

# Specimen Label

## RESTRICTED USE PESTICIDE

Due to acute toxicity and carcinogenicity.

For retail sale to and use by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.



## Soil Fungicide and Nematicide

®Trademark of Dow AgroSciences LLC

**A multi-purpose liquid fumigant for preplant treatment of soil to control plant parasitic nematodes, symphylans and to help manage certain soil borne diseases in cropland.**

**Not for use in greenhouses or other enclosed areas and not for use in drip or other chemigation applications.**

Active Ingredients:

1,3-dichloropropene .....	81.2%
chloropicrin .....	16.5%
Other Ingredients .....	2.3%
Total .....	100.0%

One gallon of Telone C-17 weighs 10.6 lbs./gal. @ 68°F (20°C). Contains 8.6 lb of 1,3-dichloropropene and 1.75 lb of chloropicrin per gallon.

### Precautionary Statements

#### Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-12

Hazardous Liquid and Vapor

## DANGER

- **May cause lung, liver, and kidney damage and respiratory system irritation upon prolonged contact.**
- **The use of this product may be hazardous to your health. This product contains 1,3-dichloropropene, which has been determined to cause tumors in laboratory animals. Risks can be reduced by exactly following directions for use, precautionary statements, and by wearing the personal protective equipment specified in this labeling.**
- **Fatal if inhaled or swallowed. Poisonous liquid and vapor. Corrosive. Liquid causes skin burns and irreversible eye damage. Do not breathe vapor or gas. Do not get in eyes, on skin or on clothing. Chloropicrin is readily identifiable by smell. Exposures to very low concentrations of vapor will cause irritation of eyes, nose and throat. Continued exposure after irritation occurs, or exposure to higher concentration may cause painful irritation or temporary blindness.**

#### Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are listed below. For more options, follow the instructions for Category H on the chemical resistance category selection chart. PPE constructed of saranex, neoprene, and chlorinated polyethylene provide short-term contact or splash protection against liquid in this product. Longer-term protection is provided by PPE constructed of viton, Teflon, and EVAL barrier laminates (for example, responder suits manufactured by Life-guard or silvershield gloves manufactured by North). Where chemical-resistant materials are required, leather, canvas, or cotton materials offer no protection from this product and must not be worn as the sole article of protection when contact with this product is possible. Where coveralls are required, they must be loose-fitting and constructed of woven fabrics

(e.g., tight knit cotton or cotton/polyester), non-woven fabrics (e.g., tyvek or sontara), or fabrics containing microporous Teflon.

**When performing tasks with NO potential for contact with liquid fumigant, all handlers (including applicators) must wear:**

- Long-sleeved shirt and long pants, and
- Shoes and socks

**When performing tasks with potential for contact with liquid fumigant, all handlers (including applicators) must wear:**

- Long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant apron,
- Protective eyewear (do NOT wear goggles), and
- Chemical-resistant footwear with socks.

The PPE required when handling liquid fumigant must be immediately available and must be worn if the handler is to perform any handling activity with a potential for liquid fumigant contact.

1. All handlers (including applicators) must wear a half-face air-purifying respirator (except when handlers are in enclosed cabs or applying the fumigant with equipment that disrupts the chisel trace and seals the soil at the same time, e.g., Yetter applicator) equipped with an organic vapor (OV, NIOSH approval number prefix TC-23C) cartridge and a particulate pre-filter (Type N, R, P or HE, NIOSH approval number prefix TC-84A).

If sensory irritation (tearing, burning of the eyes or nose) is experienced and handlers remain in the application block or buffer zone, handlers must wear at a minimum either:

- A NIOSH certified full facepiece air-purifying respirator equipped with an organic vapor (OV, NIOSH approval number prefix TC-23C) cartridge and a particulate pre-filter (Type N, R, P, or HE, NIOSH approval number prefix TC-84A), or
- A gas mask with a canister approved for organic vapor (NIOSH approval number prefix TC-14G).

See Directions for Use, Air Monitoring Requirements, Respiratory Protection and Stop Work Triggers, number 1, *Handlers Wearing Half-Face Air-Purifying Respirators* for when an air-purifying respirator (full facepiece or gas mask) is required.

IMPORTANT: A self-contained breathing apparatus (SCBA) is not permitted for routine handler tasks. If responding to an emergency when corrective action is needed to reduce air concentrations to acceptable levels, wear an SCBA. Escape-only SCBA respirators must not be used by handlers for responding to emergencies. In addition wear PPE required for potential contact with liquid fumigant.

2. Handlers using enclosed cabs are not required to wear respiratory protection (**not applicable in California**) provided that the cab has been maintained according to the manufacturer's written operating instructions **and** there is written documentation that the ventilation system has been maintained according to the manufacturer's instructions **and** the enclosed cab is in conformance with the following requirements:

- The enclosed cab must maintain a positive pressure of 6 mm H<sub>2</sub>O.
- The enclosed cab must have a minimum air intake flow of 43 m<sup>3</sup>/hour.
- The enclosed cab must be equipped with activated charcoal filter media containing no less than 1000 grams of activated charcoal.
- The filter must be changed after no more than 50 hours of application time.

See Directions for Use, Air Monitoring Requirements, Respiratory Protection and Stop Work Triggers, number 2, *Handlers in Enclosed Cabs (Not Applicable in California)* for stop work procedures.

3. Handlers applying the fumigant with equipment that disrupts the chisel trace and seals the soil with one implement, e.g., Yetter applicator (**not applicable in California**) are not required to wear respiratory protection unless sensory irritation is experienced.

If sensory irritation (tearing, burning of the eyes or nose) is experienced and handlers remain in the application block or buffer zone, handlers must wear at a minimum either:

- A NIOSH certified full facepiece air-purifying respirator equipped with an organic-vapor (OV, NIOSH approval prefix TC-23C) cartridge and a particulate pre-filter (Type N, R, P, or HE, NIOSH approval number prefix TC-84A), or
- A gas mask with a canister approved for organic vapor (NIOSH approval number prefix TC-14G).

See Directions for Use, Air Monitoring Requirements, Respiratory Protection and Stop Work Triggers, number 3, *Handlers Applying the Fumigant with Equipment that Disrupts the Chisel Trace and Seals the Soil with One Implement, e.g., a Yetter applicator (not applicable in California)* for when respiratory protection is required.

4. Handlers exposed to greater than 1.5 ppm of chloropicrin (e.g., an emergency when corrective action is needed to reduce air concentrations to acceptable levels), and handlers exposed to this product in poorly ventilated areas, must wear at a minimum:

- Chemical-resistant suit,
- Chemical-resistant gloves such as barrier laminate (EVAL) or viton,
- Chemical-resistant footwear with socks, and
- Chemical-resistant headgear.
- A self-contained breathing apparatus (SCBA) with NIOSH approval number prefix TC-13F. See further respirator requirements in the *Protection for Handlers* section on this label.

