

US EPA ARCHIVE DOCUMENT

4-20-98

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



PC Code: 039003
DP Barcodes: D244433

MEMORANDUM:

SUBJECT: Metam Sodium - Request for a waiver of the Spray Drift Data Requirements (201-1 and 202-1). Letter from Carl F. Watson (Buckman Laboratories) dated February 19, 1998 and revised labels [Busan 1236 (EPA Reg. No. 1448-361) and Busan 1020 (EPA Reg. No. 1448-85)] which delete the Sprinkler Irrigation uses.

TO: Michael Goodis, CRM
Kathy Monk, Chief
Reregistration Branch II
Special Review and Reregistration Division (7508W)

FROM: Dana S. Spatz, Chemist *Dana Spatz*
Environmental Risk Branch IV
Environmental Fate and Effects Division (7507C)

THROUGH: Mah Shamim, Ph.D., Branch Chief *Mah Shamim*
Environmental Risk Branch IV
Environmental Fate and Effects Division (7507C)

4/20/98

Buckman Laboratories has submitted revised labels for two Metam Sodium products (Busan 1236 and Busan 1020). These labels have been amended to prohibit sprinkler irrigation methods of application. Based on these label changes, they have requested that the spray drift data requirements (201-1 and 202-1) be waived. EFED has reviewed the amended labels and agrees that spray drift studies are not needed now for these two products.

DP BARCODE: D244433

REREG CASE # 2390

CASE: 804395
SUBMISSION: S539467

DATA PACKAGE RECORD
BEAN SHEET

DATE: 03/23/98
Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REREGISTRATION ACTION: 614 DATA WAIVER REQUEST
CHEMICALS: 039003 Metam-sodium 100.00 %

ID#: 039003-001448
COMPANY: 001448 BUCKMAN LABORATORIES INC
PRODUCT MANAGER: 52 KATHY MONK 703-308-8071 ROOM: CS1 3B
PM TEAM REVIEWER: MICHAEL GOODIS 703-308-8157 ROOM: CS1 3W83
RECEIVED DATE: 02/23/98 DUE OUT DATE: 05/04/98

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 244433 EXPEDITE: N DATE SENT: 03/20/98 DATE RET.: / /
CHEMICAL: 039003 Metam-sodium
DP TYPE: 999 Miscellaneous Data Package
CSF: N LABEL: Y

ASSIGNED TO	DATE IN	DATE OUT	ADMIN DUE DATE: 05/09/98
DIV : EFED	03/23/98	/ /	NEGOT DATE: / /
BRAN: ERB4	/ /	/ /	PROJ DATE: / /
SECT: IO	/ /	/ /	
REVR : MSHAMIM	/ /	/ /	
CONTR:	/ /	/ /	

* * * DATA REVIEW INSTRUCTIONS * * *

Metam-Sodium: Buckman Laboratories has submitted revised labels that no longer include sprinkler application methods. Their proposal is that removal of this method will alleviate the spray drift data requirements (GLN #s 201-1 and 202-1). Please review these labels to determine if these requirements can be waived. Contact Mike Goodis at 308-8157 if you have nay questions.

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL
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A Multipurpose Soil Fumigant

BUSAN 1236

ACTIVE INGREDIENT:

Sodium N-methyldithiocarbamate.....42.5%

INERT INGREDIENTS.....57.5%

100%

This product contains 4.3 lb. of active ingredient per gallon and weighs 10.1 lb. per gallon.

THIS PRODUCT IS NOT TO BE SOLD IN THE FOLLOWING COUNTIES OF TEXAS: ATASCOSA, CAMERON, DUVAL, HIDALGO, MAVERICK, STARR, WILLACY, ZAPATA.

Manufactured by
Buckman Laboratories, Inc.
Memphis, Tennessee 38108, U.S.A.

IT IS THE RESPONSIBILITY OF THE USER TO READ THIS LABEL AND USE THIS PRODUCT ACCORDINGLY.

NET CONTENTS: AS MARKED ON CONTAINER
EPA Reg. No. 1448-361
EPA Est. 1448-TN-1 EPA Est. 1448-MO-1

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).

