line as close as possible to treatment area. Two or more lines per bed may be needed to ensure full coverage. See use precautions in "CHEMIGATION" section above.

Important: Application must be continuously monitored as weed elimination will not be satisfactory if too much water is applied. An adequate concentration of METAM must be present at the time of weed seed germination to provide effective weed control. Further directions for use are as follows:

1. Ground must be in seedbed condition, no clods larger than 1/2" 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 METAM 32.7 application.

SOIL COVERING METHODS: (Bed-over methods). METAM may be sprayed or dripped onto the soil immediately ahead of bed-shaping equipment. Follow immediately with a bedshaper, roller press wheel, or similar device, or cover with an adequate amount of soil to seal the fumigant into the soil. The recommended rate of METAM is 50 to 100 gallons per acre of treated sod, approximately equivalent to 1 to 2 pints per 100 linear ft. of 12-inch wide row.

ROTARY TILLER or POWER MULCHER: Spray dilute METAM immediately in front of tiller or mulcher. Use 50 to 100 gallons per treated acre (1 to 2 pints per 100 sq.ft. of treated soil). Follow immediately with a bedshaper, roller press wheel, or similar device, or cover with an adequate amount of soil to seal the fumigant into the soil.

DRENCH METHOD: Apply 20 to 100 gallons METAM per treated acre to finished beds in enough water to soak at least 2 inches deep for control of shallow seeded weeds. Avoid contamination by untreated soil by not disturbing the treated area.

TREATMENT OF 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 METAM to the stream of water while filling the basin. Use 1 quart METAM per 100 sq.ft. in sufficient water (depending on soil type) to penetrate at least 6 ft. For control of oak root fungus, use a basin at least 20 x 20 ft. square. Increase dosage to 2 qts. METAM per 100 sq.ft. in sufficient water to penetrate to the depth of root system. If water is tanked to the planting site, add METAM to the water and mix before filling basin.

ADDITIONAL RECOMMENDATIONS:

SEED TREATMENT: A suitable fungicide should be used to treat all crop seed being planted into fumigated soil.

POTATOES: For suppression of Root Knot Nematodes and Control of Verticillium dahliae (Early Maturity Disease) in Potatoes: Sprinkler System Preplant Application—Use 50 to 100 gallons of METAM per treated acre. Inject into the sprinkler system all the METAM needed for the area covered and apply in a minimum of 1 acre inch of water. Soil temperature should be in a range of 40°F to 90°F in the treatment zone. Soil moisture immediately prior to treatment must be 50% to 75% of yield capacity down to 24" level. Soil condition must facilitate even moisture penetration without runoff.

NOTE: METAM will suppress root knot nematodes in the fumigated zone at the time of treatment. The fumigated zone is defined as the depth of penetration that METAM achieves at the time of application. If high numbers or deep nematodes are identified, anticipate nematodes to build up throughout the growing season. Some damage will occur unless additional action is taken.

METAM has no soil residual and reinfestation of a field can occur from numerous sources such as deep nematode populations, seed pieces, irrigation water, equipment contamination and blowing wind.

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

WHEAT AND BARLEY: For suppression of certain root diseases caused by Early Season Soil Fungi — before applying METAM cultivate the area to be treated to break up clods. Apply 2½ to 10 gallons per treated acre 14 to 21 days before planting. METAM may be diluted with water or non-acidic liquid fertilizer immediately before applying. Inject METAM to a depth of 5 to 8 inches into moist soil. Space injector shanks 2 to 12 inches apart.

Do not mix METAM with acidic fertilizer or other acidic solution. For best results, moisture in the treated zone should be 50% of field capacity or more.

Use only in areas which receive 15 or more inches of rainfall per year.

PEANUTS—CYLINDROCLADIUM BLACK ROT (CBR) CONTROL: Apply METAM at the following rates:

- CBR resistant cultivar (NC 8C): 10 gallons per treated acre of 4.1 pints per 1,000 feet of treated row.
- CBR susceptible peanut cultivars (Flongant, GK-3, NC-5, Keel 29) 20 gallons per treated acre or 11 pints per 1,000 feet of treated row.
- CBR highly susceptible cultivars (VA 818, NC7): use of METAM not recommended.

Soil Preparation: Before applying METAM residue from the previous crop should be decomposed (enhanced by fall disking) and plowed under in the spring with moldboard plow. Soil incorporated preplant herbicides must be applied before application of METAM.

Application: Apply METAM with a gravity flow regulator through chisel-type or counter-type applicators. Center each applicator, one per row, in front of a bedshaper to mark the location of chemical deposition. METAM should be deposited 6 to 8 inches below the soil surface of beds. Bed and applicator spacing should coincide with row spacing at planting. Soil temperatures must be in the range of 60°F to 90°F at 3-inch depth before application.

Tillage and Planting after Application: Do not mix treated soil with untreated soil by tillage or other cultural practices. Plant peanuts in the center of treated beds no earlier than 14 days following application of METAM. An at planting nematicide treatment will be necessary in fields with heavy infestations of root knot, ring, and/or string nematode.

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 METAM. The bed should be free of clods, level and in good tilth. Apply 1 to 1½ gallons of METAM in a minimum of 40 gallons of water per 100 sq. yd. of treated soil. Apply uniformly over the entire bed. Cover the bed immediately with a plastic cover. Keep covered no less than one day, but not more than 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 METAM application, loosen the treated soil to a depth of 2 inches. Do not seed tobacco earlier than 21 days after METAM application.

B. DRENCH METHOD: Apply 2½ gallons METAM in 150 to 200 gallons of water per 100 sq. yd. of treated soil. Application may be made with sprinklers, sprayers with nozzles or any suitable equipment. Follow directions given above for seed bed treatment.

SYMPHYLID CONTROL: Soil should be in good seed bed condition to a depth of 8 to 10 inches. Maintain adequate moisture during Spring season. Test during July-August when symphyllids are in the upper soil surface. Apply 20 gallons METAM per treated acre (0.4 pints per 100 sq. ft.) of treated soil) using blade or chisel injectors spaced 5 inches apart. Inject below level of symphyllid concentration, usually 6 to 8 inches. Pack soil immediately after application.

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

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STORAGE AND DISPOSAL:

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

STORAGE: Keep container tightly sealed during storage. Do not store below 0°F. Product crystallizes at lower temperatures. If exposed, warm or store at higher temperatures and mix to redissolve crystals and assure uniformity before use.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent) containers or bulk storage tanks. Offer containers for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other procedures approved by State and local authorities.

NET CONTENTS

GALLONS

Simplot

J.R. SIMPLOT COMPANY

P.O. Box 198
Lathrop, CA 95330

P.O. Box 15057
Boise, ID 83715

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METAM (PM65/AGC 9/98)

**ACCEPTED
with COMMENTS
In EPA Letter Dated:**

12/21/98

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

7001-284



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