### User Safety Requirements

1. **Never fumigate alone:** It is imperative to always have an assistant and proper protective equipment in case of accidents.
2. **Driver's Responsibilities:** Drivers of application equipment must advise other workers of all precautions and procedures. In addition, drivers must instruct their helpers in the mechanical operation of the tractor and how to safely work with the tractor and driver while fumigating.
3. **Dispose of Contaminated Clothing:** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.
4. **Clean and Maintain PPE:** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.
5. **Contact With Mouth:** Never siphon this product by mouth or use mouth to blow out clogged lines, nozzles, etc.
6. **Heat Illness Avoidance:** Use measures to avoid or minimize heat illness while using this product. These measures include gradual adjustment to heat and respirator stress, fans for cooling, cooling vests, frequent breaks to cool down, frequent intake of drinking water, and maintaining weight from day to day.

### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE 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.

### First Aid

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

**Note to physician:** Because rapid absorption may occur through lungs if product is aspirated and cause systemic effects, the decision to induce vomiting or not should be made by a physician. If lavage is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Chloropicrin is a volatile liquid that is the active ingredient in tear gas. As a gas it is a powerful lachrymator. Early symptoms of overexposure are lachrymation, respiratory distress and vomiting. Pulmonary edema may develop later. Treatment is symptomatic.

### Environmental Hazards

This pesticide is toxic to mammals and birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

- Chloropicrin has certain properties and characteristics in common with chemicals that have been detected in groundwater (chloropicrin is highly soluble in water and has low adsorption to soil).
- For untarped applications of chloropicrin, leaching and runoff may occur if there is heavy rainfall after soil fumigation.

**Groundwater advisory:** 1,3-dichloropropene is known to move through soil and under certain conditions has the potential to reach groundwater as a result of agricultural use. Application in areas where soils are permeable and groundwater is near the surface could result in groundwater contamination.

### Physical or Chemical Hazards

**Combustible.** Do not use or store near heat or open flame. Incompatible with oxidizing agents.

### Directions for Use

#### Restricted Use Pesticide

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

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only handlers may be in the application block from the start of the application until the entry restricted period ends, and in the buffer zone during the buffer zone period. 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 Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard (WPS). No instructions elsewhere on the labeling relieve users from complying with the requirements of WPS. For the entry restricted period and notification requirements, see the Entry Restricted Period and Notification section of this label.

PPE for Entry During the Entry Restricted Period: PPE for entry that is permitted by this labeling is listed in the *Personal Protective Equipment (PPE)* section of this labeling.

### Storage and Disposal

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

**Pesticide Storage:** Store in tightly-closed original container away from dwellings. Prolonged exposure of container to direct sunlight must be avoided. Do not allow contamination of seeds, plants, fertilizers, or other pesticide chemicals.

**Pesticide Disposal:** Pesticide wastes are toxic. Improper disposal of excess pesticide and rinsates is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

#### Refillable containers 5 gallons or larger:

**Container Handling:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

#### Nonrefillable containers 5 gallons or larger:

**Container Handling:** Nonrefillable container. Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and

## Storage and Disposal (Cont.)

continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsewater for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

## Terms Used in This Labeling

**Soil Fumigant Training Program:** Certified applicator training that provides information on (1) how to correctly apply the fumigant, including how to comply with new label requirements; (2) how to protect handlers and bystanders; (3) how to determine buffer zone distances; (4) how to complete an FMP and the post-application summary; (5) how to determine when weather and other site-specific factors are not favorable for fumigant application; (6) how to comply with required GAPs and how to document compliance with GAPs in the FMP; and (7) how to develop and implement emergency response plans.

**Fumigant Safe Handling Information:** Information that must be provided annually to handlers that must include the following: (1) what fumigants are and how they work, (2) safe application and handling of soil fumigants, (3) air monitoring and respiratory protection requirements for handlers, (4) early signs and symptoms of exposure, (5) appropriate steps to take to mitigate exposures, (6) what to do in case of an emergency, and (7) how to report incidents.

**Application Block:** Area within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

**Application Rate:** The ratio of fumigant mass applied compared to the soil surface area (e.g., pounds of product per acre). The application rate is expressed on this labeling in terms of either the "treated area application rate" or the "broadcast equivalent application rate." The "treated area application rate" relates to only the rate of fumigant applied to the portion of the field that is fumigated (e.g., rate within the bed or strips). The "broadcast equivalent application rate" relates to the rate of fumigant applied within the entire perimeter of the application block. For bedded and strip applications, the "broadcast equivalent application rate" must be calculated to determine the buffer zone distance required by this labeling.

**Start of the Application:** The time at which the fumigant is first delivered/dispensed into the soil in the application block.

**Application is Complete:** The time at which the fumigant has stopped being delivered/dispensed into the soil and the soil has been sealed; drip lines have been purged (if applicable).

**Entry Restricted Period:** This period begins at the start of the application and expires depending on the application method and if tarps are used when the tarps are perforated and removed. Entry into the application block during this period is only allowed for appropriately PPE-equipped handlers performing handling tasks. See the *Entry Restricted Period and Notification* section for additional information.

**Buffer Zone:** An area established around the perimeter of each application block. The buffer zone must extend outward from the edge of the application block perimeter equally in all directions.

**Buffer Zone Period:** Begins at the start of the application and lasts for a minimum of 48 hours after the application is complete. Non-handlers must be excluded from the buffer zone during the buffer zone period.

**Difficult to Evacuate Sites:** Pre-K to Grade 12 schools, state licensed daycare centers, nursing homes, assisted living facilities, hospitals, in-patient clinics, and prisons.

**Owner:** Any person who has a present possessory interest (fee, leasehold, rental, or other) in an agricultural establishment. A person who has both leased such agricultural establishment to another person and granted that same person the right and full authority to manage and govern the use of such agricultural establishment is not an owner. See definition of "owner" in WPS (40 CFR § 170.3).

**Roadway:** Portion of a street or highway improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk or shoulder even if such sidewalk or shoulder is used by persons riding bicycles. In the event a highway includes two or more separated roadways, the term *roadway* shall refer to any such roadway separately.

**Representative Handling Task:** For air monitoring, the locations and handler activities sampled must represent each handler's exposure occurring within the application block. For example, for an application consisting of a seven-handler crew (1 tractor driver, 1 tractor co-pilot, 4 shovelers, and 1 certified applicator supervising), two breathing zone samples could

be collected: one sample for the tractor co-pilot and one sample for a downwind shoveler. Results of previous sampling may indicate which tasks and locations are worst case and therefore representative of all handlers.