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

- Corrosive: causes skin damage. May be fatal if absorbed through 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.

Worker Protection Standards (WPS) for applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170):

Personal Protective Equipment (PPE)

(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 and 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 exposures,
- 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 task may be performed in a treated area outdoors) in which a treatment took place:

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

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

Handlers performing the above task must wear:

- Coveralls over long-sleeved shirts 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.
 - b. Respirators must be fit-tested and fit-checked using a program that conforms to the OSHA requirements (described in 29 CFR Part 1910.134).
- 2. Dispose of Contaminated Clothing:** Discard clothing and other absorbent material that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.
- 3. Clean and Maintain PPE:** Follow manufacture'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 days use.

User Safety Recommendations

Users should:

- * Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- * Remove clothing immediately if pesticide get 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.

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 person.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not contaminate water when disposing of equipment washwaters or rinsate. 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 discharge effluent containing this product directly into lakes, streams, ponds, estuaries, oceans or public waters unless in accordance with requirements of a National Pollutant Discharge System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

STORAGE AND DISPOSAL

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

STORAGE: Do not expose to extreme temperatures. Do not stack more than 4 drums high. Leaking or damaged drums should be placed in overpack drums for disposal. Spills should be absorbed in sawdust or sand and disposed of in a sanitary landfill. Keep container closed when not in 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 your 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 by other procedures approved by state and local authorities.

USE PRECAUTIONS

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 or where fumes may enter nearby houses. Do not use in greenhouses. Keep container tightly closed when not in use.

PRODUCT INFORMATION

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 Metam Sodium Registrant

Busan 1236 is a water-soluble liquid. When applied to properly prepared soil, the liquid is converted into a gaseous fumigant. After a sufficient waiting period, the gas dissipates, leaving the soil ready for planting. Busan 1236 is recommended for the suppression of weeds and the control of plant parasitic nematodes, and soilborne fungi that cause reductions in the yield and quality of ornamental, food, and fiber crops.

Busan 1236 will control only those pests in the fumigation zone at the time of treatment. Recontamination may occur subsequent to the fumigant's dissipation from the soil.

Weeds and germinating weed seeds that are suppressed include grasses (annual bluegrass, Bermuda grass, water grass, Johnson grass), sedges (nutgrass), composites (dandelion, ragweed), pinks (chickweed), mints (henbit), goosefoots (lambquarters), amaranths (pigweed, careless weed), convolvulus (wild morning glory), purslanes, and nightshades. The best weed suppression is obtained when Busan 1236 is applied to weeds that are in an active vegetative growth phase.

The plant parasitic nematodes which Busan 1236 controls include root knot, lesion, dagger, lance, needle, pin, reniform, stunt, stubby root, sting, and spiral. Note: In the Northwest, Busan 1236 will only suppress *Meloidogyne chitwoodi*.

The 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 fungus), *Phoma* (*Pyrenochaeta*) *terrestris* (Pink Root), *Cylindrocladium crotalariae* (*Cylindrocladium* Black Rot).

BUSAN 1236 TREATMENT GUIDELINES

For optimum results from soil fumigation with Busan 1236, 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 Busan 1236 application
- Preparing a field for application of Busan 1236
- Applying Busan 1236
- Preparing for planting after application of Busan 1236.

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

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.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR 170. This Standard contains requirements for the protection of agricultural workers on farms, forest 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 protective equipment, 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 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 fumigant warning signs. The signs must bear the skull and crossbones symbols and state: (1) DANGER/PELIGRO, (2) Area under fumigation, DO NOT ENTER/NO ENTRE, (3) the date and time of fumigation, (4) BUSAN 1236 Fumigant in use, and (5) name, address, and telephone number of applicator. Post the fumigant warning signs instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, 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.

General Precautions for Irrigation Systems

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 area such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when chemigated area is open to 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 should 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 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 an octagonal stop sign symbol of at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDE IN IRRIGATION WATER. This sign is in addition to any sign posted to comply with the Worker Protection Standard

Planning a Busan 1236 Application

Time of Application

Busan 1236 is applied following harvest and not less than 21 days before a new crop is planted. In some area 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 Over Cover Crops

~~Busan 1236 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 cover crops, no cultivation of the soil is required before the application of Busan 1236.~~

Application Rate

Apply 14 to 72 gallons of Busan 1236 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.