## Application Restrictions

The use of this product is restricted to the methods described in this label. Soil fumigation using Telone C-17 must be conducted only according to directions and conditions of use.

**Chemigation:** Do not apply Telone C-17 through any type of irrigation system.

**Do not formulate and/or tank mix this product into other end-use agricultural products.**

Not for use in greenhouses or other enclosed areas.

An application block treated with Telone C-17 must not be within 100 feet of an occupied structure. No person shall be present at this structure at any time during the seven consecutive day period after the application is complete. **EXCEPTION:** This restriction does not apply to use on soils that have not experienced a 1,3-dichloropropene treatment in the previous two years, for example, on soils to be planted with fruit trees, nut and nursery crops, perennial vines, hops, mint, or pineapple.

Telone C-17 shall not be applied to soil more frequently than once each year.

Do not apply within 100 feet of any well used for potable water. Do not apply this product within 100 feet from the edge of karst topographical features. Karst topography is identified from landscape features that result from the dissolving activity of water in carbonate rock formations (limestone, dolomite and marble). Surface features that are associated with karst topography include sinkholes, caverns, springs, and sinking or disappearing streams. In North Dakota, South Dakota, Wisconsin, Minnesota, New York, Maine, New Hampshire, Vermont, Massachusetts, Utah, and Montana: Where groundwater aquifers exist at a depth of 50 feet or less from the surface, do not apply this product where soils are Hydrologic Group A.

### For Applications in California Only:

Use the buffer zone distances specified by the California Department of Pesticide Regulation, which are found at the website listed below. Additional California Department of Pesticide Regulation requirements must also be followed including:

- Additional tarp requirements
- Application time restrictions
- Additional buffer zone restrictions for overlapping buffer zones and credits
- Additional emergency preparedness and response requirements

The certified applicator must follow all California buffer zone requirements and California restrictions that are specified at: [www.cdpr.ca.gov/chloropicrin.htm](http://www.cdpr.ca.gov/chloropicrin.htm)

### Use Restrictions for Certain Florida Counties

**For application of this product in Brevard, Charlotte, Citrus, Collier, DeSoto, Glades, Hardee, Hendry, Hernando, Highlands, Hillsborough, Indian River, Lake, Lee, Manatee, Martin, Monroe, Okeechobee, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Sarasota, Seminole, St. Lucie, Sumter, and Volusia counties, applicators must have labeling for FIFRA Section 24(c) Special Local Need (SLN) FL-990004 in their possession and comply with stated requirements. Use of Telone C-17 is prohibited in Broward and Dade counties.**

### Use Restrictions for Certain New York Counties

This product is prohibited from sale, use or distribution in Nassau and Suffolk counties.

## Certified Applicator Training

Any certified applicator supervising a soil fumigant application must have successfully completed one of the soil fumigant training programs listed on the following EPA web site [www.epa.gov/fumiganttraining](http://www.epa.gov/fumiganttraining) for the active ingredient(s) in this product. The training must be completed in the time frames listed on the web site. The FMP must document the date and location where the soil fumigant training program was completed.

## Product Information

Before using this product, carefully read and follow all label precautions and directions.

Telone C-17 is a multi-purpose liquid fumigant for preplant treatment of cropland soil that can be used as part of a nematode and disease management program involving crop rotation, planting resistant varieties, sanitation, and other cultural practices designed to reduce nematode and disease pressure.

Telone C-17 may be applied as a preplant soil treatment as part of a management program to aid in reducing the damaging effects of certain



soil borne diseases [soil rot (soil pox) of sweet potatoes; granville (bacterial) wilt, black root rot, black shank diseases of tobacco; verticillium wilt of strawberries, cole crops and mint, pink root of onions, and fusarium crown and root rot of tomatoes]. This is not a complete list of crops and soil borne diseases. Consult your crop advisor for recommendations on specific soil borne diseases.

Telone C-17 must not be used to control diseases in the plastic culture vegetable and fruit market.

Telone C-17 may be applied as a preplant soil treatment as part of a management program to control and aid in reducing the damaging effects of certain soil pests; plant parasitic nematodes (root-knot, root lesion, citrus, cyst formers, golden, sugarbeet, soybean, burrowing, lance, reniform, ring, spiral, sting, pin, stubby root, dagger, and certain others), symphylans (garden centipedes) and wireworms.

Before fumigation, soil sampling for the type and number of pests present is recommended. In fields where pre-treatment soil samples indicate the presence of high population levels of nematodes, a successful fumigation cannot be expected to eradicate entire populations. Therefore, post-treatment (mid-season and/or preharvest) sampling is recommended to determine the need for additional pest management practices.

Consult State Agricultural Experiment Station or Extension Service specialists for information on other practices such as post-harvest destruction of crop residues, weed control or other cultural practices, and use of nematode resistant crop varieties that may aid in reducing crop losses from soil borne pests.

## Use Precautions

### Recontamination Prevention

Telone C-17 will help manage certain soil borne pests that are present in the soil treatment zone at time of fumigation. It will not control pests that are introduced into soil after fumigation. To avoid reinfestation of treated soil do not use irrigation water, transplants, seed pieces, or equipment that could carry soil borne pests from infested land. Avoid contamination from moving infested soil onto treated beds through cultivation, movement of soil from below the treated zone, dumping contaminated soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields. Cultural practices, which provide post-harvest destruction of crop residues and weeds prior to fumigation and practices which prevent weed infestation following fumigation and prior to planting, will help prevent recontamination.

### Equipment Clean-Up

Because Telone C-17 is corrosive under certain conditions, flush all application equipment with fuel oil, kerosene or a similar type of petroleum solvent immediately after use. Fill pumps and meters with new motor oil or a 50% motor oil/fuel oil mixture before storing. **Do not use water.** Dispose of rinsate by incorporation into field just treated or by other approved means. Never introduce rinsate or unused Telone C-17 into surface or underground water supplies.

### Fertility Interactions

Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when high rates of fertilizer and fumigant are applied to soils that are either cold, wet, acidic, or high in organic matter. To avoid injury to certain crops including red beets, carrots, corn, radishes, cole crops, legumes (beans), lettuce, onions, and sugarbeets, fertilize when possible as indicated by soil tests made after fumigation. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic soils, do not use fertilizers containing ammonium salts.

When using high rates of Telone C-17 as required by certain state nursery regulations, liming of highly acid soils before fumigation may stimulate nitrification and reduce the possibility of ammonia toxicity. Certain nursery crops such as citrus seedlings, *Cornus* sp., *Crataegus* sp., spruce, and vegetable crops such as cauliflower have shown evidence of phosphorus deficiency following fumigation. To avoid this possible effect, additional phosphate fertilizer (foliar applied) is recommended where experience indicates a deficiency may occur.

## Handlers

The following activities are prohibited from being performed by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in WPS (40 CFR Part 170):

- Monitoring fumigant air concentrations;
- Cleaning up fumigant spills (this does not include emergency personnel not associated with the application);
- Handling or disposing of fumigant containers;
- Cleaning, handling, adjusting, or repairing the parts of application equipment that may contain fumigant residues; and
- Performing any handling tasks as defined by the WPS (40 CFR Part 170).

The following activities are prohibited from being performed in the application block from the start of the application until the entry restricted period ends and in the buffer zone during the buffer zone period by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in WPS (40 CFR Part 170). (NOTE: Persons repairing and monitoring tarps are considered handlers for the duration listed below.) Prohibited activities (except for trained and equipped handlers) include:

- Participating in the application as supervisors, loaders, drivers, tractor co-pilots, shovelers, cross ditchers, or as other direct application participants;
- Installing, repairing, operating or removing irrigation equipment;
- Performing scouting, crop advising, or monitoring tasks;
- Installing, perforating (cutting, punching, slicing, poking), or removing tarps; and
- Repairing or monitoring tarps until 14 days after application is complete if tarps are not perforated and removed during those 14 days.

NOTE: See *Tarp Perforation and/or Removal* section on this labeling for requirements about when tarps are allowed to be perforated.

Handlers do not include local, state, or federal officials performing inspection, sampling, or other similar official duties.

## Protection for Handlers

### Supervision of Handlers

For all applications from the start of the application until the application is complete, a certified applicator must be at the application block in the line of site of the application and must directly supervise all persons performing handling activities.

For handling activities that take place after the application is complete until the entry restricted period expires, the certified applicator is not required to be on site, but must have communicated in a manner that can be understood by the site owner and handlers responsible for carrying out those activities the information necessary to comply with the label and procedures described in the FMP (e.g., emergency response plans and procedures).

IMPORTANT: This requirement does not override the requirements in the Worker Protection Standard for Agricultural Pesticides for information exchange between operators of agricultural establishments and commercial pesticide applicators.

The certified applicator must provide **Fumigant Safe Handling Information** to each handler or confirm that within the past 12 months, each handler has received **Fumigant Safe Handling Information** in a manner that he/she can understand. **Fumigant Safe Handling Information** will be provided where this product is purchased or at <http://www.epa.gov/fumigantraining>.

For all handling tasks at least two handlers must be present.

Exception: After the application is complete, only one trained handler is required to perform fumigant site monitoring tasks outside of the buffer zone.

### Exclusion of Non-Handlers From the Application Block and Buffer Zone

The certified applicator supervising the application and the owner of the establishment where the application is taking place must make sure that all persons who are not trained and PPE-equipped and who are not performing one of the handling tasks as stated in this label are:

- excluded from the application block during the entry restricted period, and
- excluded from the buffer zone during the buffer zone period (see buffer zone exemption for transit on roadways in *Buffer Zone Requirements* section).

Local, state, or federal officials performing inspection, sampling, or other similar official duties are not excluded from the application block or the buffer zone by this labeling. The certified applicator supervising the application and the owner of the establishment where the application is taking place are not authorized to, or responsible for, excluding those officials from the application block or the buffer zone.

### Providing, Cleaning, and Maintaining PPE

The employer of any handler (as stated in this label) must make sure that all handlers are provided and correctly wear the required PPE. The PPE must be cleaned and maintained as required by the Worker Protection Standard for Agricultural Pesticides.

### Air-Purifying Respirator Availability

The employer of any handler must confirm that an air-purifying respirator and appropriate cartridges/canisters of the type specified in the *PPE* section of this labeling are immediately available for each handler who will wear one (see *Respirator Fit Testing, Medical Qualification, and Training* section for additional requirements).

Exception: Air-purifying respirators do not need to be made available for handlers performing fumigant site monitoring tasks outside of the buffer zone.

Cartridges or canisters must be replaced when odor or sensory irritation from this product becomes apparent during use, if the measured concentration of chloropicrin is greater than or equal to 1.5 ppm, or after 8 hours of cumulative use, whichever occurs first.

### Respirator Fit Testing, Medical Qualification and Training

Using a program that conforms to OSHA's requirements (see 29 CFR Part 1910.134), employers must verify that any handler who uses a respirator is:

- Fit tested and fit checked,
- Trained, and
- Examined by a qualified medical practitioner to ensure physical ability to safely wear the style of respirator to be worn. A qualified medical practitioner is a physician or other licensed health care professional who will evaluate the ability of a worker to wear a respirator. The initial evaluation consists of a questionnaire that asks about medical conditions (such as a heart condition) that would be problematic for respirator use. If concerns are identified, then additional evaluations, such as a physical exam, might be necessary. The initial evaluation must be done before respirator use begins. Handlers must be reexamined by a qualified medical practitioner if their health status or respirator style or use conditions change.
- Upon request by local/state/federal/tribal enforcement personnel, employers must provide documentation demonstrating how they have complied with these requirements.

## Air Monitoring Requirements, Respiratory Protection, and Stop Work Triggers

### Air Monitoring Requirements

- When air-purifying respirators (full facepiece or gas mask) are worn, air monitoring samples for chloropicrin must be collected at least every 2 hours in the breathing zone of a handler performing a representative handling task.
- When breathing zone samples are required, they must be taken outside respiratory protection equipment and within a 10-inch radius of the handler's nose and mouth.
- When using devices to monitor air concentration levels, a direct read detection device, such as an electronic device or a colorimetric device (e.g., Matheson-Kitagawa, Draeger, or Sensidyne) must be used. The devices must have sensitivity of at least 0.15 ppm for chloropicrin. Persons using direct read detection devices must follow the manufacturer's directions.

### 1. Handlers Wearing Half-Face Air-Purifying Respirators

(Handlers are required to start work in half-face air-purifying respirators.)

The *Air Monitoring Requirements* section above must be followed.

- If at any time any handler experiences sensory irritation (tearing, burning of the eyes or nose) while wearing a half-face respirator then either:
  - o (OPTION 1) An air-purifying respirator (full facepiece or gas mask) must be worn by all handlers who remain in the application block or surrounding buffer zone, or
  - o (OPTION 2) Operations must cease and handlers not wearing air-purifying respirators (full facepiece or gas mask) must leave the application block and surrounding buffer zone.