Busan 1236 can be used at 22 and 37 gallons per acre before or following the use of Telone II. A minimum of a 14 day interval must be observed between the application of the products.

Target Pest and Depth of Treatment

For control of fungi causing seed or seedling 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 Busan 1236 per acre is required to treat 4 inches, then 50 gallons of Busan 1236 will be required to treat to a depth of 8 inches. Choose the appropriate application method to distribute Busan 1236 evenly throughout the soil to the required depth.

Organic Matter in the Soil

Except in the case of cover crops, plant material under the soil surface should be thoroughly decomposed before Busan 1236 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 Busan 1236. For example, muck soils require twice the amount of fumigant that would be used in mineral soils.

Soil Texture

Application rates will vary with the soil texture. For instance, heavy clay soils require more Busan 1236 than light sandy soils.

Preparing a Field for Application

Soil Cultivation

Cultivate the soil thoroughly before treatment, breaking up all large clods. If the soil crusts following pretreatment irrigation, lightly cultivate it again before treatment with Busan 1236.

Soil Temperature During Treatment

At the time of fumigation, the soil temperature should be in the range of 40° - 90°F (4° - 32°C) at a depth of 3 inches.

To prevent rapid evaporation of the product from the soil, avoid treating soil during times of the day when soil temperatures exceed 90°F (32°C). 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 percent 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.

Area To Be Treated

Busan 1236 can be applied either broadcast or in bands, depending on the crop to be planted. For example, in the production of row crops, band applications are most economical.

Phytotoxicity

Busan 1236 is phytotoxic. Protect valuable, non-target plants by stopping soil applications of Busan 1236 at least 3 feet short of the drip line of trees, shrubs, and other desirable plants. Crop injury [or] lack of effectiveness ~~or illegal pesticide residues in the crop~~ can result from nonuniform distribution of Busan 1236.

Applying Busan 1236

Busan 1236 may be applied by chemigation [but not sprinkler irrigation], soil injection, disc, rotary tiller, power mulcher, and soil covering methods.

Use of Diluted Busan 1236

DO NOT STORE THE DILUTED PRODUCT. Use Busan 1236 promptly after it has been mixed with water. Although Busan 1236 is stable in its concentrated form, in dilute solutions in water, Busan 1236 decomposes over a period of weeks.

Odors During Treatment

Strong odors during or after treatment are a signal that the fumigant is escaping and needs to be sealed in the soil.

Sealing Busan 1236 in Soil

To be most effective, Busan 1236 should be sealed in the soil. Sealing methods include applying irrigation water or plastic tarpaulins and packing soil with a roller or drag. 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. Seven days after treatment, the sealed area should be cultivated to a depth of 2 inches to aerate the soil. When tarpaulins are used to seal the soil, wait at least 21 days before planting.

Application Methods

1) CHEMIGATION METHODS

PRECAUTIONARY STATEMENTS

When applying by chemigation methods the following precautions must be observed:

- General

A. Apply this product only through the following types of systems: ~~sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move~~; flood (basin); furrow; border; or drip (trickle) irrigation system(s). Do not apply this product through any other type of irrigation system, such as sprinklers.

B. Crop injury [or] lack of effectiveness ~~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.

- Chemigation Systems Connected to Public Water Systems

A "public water system" is one that provides piped water for human consumption to the public, and the system also either has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days a year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventor (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 end 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, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

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. This valve prevents 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 shut off the pesticide injection pump automatically when the water pump motor stops. In cases where there is no water pump, controls on the pesticide injection pump are also needed 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.

- ~~Drift Prevention~~

~~Do not apply when wind speed favors drift beyond the area intended for treatment.~~

- 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.