For OPTION 1 [all handlers are wearing air-purifying respirators (full facepiece or gas mask)]

- a) Handlers can **resume** operations wearing half-face air-purifying respirators if all of the following conditions exist:
  - o Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm, and
  - o Handlers do not experience sensory irritation.
  - o During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handlers taking the air samples. Samples must be taken where the sensory irritation was first experienced.
- b) If at any time (1) a handler experiences sensory irritation when wearing an air-purifying respirator (full facepiece or gas mask), or (2) a chloropicrin air sample is greater than or equal to 1.5 ppm, then all handler activities must cease and handlers must be removed from the application block and surrounding buffer zone.
  - i. Handlers can **resume** operations wearing half-face air-purifying respirators if all of the following conditions exist:
    - Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm,
    - Handlers do not experience sensory irritation, and
    - Cartridges/canisters have been changed.
    - During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced or where sample(s) were greater than or equal to 1.5 ppm.

For OPTION 2 (Operations ceased)

- a) Handlers can **resume** operations wearing half-face air-purifying respirators if all of the following conditions exist:
  - o Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm, and
  - o Handlers do not experience sensory irritation.
  - o During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handlers taking the air samples. Samples must be taken where the sensory irritation was first experienced.

### 2. Handlers in Enclosed Cabs (Not Applicable in California)

[Handlers in enclosed cabs are not required to start work in half-face air-purifying respirators if the conditions in the *Personal Protective Equipment (PPE)* section are met.]

The *Air Monitoring Requirements* section above must be followed.

- If at any time a handler experiences sensory irritation (tearing, burning of the eyes or nose) while in the enclosed cab, operations must cease and handlers must leave the application block and buffer zone.
- Operations may resume in the enclosed cab provided that:
  - o Two consecutive chloropicrin samples taken in the breathing zone of the handlers at the handling site at least 15 minutes apart must be less than 1.5 ppm,
  - o Handlers do not experience sensory irritation, and
  - o The filter has been changed.
  - o During the collection of air samples, an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced.

### 3. Handlers Applying the Fumigant with Equipment That Disrupts the Chisel Trace and Seals the Soil with One Implement, e.g., a Yetter Applicator (Not Applicable in California)

(Handlers applying the fumigant with equipment that disrupts the chisel trace and seals the soil with one implement, e.g., a Yetter applicator, are not required to start work in half-face air-purifying respirators.)

The *Air Monitoring Requirements* section above must be followed.

- If at any time any handler experiences sensory irritation (tearing, burning of the eyes or nose) then either:
  - o (OPTION 1) An air-purifying respirator (full facepiece or gas mask) must be worn by all handlers who remain in the application block or surrounding buffer zone, or
  - o (OPTION 2) Operations must cease and handlers not wearing an air-purifying respirator (full facepiece or gas mask) must leave the application block and surrounding buffer zone.

For OPTION 1 [all handlers are wearing air-purifying respirators (full facepiece or gas mask)]

- a) Handlers can remove air-purifying respirators (full facepiece or gas mask) if all of the following conditions exist:
  - o Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm, and
  - o Handlers do not experience sensory irritation.
  - o During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced.
- b) If at any time: (1) a handler experiences sensory irritation when wearing an air-purifying respirator (full facepiece or gas mask) or (2) a chloropicrin breathing zone sample is greater than or equal to 1.5 ppm, then all handler activities must cease and handlers must be removed from the application block and the surrounding buffer zone.
  - i. Handlers can **resume** operations **without** wearing an air-purifying respirator (full facepiece or gas mask) if all of the following conditions exist:
    - Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm, and
    - Handlers do not experience sensory irritation.
    - During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced or where sample(s) were greater than or equal to 1.5 ppm.
  - ii. Handlers can **resume** operations **with** wearing an air-purifying respirator (full facepiece or gas mask) if all of the following conditions exist:
    - Two chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 1.5 ppm,
    - Handlers do not experience sensory irritation, and
    - Cartridges/canisters have been changed.

- During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced or where sample(s) were greater than or equal to 1.5 ppm.

For OPTION 2 (Operations ceased)

- Handlers can resume operations if all of the following conditions exist:
  - o Two consecutive chloropicrin breathing zone samples taken at the handling site at least 15 minutes apart must be less than 0.15 ppm, and
  - o Handlers do not experience sensory irritation.
  - o During the collection of air samples an air-purifying respirator (full facepiece or gas mask) must be worn by the handler taking the air samples. Samples must be taken where the sensory irritation was first experienced.

## Tarp Perforation and/or Removal

**IMPORTANT:** Persons perforating, repairing, removing, and/or monitoring tarps are defined, within certain time limitations, as handlers (see *Handlers* section), and they must be provided the PPE and other protections for handlers as required on this labeling and in the Worker Protection Standard for Agricultural Pesticides.

- Tarps must not be perforated until a minimum of 5 days (120 hours) have elapsed after the application is complete, unless a weather condition exists which necessitates early tarp perforation or removal. (See *Early Tarp Removal for Broadcast Applications Only* and *Early Tarp Perforation During Flood Prevention Activities for Bedded Applications Only* requirements.)
- If tarps are perforated within 14 days after the application is complete, tarp removal must not begin until at least 2 hours after tarp perforation is complete.
- If tarps are perforated but not removed within 14 days after the application is complete, planting or transplanting must not begin until at least 48 hours after the tarp perforation is complete.
- If tarps are not perforated or removed within 14 days after the application is complete, planting or transplanting may take place while the tarps are being perforated.
- Each tarp panel used for broadcast application must be perforated.
- Tarps may be perforated manually **ONLY** for the following situations:
  - o At the beginning of each row when a coulter blade (or other device which performs similarly) is used on a motorized vehicle such as an ATV.
  - o In fields that are 1 acre or less.
  - o During flood prevention activities.
- In all other instances, tarps must be perforated (cut, punched, poked, or sliced) only by mechanical methods.
- Tarp perforation for broadcast applications must be completed before noon.
- For broadcast fumigations, tarps must not be perforated if rainfall is expected within 12 hours.

### Early Tarp Removal for Broadcast Applications Only

- Tarps may be removed before the required 5 days (120 hours) if adverse weather conditions have compromised the integrity of the tarp, provided that the compromised tarp poses a safety hazard. *Adverse weather* includes high wind, hail, or storms that blow tarps off the field and create a hazard, e.g., tarps blowing into power lines and onto roads. *A compromised tarp* is a tarp that due to an adverse weather condition is no longer performing its intended function and is creating a hazard.

### Early Tarp Perforation During Flood Prevention Activities for Bedded Applications Only

- Tarp perforation is allowed before the 5 days (120 hours) have elapsed.
- Tarps must be immediately retucked and packed after soil removal.