BROADCAST CHEMIGATION METHODS

● **Sprinkler Chemigation:** Use 35 to 72 gallons Busan 1236 per treated acre for control of nematodes and fungi at a depth of 24 inches. For control of fungi and suppression of weeds at a depth of 6 inches or less, use 14 to 72 gallons per treated acre. Inject the Busan 1236 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, rewater it with 15 minutes of water once a day for the next day or two.

Use sprinkler systems that give uniform coverage. Apply only through central pivot or solid set sprinkler irrigation systems containing antisciphon and check valves which will prevent water source contamination and overflow of the slurry tank. 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 also contain interlocking controls between the metering device and the water pump to ensure simultaneous shut-off. 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.

NOTE: Effect of Air Temperature and Winds on Sprinkler Application

When using a sprinkler application method, apply Busan 1236 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 Busan 1236 before it can be drenched into the soil. To prevent wind drift of the fumigant, apply only when wind conditions are suitable.

● **Check, Flood (Basin), Furrow and Border Chemigation:** Meter Busan 1236 at a steady rate into water during irrigation. Depending upon the kind of pest and the treatment depth desired, use 14 to 72 gallons of Busan 1236 per treated acre in 3 to 18 inches of water per acre.

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 the potential for contaminating the water source from backflow should the water flow stop.

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

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.

BAND, BED OR ROW CHEMIGATION METHODS

- **"Drip Chemigation":** During pre-irrigation, check drip tape for uniform distribution and repair if necessary. Apply 14 to 72 gallons per treated acre. Inject Busan 1236 continuously into drip line as close as possible to treatment area. Use enough water to thoroughly wet entire desired treatment zone. Two or more lines per bed may be needed to ensure full coverage.

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.

- **Drench Method:** Busan 1236 may be applied to finished beds in enough water to soak at least 2 inches deep for suppression of shallow seeded weeds. To avoid contamination by untreated soil, do not disturb the treated area. Apply 14 to 72 gallons of Busan 1236 per treated acre.

2) OTHER FIELD APPLICATION METHODS

BROADCAST METHODS

● **INJECTION METHOD**

Soil Injection: Use chisel or shank-type injectors to apply 14 to 72 gallons of Busan 1236 per acre into well prepared soil. Seal immediately after treatment.

● **INCORPORATION METHODS**

Disc or Plow Applied Method: ~~Spray Apply~~ dilute Busan 1236 immediately under disc or plow. Use 14 to 72 gallons per treated acre. Follow immediately with a roller to smooth and compact the soil surface.

Rotary Tiller or Power Mulcher: ~~Spray Apply~~ dilute Busan 1236 immediately in front of tiller or mulcher. Use 14 to 72 gallons per treated acre. Follow immediately with roller or bed shaper to seal soil surface.

BAND, BED OR ROW METHODS

● **INJECTION METHOD**

Soil Injection: Busan 1236 can be injected into pre-formed plant beds using chisel or shank-type injectors. If a wider treated band is desired, space 2 or more shanks to cover the desired treating width. Seal after treatment. Use 14 to 72 gallons per treated acre.

● **INCORPORATION METHODS**

Rotary Tiller or Power Mulcher: ~~Spray Apply~~ dilute Busan 1236 immediately in front of tiller or mulcher. Use 14 to 72 gallons per treated acre. Follow immediately with roller or bed shaper to seal soil surface.

Soil Covering Methods (Bed-over methods): Busan 1236 may be ~~sprayed or dripped~~ applied onto the soil immediately ahead of bed-shaping equipment. Cover the Busan 1236 with soil to a depth of 3 to 6 inches. The recommended rate of Busan 1236 is 14 to 72 gallons per treated acre.

Busan 1236 may be applied to prepared or unprepared sites as a ~~coarse-spray~~ drench treatment in a band using standard tractor ~~spray~~ application equipment. Use 55 to 72 gallons of product per treated acre. Apply irrigation water while ~~spraying~~ application is taking place and continue until enough water has been applied to drive the Busan 1236 to the minimum depth of two feet. Do not apply more than one inch of irrigation water. The soil should be at 50 - 80% or higher field capacity at the time

of application. Because Busan 1236 is harmful to plants, an appropriate interval must be observed between soil fumigation and planting. Planting can only begin 21 days (minimum) after treatment.

- **REPLANT METHOD:**

Use 18 to 24 fl. oz. of Busan 1236 per 100 gallons of water. Use 16 gallons of this mixture per 4' x 4' treated area. More water and/or product may be necessary to treat different sized areas to insure product movement to desired depth.

Preparing for Planting After Application of Busan 1236

Effect of Rain

If a Busan 1236 application is rained on 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 Busan 1236 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 or 15°C) following application, a minimum interval of 30 days should be observed.

Aeration Before Planting

Soils, including soils high in clay or organic matter, should be allowed to aerate and dry thoroughly after treatment with Busan 1236. During cold and/or wet weather, frequent shallow cultivation can aid the escape of Busan 1236 from the soil.

Testing for Dissipation of Busan 1236

After the waiting period has passed, if there is any question about the complete escape of Busan 1236 from the soil, transplant several seedlings into the treated soil. If the plant develops normally without any signs of chemical injury, crop planting can begin. For assistance in testing for dissipation of Busan 1236, contact your Buckman representative.

LIMITED WARRANTY
AND
LIMITATION OF LIABILITY AND REMEDIES

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes any risk of any use contrary to such directions or resulting from extreme weather conditions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort. Any controversy or claim arising out of or relating to this contract, or breach thereof shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

Rev. 02/05/98

Increasing Your Profits With

BUSAN 1020

ACTIVE INGREDIENT:

Sodium N-methyldithiocarbamate.....	33.0%
INERT INGREDIENTS.....	67.0%
	100%

This product contains 3.2 lb. of active ingredient per gallon and weighs 9.6 lb. per gallon.

THIS PRODUCT IS NOT TO BE SOLD IN THE FOLLOWING COUNTIES OF TEXAS: ATASCOSA, CAMERON, DUVAL, HIDALGO, MAVERICK, STARR, WILLACY, ZAPATA.

Manufactured by
Buckman Laboratories, Inc.
Memphis, Tennessee 38108, U.S.A.

IT IS THE RESPONSIBILITY OF THE USER TO READ THIS LABEL AND USE THIS PRODUCT ACCORDINGLY.

NET CONTENTS: AS MARKED ON CONTAINER
EPA Reg. No. 1448-85
EPA Est. 1448-TN-1 EPA Est. 1448-MO-1

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).

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

- Corrosive: causes skin damage. May be fatal if absorbed through 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.

Worker Protection Standards (WPS) for applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170):

Personal Protective Equipment (PPE)

(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 and 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 exposures,
- 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 task may be performed in a treated area outdoors) in which a treatment took place:

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

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

Handlers performing the above task must wear:

- Coveralls over long-sleeved shirts 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.
 - b. Respirators must be fit-tested and fit-checked using a program that conforms to the OSHA requirements (described in 29 CFR Part 1910.134).
- 2. Dispose of Contaminated Clothing:** Discard clothing and other absorbent material that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.
- 3. Clean and Maintain PPE:** Follow manufacture'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 days use.

User Safety Recommendations

Users should:

- * Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- *Remove clothing immediately if pesticide get 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.

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 advise 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 advise. 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 person.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not contaminate water when disposing of equipment washwaters or rinsate. 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 discharge effluent containing this product directly into lakes, streams, ponds, estuaries, oceans or public waters unless in accordance with requirements of a National Pollutant Discharge System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

STORAGE AND DISPOSAL

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

STORAGE: Do not expose to extreme temperatures. Do not stack more than 4 drums high. Leaking or damaged drums should be placed in overpack drums for disposal. Spills should be absorbed in sawdust or sand and disposed of in a sanitary landfill. Keep container closed when not in 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 your 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 by other procedures approved by state and local authorities.

USE PRECAUTIONS

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 or where fumes may enter nearby houses. Do not use in greenhouses. Keep container tightly closed when not in use.