## Entry Restricted Period and Notification

### Entry Restricted Period

Entry into the application block (including early entry that would otherwise be permitted under the WPS) by any person – other than a correctly trained and PPE-equipped handler who is performing a handling task listed on this labeling – is **PROHIBITED** from the start of the application until:

- 5 days (120 hours) after the application is complete for untarped applications, or
- 5 days (120 hours) after the application is complete if tarps are not perforated and removed for at least 14 days after the application is complete, or
- 48 hours after tarp perforation is complete if tarps will be perforated within 14 days after the application is complete and will not be removed for at least 14 days after the application is complete, or

- tarp removal is completed if tarps are both perforated and removed less than 14 days after the application is complete.

### NOTES:

- See *Tarp Perforation and/or Removal* section on this labeling for requirements about when tarps are allowed to be perforated.
- If early tarp removal occurs for a broadcast application the entry restricted period is a minimum of 5 days after the application is complete.
- When listing application information for soil fumigant applications to comply with part 170.122 of the WPS, list the entry restricted period time frame in place of the REI.

### Notification

Notify workers of the application by warning them orally and by posting Fumigant Treated Area signs. The Fumigant Treated Area signs must bear the skull and crossbones symbol and state:

- “DANGER/PELIGRO”
- “Area under fumigation, DO NOT ENTER/NO ENTRE”
- “1,3-dichloropropene and chloropicrin fumigants in use”
- The date and time of fumigation
- The date and time entry prohibition period is over
- Telone C-17
- Name, address, and telephone number of the certified applicator in charge of the fumigation.

Post the Fumigant Treated Area sign instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, text size, and sign size (40 CFR §170.120).

Post Fumigant Treated Area signs at all entrances to the application block no sooner than 24 hours prior to application.

Fumigant Treated Area signs must remain posted for no less than the duration of the entry restricted period.

Fumigant Treated Area signs must be removed within 3 days after the end of the entry restricted period.

## Mandatory Good Agricultural Practices (GAPs)

The following GAPs must be followed during all fumigant applications.

### Application Timing

Apply Telone C-17 at any time of the year when soil conditions permit. Conditions that allow rapid diffusion of the fumigant as a gas through the soil normally give the best results. Because Telone C-17 does not provide residual control of soil pests, use it as a preplant application before planting each crop.

### Tarps (when tarps are used in applications of Telone C-17)

- A written tarp plan must be developed and included in the FMP.
- Once a tarp is perforated, the application is no longer considered tarped.
- Tarps must be installed immediately after the fumigant is applied to the soil.

### Weather Conditions

- To determine if unfavorable weather conditions exist or are predicted (see Identifying Unfavorable Weather Conditions section) and whether an application should proceed, the National Weather Service weather forecast must be checked by the certified applicator supervising the application:
  - o on the day of, but prior to the start of, the application, and
  - o on a daily basis during the application if the time period from the start of the application until the application is complete is greater than 24 hours.
- Do not apply if an air stagnation advisory issued by the National Weather Service is in effect for the area in which the application is planned, during the application, or the 48 hours after the application is complete.
- Do not apply if light wind conditions (<2 mph) are forecast to persist for more than 18 consecutive hours from the time the application starts until 48 hours after the application is complete.
- Detailed National Weather Service forecasts for local weather conditions, wind speed, and air stagnation advisories may be obtained on-line at <http://www.nws.noaa.gov>, on NOAA weather radio, or by contacting your local National Weather Service Forecasting Office.

### Identifying Unfavorable Weather Conditions

Unfavorable weather conditions block upward movement of air, which results in trapping fumigant vapors near the ground. The resulting air mass can move off site in unpredictable directions. These conditions typically exist within an hour prior to sunset and continue past sunrise and may persist as late as noontime. Unfavorable conditions are common on nights with limited cloud cover and light to no wind and their presence can be indicated by ground fog or smog and can also be identified by smoke from a ground source that flattens out below a ceiling layer and moves laterally in a concentrated cloud.



## Telone C-17 Bedded and Broadcast Shank Applications – Additional GAPs

In addition to the GAPs required for all soil fumigation applications with Telone C-17, the following GAPs apply for injection applications.

### Soil Preparation:

- Soil must be in good till and free of large clods. Large clods can prevent effective soil sealing and reduce effectiveness of the application. If subsurface soil compaction layers (hardpans) are present within the intended fumigation treatment zone, a deep tillage to fracture these layers must occur prior to or during the soil fumigant application.
- Plant residue that is present must not interfere with the application or the soil seal. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Crop residue that is present must lie flat to permit the soil to be sealed effectively and limit the natural “chimneys” that may occur in the soil when plant residue is present. These “chimneys” allow the soil fumigants to move through the soil quickly and escape into the atmosphere. This may create potentially harmful conditions for workers and bystanders and limits the efficacy of the fumigant. Plant residue on the field serves to prevent soil erosion from both wind and water.
- Trash pulled by the shanks to the ends of the field must be covered with tarp, or soil, depending on the application method before making the turn for the next pass.

### Soil Temperature:

- The minimum soil temperature at the depth of injection is 40°F.
- The maximum soil temperature at the depth of injection must not exceed 90°F at the beginning of the application.
  - If air temperatures have been above 100°F in any of the three days prior to the start of the application, then soil temperature must be measured and recorded in the FMP. Record temperature measurements at the application depth or 12 inches, whichever is shallower.

### Soil Sealing:

- **Broadcast Untarped Applications:** Use a disc or similar equipment to uniformly mix the soil to at least a depth of 4 to 6 inches to eliminate the chisel or plow traces. Following elimination of the chisel trace, the soil surface must be compacted with a cultipacker, ring roller, and roller in combination with tillage equipment. When using equipment similar to the Yetter applicator (chisel trace disruption and soil sealing are done with one implement), additional tillage and compaction are not required.
- **Bedded Applications:** Preformed beds must be sealed by disruption of the chisel trace using press sealers, bed shapers, cultipackers, or by reshaping (e.g., relisting, lifting and replacing) the beds immediately following injection. Beds formed at the time of application must be sealed by disrupting the chisel trace using press sealers or bed shapers. When bedding, prebedders such as ripper hipers, hillers, or other prebedders may be used to disrupt the chisel trace and seal the soil. When using equipment similar to the Yetter applicator (chisel trace disruption and soil sealing are done with one implement), additional tillage and compaction are not required. Beds may be formed following the Yetter-type applicator in a normal interval consistent to area production practices.
- **Tarped Applications:** The use of a tarp does not eliminate the need to minimize chisel traces prior to application of the tarp, such as by using a Nobel plow or other injection shank that disrupts the chisel traces. When bedding, prebedders such as ripper hipers, hillers, or other prebedders may be used to disrupt the chisel trace and seal the soil. When using equipment similar to the Yetter applicator (chisel trace disruption and soil sealing are done with one implement), additional tillage and compaction are not required. Beds may be formed following the Yetter-type applicator in a normal interval consistent to area production practices.