PRODUCT INFORMATION

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 Metam Sodium Registrant

Busan 1020 is a water-soluble liquid. When applied to properly prepared soil, the liquid is converted into a gaseous fumigant. After a sufficient waiting period, the gas dissipates, leaving the soil ready for planting. Busan 1020 is recommended for the suppression of weeds and the control of plant parasitic nematodes, and soilborne fungi that cause reductions in the yield and quality of ornamental, food, and fiber crops.

Busan 1020 will control only those pests in the fumigation zone at the time of treatment. Recontamination may occur subsequent to the fumigant's dissipation from the soil.

Weeds and germinating weed seeds that are suppressed include grasses (annual bluegrass, Bermuda grass, water grass, Johnson grass), sedges (nutgrass), composites (dandelion, ragweed), pinks (chickweed), mints (henbit), goosefoots (lambquarters), amaranths (pigweed, careless weed), convolvulus (wild morning glory), purslanes, and nightshades. The best weed suppression is obtained when Busan 1020 is applied to weeds that are in an active vegetative growth phase.

The plant parasitic nematodes which Busan 1020 controls include root knot, lesion, dagger, lance, needle, pin, reniform, stunt, stubby root, sting, and spiral. Note: In the Northwest, Busan 1020 will only suppress *Meloidogyne chitwoodi*.

The plant pathogenic fungi controlled include species of *Verticillium*, *Rhizoctonia*, *Pythium*, *Phytophthora*, *Sclerotinia*, as well as *Sclerotium rolfsii*, *Amillaria mellea* (Oak root fungus), and *Plasmodiophora brassicae* (Club root fungus); *Phoma* (*Pyrenochaeta*) *terrestris* (Pink Root), *Cylindrocladium crotalariae* (Cylindrocladium Black Rot).

BUSAN 1020 TREATMENT GUIDELINES

For optimum results from soil fumigation with Busan 1020, 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 Busan 1020 application
- Preparing a field for application of Busan 1020
- Applying Busan 1020
- Preparing for planting after application of Busan 1020.

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

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.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR 170. This Standard contains requirements for the protection of agricultural workers on farms, forest 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 protective equipment, 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 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 fumigant warning signs. The signs must bear the skull and crossbones symbols and state: (1) DANGER/PELIGRO, (2) Area under fumigation, DO NOT ENTER/NO ENTRE, (3) the date and time of fumigation, (4) BUSAN 1236 Fumigant in use, and (5) name, address, and telephone number of applicator. Post the fumigant warning signs instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, 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.

General Precautions for Irrigation Systems

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 area such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when chemigated area is open to 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 should 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 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 an octagonal stop sign symbol of at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDE IN IRRIGATION WATER. This sign is in addition to any sign posted to comply with the Worker Protection Standard

Planning a Busan 1020 Application

Time of Application

Busan 1020 is applied following harvest and not less than 21 days before a new crop is planted. In some area 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 Over Cover Crops

~~Busan 1020 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 cover crops, no cultivation of the soil is required before the application of Busan 1020.~~

Application Rate

Apply 20 to 100 gallons of Busan 1020 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.

Busan 1020 can be used at 30 and 50 gallons per acre before or following the use of Telone II. A minimum of a 14 day interval must be observed between the application of the products.

Target Pest and Depth of Treatment

For control of fungi causing seed or seedling 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 Busan 1020 per acre is required to treat 4 inches, then 50 gallons of Busan 1020 will be required to treat to a depth of 8 inches. Choose the appropriate application method to distribute Busan 1020 evenly throughout the soil to the required depth.

Organic Matter in the Soil

Except in the case of cover crops, plant material under the soil surface should be thoroughly decomposed before Busan 1020 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 Busan 1020. For example, muck soils require twice the amount of fumigant that would be used in mineral soils.

Soil Texture

Application rates will vary with the soil texture. For instance, heavy clay soils require more Busan 1020 than light sandy soils.

Preparing a Field for Application

Soil Cultivation

Cultivate the soil thoroughly before treatment, breaking up all large clods. If the soil crusts following pretreatment irrigation, lightly cultivate it again before treatment with Busan 1020.

Soil Temperature During Treatment

At the time of fumigation, the soil temperature should be in the range of 40° - 90°F (4° - 32°C) at a depth of 3 inches.