### Soil Moisture:

- The soil must be moist 9 inches below the surface. The amount of moisture needed in this zone will vary according to soil type. Surface soil generally dries rapidly and must not be considered in this determination.
- Soil moisture must be determined using one of the following methods:
  - the USDA Feel and Appearance Method for testing (see below), or
  - an instrument, such as a tensiometer.
- Available water capacity must be equal to or greater than 50% for shank applications. If there is less than 50% available water capacity 9 inches below the surface, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 9 inches, soil moisture can be adjusted by discing or plowing before the start of the application. To conserve existing soil moisture, pretreatment irrigation or pretreatment tillage should be done as close to the start of the application as possible.
- Measure soil moisture at a depth of 9 inches at either end of the field, no more than 48 hours prior to the start of the application.

The USDA Feel and Appearance Method for estimating soil moisture as appropriate for the soil texture:

- For **coarse** textured soils (fine sand and loamy fine sand), the soil is moist enough (50 to 75% available water capacity) to form a weak

ball with loose and clustered sand grains on fingers, darkened color, moderate water staining on fingers, will not ribbon.

- For **moderately coarse** textured soils (sandy loam and fine sandy loam), the soil is moist enough (50 to 75% available water capacity), to form a ball with defined finger marks, very light soil/water staining on fingers, darkened color will not stick.
- For **medium** textured soils (sandy clay loam, loam, and silt loam), the soil is moist enough (50 to 75% available water capacity), to form a ball, very light staining on fingers, darkened color, pliable, and forms a weak ribbon between the thumb and forefinger.
- For **fine** textured soils (clay, clay loam, and silty clay loam), the soil is moist enough (50 to 75% available water capacity), to form a smooth ball with defined finger marks, light soil/water staining on fingers, ribbons between thumb and forefinger.
- For **fields with more than one soil texture**, soil moisture content in the lightest textured (most sandy) areas must comply with this soil moisture requirement. Whenever possible, the field should be divided into areas of similar soil texture and the soil moisture of each area should be adjusted as needed. Coarser textured soils can be fumigated under conditions of higher soil moisture than finer textured soils; however, if the soil moisture is too high, fumigant movement will be retarded and effectiveness of the treatment will be reduced. Previous and/or local experience with the soil to be treated or the crop to be planted can often serve as a guide to conditions that will be acceptable. If there is uncertainty in determining the soil moisture content of the area to be treated, a local extension service agent, or soil conservationist, or pest control advisor (agriculture consultant) should be consulted for assistance.

### Application Depth:

- **Tarped Broadcast Applications:** The injection point must be a minimum of 8 inches from the nearest final soil/air interface.
- **Tarped and Untarped Bedded Applications:** The injection point must be a minimum of 12 inches from the nearest final soil/air interface.
- **Untarped Broadcast Applications:** The injection point must be a minimum of 12 inches from the nearest final soil/air interface. When using the Nobel plow for untarped broadcast applications, the injection point must be a minimum of 15 inches from the nearest final soil/air interface.
- **Untarped Broadcast Deep Applications:** The injection point must be a minimum of 18 inches from the nearest final soil/air interface.

### Application Methods and Equipment:

- **Broadcast Applications:** Use chisel (shank) or coulters (e.g., Yetter 30-inch Avenger), offset wing shank, Nobel (sweep) plow, or plow-sole application equipment. For best results when using chisel equipment, use ripper-type, forward-swept shanks. Nobel plow equipment is particularly useful for fall fumigation when the soil still contains some standing undecomposed plant material. Subsoiling may be necessary before application. Choose application equipment that allows the deepest application and best soil seal under existing conditions.
  - The fumigant outlet spacing varies with the type of application equipment used.
  - With chisel and coulters equipment, a fumigant shank spacing of 12 to 24 inches is recommended. Do not exceed the maximum shank and outlet spacing of 24 inches. The outlet spacing for this equipment may be up to 1 1/2 times the application depth but generally should be equal to the application depth and should not exceed the soil-shattering capability of the chisels.
  - With plow-sole equipment, a 12-inch outlet spacing is recommended. Do not exceed an outlet spacing of 18 inches.
  - With Nobel (sweep) plow equipment, use an outlet spacing of 9 to 12 inches along the sweeps.
  - Broadcast application can be made in the same direction or at an angle to the direction of row planting.
- **Bedded Applications (for Row Spacing Greater Than 24 Inches):** Use chisel equipment to treat a band of soil where the crop is to be planted, i.e., the plant row. When multiple chisels per plant row are used, space the chisels (fumigant outlets) no more than 12 inches apart.
  - With certain deeper rooted crops such as potatoes and sugarbeets, higher flow rates may be necessary to ensure adequate treatment of the zone of soil where primary root growth occurs.
  - To prevent seed germination problems caused by improper seed-to-soil contact or improper planting depth, do not place the seed directly over the furrow left by the applicator chisel(s). When one chisel is used per plant row, place the seed about 4 inches to one side of the chisel furrow. When two chisels are used per plant row, plant the seed offset from the chisel trace.

### Prevention of End Row Spillage:

- Do not apply or allow fumigant to spill onto the soil surface. For each injection line either have a check valve located as close as possible to the final injection point, or drain/purge the line of any remaining fumigant prior to lifting injection shanks from the ground.

- Do not lift injection shanks from the soil until the shut-off valve has been closed and the fumigant has been depressurized (passively drained) or purged (actively forced out via air compressor) from the system.
- The dispensing system must shut off the feed stream when chisels are raised out of the ground. Do not stop or park near any area where dribble from chisel tips has fallen.
- A flow shutoff device must be placed as close as is technically feasible to the fluid discharge point. This can be a ball, poppet, or diaphragm check valve, or full flow shutoff device such as an electric or pneumatically actuated valve.
- Service any system immediately if continuous drip occurs.
- If mechanical check valves and orifices are used, place the check valve above the orifice. Also, isolate the check valve from upstream pressure by installing a main line shut off or bypass valve prior to the manifold.
- Pipe diameter from check valve to injection point must not exceed 1/4 inches ID National Pipe Standard (NPS). Preferably, use the smallest diameter pipe or tubing possible which achieves the required flow rate.
- Alternative end-row spillage devices or methods, such as, but not limited to, micro-bore restricted flow tubing or line purge systems may be used if they provide equal or superior control versus check valves.