To prevent rapid evaporation of the product from the soil, avoid treating soil during times of the day when soil temperatures exceed 90°F (32°C). 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 percent 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.

Area To Be Treated

Busan 1020 can be applied either broadcast or in bands, depending on the crop to be planted. For example, in the production of row crops, band applications are most economical.

Phytotoxicity

Busan 1020 is phytotoxic. Protect valuable, non-target plants by stopping soil applications of Busan 1020 at least 3 feet short of the drip line of trees, shrubs, and other desirable plants. Crop injury [or] lack of effectiveness, ~~or illegal pesticide residues in the crop~~ can result from nonuniform distribution of Busan 1020.

Applying Busan 1020

Busan 1020 may be applied by chemigation [but not sprinkler irrigation], soil injection, disc, rotary tiller, power mulcher, and soil covering methods.

Use of Diluted Busan 1020

DO NOT STORE THE DILUTED PRODUCT. Use Busan 1020 promptly after it has been mixed with water. Although Busan 1020 is stable in its concentrated form, in dilute solutions in water, Busan 1020 decomposes over a period of weeks.

Odors During Treatment

Strong odors during or after treatment are a signal that the fumigant is escaping and needs to be sealed in the soil.

Sealing Busan 1020 in Soil

To be most effective, Busan 1020 should be sealed in the soil. Sealing methods include applying irrigation water or plastic tarpaulins and packing soil with a roller or drag. 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. Seven days after treatment, the sealed area should be cultivated to a depth of 2 inches to aerate the soil. When tarpaulins are used to seal the soil, wait at least 21 days before planting.

Application Methods

1) CHEMIGATION METHODS

PRECAUTIONARY STATEMENTS

When applying by chemigation methods the following precautions must be observed:

● General

A. Apply this product only through the following types of systems: ~~sprinkler including center pivot, lateral move, and tow, side (wheel) roll, traveler, big gun, solid set, or hand move~~; flood (basin); furrow; border; or drip (trickle) irrigation system(s). Do not apply this product through any other type of irrigation system, such as sprinklers.

B. Crop injury [or] 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.

● Chemigation Systems Connected to Public Water Systems

A "public water system" is one that provides piped water for human consumption to the public, and the system also either has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days a year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventor (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 end 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, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

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. This valve prevents 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 shut off the pesticide injection pump automatically when the water pump motor stops. In cases where there is no water pump, controls on the pesticide injection pump are also needed 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.

● ~~Drift Prevention~~

~~Do not apply when wind speed favors drift beyond the area intended for treatment.~~

● 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.

BROADCAST CHEMIGATION METHODS

● ~~Sprinkler Chemigation: Use 50 to 100 gallons Busan 1020 per treated acre for control of nematodes and fungi at a depth of 24 inches. For control of fungi and suppression of weeds at a depth of 6 inches or less, use 20 to 100 gallons per treated acre. Inject the Busan 1020 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, re-soil it with 15 minutes of water once a day for the next day or two.~~

~~Use sprinkler systems that give uniform coverage. Apply only through central pivot or solid set sprinkler irrigation systems containing anticiphon and check valves which will prevent water source contamination and overflow of the slurry tank. 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 also contain interlocking controls between the metering device and the water pump to ensure simultaneous shut-off. 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.~~

NOTE: Effect of Air Temperature and Winds on Sprinkler Application

~~When using a sprinkler application method, apply Busan 1020 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 Busan 1020 before it can be drenched into the soil. To prevent wind drift of the fumigant, apply only when wind conditions are suitable.~~

● ~~Check, Flood (Basin), Furrow and Border Chemigation: Meter Busan 1020 at a steady rate into water during irrigation. Depending upon the kind of pest and the treatment depth desired, use 20 to 100 gallons of Busan 1020 per treated acre in 3 to 18 inches of water per acre.~~

~~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 the potential for contaminating the water source from backflow should the water flow stop.~~

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

- ~~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.

BAND, BED OR ROW CHEMIGATION METHODS

- **"Drip Chemigation":** During pre-irrigation, check drip tape for uniform distribution and repair if necessary. Apply 20 to 100 gallons per treated acre. Inject Busan 1020 continuously into drip line as close as possible to treatment area. Use enough water to thoroughly wet entire desired treatment zone. Two or more lines per bed may be needed to ensure full coverage.

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.

- **Drench Method:** Busan 1020 may be applied to finished beds in enough water to soak at least 2 inches deep for suppression of shallow seeded weeds. To avoid contamination by untreated soil, do not disturb the treated area. Apply 20 to 100 gallons of Busan 1020 per treated acre.

2) OTHER FIELD APPLICATION METHODS

BROADCAST METHODS

- **INJECTION METHOD**

Soil Injection: Use chisel or shank-type injectors to apply 20 to 100 gallons of Busan 1020 per acre into well prepared soil. Seal immediately after treatment.

- **INCORPORATION METHODS**

Disc or Plow Applied Method: ~~Spray~~ Apply dilute Busan 1020 immediately under disc or plow. Use 20 to 100 gallons per treated acre. Follow immediately with a roller to smooth and compact the soil surface.

Rotary Tiller or Power Mulcher: ~~Spray~~ Apply dilute Busan 1020 immediately in front of tiller or mulcher. Use 20 to 100 gallons per treated acre. Follow immediately with roller or bed shaper to seal soil surface.

BAND, BED OR ROW METHODS

- **INJECTION METHOD**

Soil Injection: Busan 1020 can be injected into pre-formed plant beds using chisel or shank-type injectors. If a wider treated band is desired, space 2 or more shanks to cover the desired treating width. Seal after treatment. Use 20 to 100 gallons per treated acre.

- **INCORPORATION METHODS**

Rotary Tiller or Power Mulcher: ~~Spray~~ Apply dilute Busan 1020 immediately in front of tiller or mulcher. Use 20 to 100 gallons per treated acre. Follow immediately with roller or bed shaper to seal soil surface.

Soil Covering Methods (Bed-over methods): Busan 1020 may be ~~sprayed or dripped~~ applied onto the soil immediately ahead of bed-shaping equipment. Cover the Busan 1020 with soil to a depth of 3 to 6 inches. The recommended rate of Busan 1020 is 20 to 100 gallons per treated acre.

Busan 1020 may be applied to prepared or unprepared sites as a coarse ~~spray~~ drench treatment in a band using standard tractor ~~spray~~ application equipment. Use 75 to 100 gallons of product per treated acre. Apply irrigation water while ~~spraying~~ application is taking place and continue until enough water has been applied to drive the Busan 1020 to the minimum depth of two feet. Do not apply more than one inch of irrigation water. The soil should be at 50 - 80% or higher field capacity at the time of application. Because Busan 1020 is harmful to plants, an appropriate interval must be observed between soil fumigation and planting. Planting can only begin 21 days (minimum) after treatment.

● **REPLANT METHOD:**

Use 24 to 32 fl. oz. of Busan 1020 per 100 gallons of water. Use 16 gallons of this mixture per 4' x 4' treated area. More water and/or product may be necessary to treat different sized areas to insure product movement to desired depth.

Preparing for Planting After Application of Busan 1020

Effect of Rain

If a Busan 1020 application is rained on 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 Busan 1020 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 or 15°C) following application, a minimum interval of 30 days should be observed.

Aeration Before Planting

Soils, including soils high in clay or organic matter, should be allowed to aerate and dry thoroughly after treatment with Busan 1020. During cold and/or wet weather, frequent shallow cultivation can aid the escape of Busan 1020 from the soil.

Testing for Dissipation of Busan 1020

After the waiting period has passed, if there is any question about the complete escape of Busan 1020 from the soil, transplant several seedlings into the treated soil. If the plant develops normally without any signs of chemical injury, crop planting can begin. For assistance in testing for dissipation of Busan 1020, contact your Buckman representative.

**LIMITED WARRANTY
AND
LIMITATION OF LIABILITY AND REMEDIES**

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes any risk of any use contrary to such directions or resulting from extreme weather conditions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort. Any controversy or claim arising out of or relating to this contract, or breach thereof shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

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