#### **Calibration, Set Up, Repair and Maintenance for Application Rigs:**

##### *Compatible Materials*

- Copper, stainless steel, stainless steel braided hose, steel, brass, Kynar, Kalrez, Chemraz, Santoprene, Hasteloy, Monel, polypropylene, polyethylene, nylon, Teflon, rigid PVC and viton (F/G best).
- Do not expose rigid PVC to undiluted Telone C-17 or more than 1500 ppm of Telone C-17 in the diluted form.

The following materials must **not** be used with Telone C-17:

- Do not use containers, pumps, or other transfer equipment made of aluminum, magnesium, zinc (including galvanized), cadmium, tin and alloys, or vinyl as under certain conditions Telone C-17 may be severely corrosive to such materials. Unless referring to plasticized vinyl, vinyl and PVC are the same. PVC is listed above under Compatible Materials.
- Buna-N, neoprene and fiberglass have the potential to disintegrate and must not be used with Telone C-17.
- All rigs must include a filter to remove any particulates from the fumigant and for pressurized systems a check valve to prevent backflow of the fumigant into the pressurizing cylinder or the compressed air system.
- Rigs must include a flowmeter or a constant pressure system with orifice plates to ensure the proper amount of fumigant is applied.
- To prevent the backflow of fumigant into the compressed gas cylinder (e.g., nitrogen, other inert gas or compressed air), if used, applicators must:
  - o Ensure that positive pressure is maintained in the compressed gas cylinder at not less than 200 psi during the entire time it is connected to the application rig if a compressed gas cylinder is used. (This is not required for a compressed air system that is part of the application rig because if the compressor system fails, the application rig will not be operable.)
  - o Ensure that application rigs are equipped with properly functioning check valves between the compressed gas cylinder or compressed air system and the fumigant cylinder. The check valve is best placed on the outlet side of the pressure regulator and is oriented to only allow compressed gas to flow out of the cylinder or compressed air out of the compressed air system.
  - o A pressure relief valve must be installed between the regulator and the check valve to ensure a regulator failure does not overpressurize the fumigant cylinder.
  - o Always pressurize the system with compressed gas or by use of a compressed air system before opening the fumigant cylinder valve.
- Before using a fumigation rig for the first time, or when preparing it for use after storage, the operator must check the following items carefully:
  - o Check the filter and clean or replace the filter element as required.
  - o Check all tubes and chisels to make sure they are free of debris and obstructions.
  - o Check and clean the orifice plates and screen checks, if installed.
  - o Pressurize the system with compressed gas or compressed air, and check all fittings, valves, and connections for leaks using soap solution.
- Install the fumigant cylinder and connect and secure all tubing. Slowly open the compressed gas or compressed air valve and increase the pressure to the desired level. Slowly open the fumigant cylinder valve, always watching for leaks.
- When the application is complete, close the fumigant cylinder valve and blow residual fumigant out of the fumigant lines into the soil using compressed gas or compressed air. If the rig uses a centrifugal pump instead of compressed gas to inject fumigant into the soil, you may clear residual fumigant from the fumigant lines using an application wand connected to the system's low point via a drain hose. Place the wand in the soil until all residual fumigant has drained from the system. The wand and drain hose must be free of dirt to allow proper drainage.

At the end of the application season, disconnect all fumigant cylinders from the application rig. At the end of the season, seal all tubing openings with tape to prevent entry of insects and dirt.

Application equipment must be calibrated and all control systems must be working properly. Proper calibration is essential for application equipment to deliver the correct amount of fumigant uniformly to the soil. Refer to the manufacturer's instructions on how to calibrate your equipment. Usually the equipment manufacturer, fumigant dealer, or Cooperative Extension service can provide assistance.

#### **Planting Interval:**

- Leave the soil undisturbed and unplanted for at least 7 days after the application of Telone C-17 is complete. A longer undisturbed interval is required if the soil becomes cold or wet, and for deep-rooted tree, shrub and vine planting sites.
- After fumigation to prevent phytotoxicity, allow the fumigant to dissipate completely before planting the crop. Dissipation is usually complete when Telone C-17 can no longer be detected at the application depth. Under optimum soil conditions for dissipation, a period of 1 week for each 10 gallons per treated acre is generally required for complete dissipation. If tarps that qualify for either a 40% or 60% buffer zone credit are used, a longer dissipation period may be needed. Rapidly germinating seed (i.e., lettuce or radish) and/or seed or transplants to be grown may be used as a bioassay to determine if Telone C-17 is present in the soil at concentrations sufficient to cause plant injury.
- To hasten dissipation especially if heavy rains or low temperatures occur during the treatment period, till the soil to the depth of fumigant application. Use a knife-like chisel without turning the soil to reduce the possibility of recontaminating the treated soil. Dissipation is usually complete when Telone C-17 is no longer evident at the application depth. Seed may be used as a bioassay to determine if Telone C-17 is present in the soil at concentrations sufficient to cause plant injury. Do not plant if Telone C-17 is detected.

#### **Bulk and Non-Bulk Containers:**

- Telone C-17 must be transferred through connecting hoses, pipes, and/or couplings sufficiently tight to prevent workers or other persons from coming in contact with liquid Telone C-17.
- All hoses, piping, and tanks used in connection with Telone C-17 shall be of the type appropriate for use under the pressure and vacuum conditions to be encountered.
- External sight gauges shall be equipped with valves so that pipes to sight gauge can be shut off in case of breakage or leakage.
- The mechanical transfer system must be adequate to make necessary measurements of the pesticide being used.
- Shut-off devices must be installed on the exit end of all hoses and at all disconnect points to prevent leakage of Telone C-17 when the transfer is stopped and hose is removed or disconnected. A dry coupler that will minimize pesticide leakage must be installed at the disconnect point.
- The pressure in hoses used to move Telone C-17 beyond a pump must not exceed the manufacturer's maximum pressure specification.

**Note:** In-tank cleaning of bulk tanks must be performed only by persons who have been specifically trained for this activity. Refer to OSHA 29 CFR Part 1910.146.

#### **Telone C-17 Tree Replant Applications Using Handheld Equipment – Additional GAPS**

This application method is used when Telone C-17 is applied to individual tree sites in an existing orchard where shank applications are not possible. In addition to the GAPS required for all soil fumigation applications with Telone C-17, the following GAPS apply for tree replant applications with Telone C-17.

#### **Site Preparation:**

- Remove the tree stump and primary root system in each individual tree site with a backhoe or other similar equipment, for example, an auger.
- The backhoe site must be dug in the approximate dimensions of 10 x 10 x 10 feet.
- The hole must be backfilled with soil before application.

#### **Application Depth:**

- The fumigant must be injected at least 18 inches into the soil.
- For sites where no restrictive soil layers are present, Telone C-17 can be applied to a depth of 5 feet using an injection auger. For tree replant sites in the western U.S., apply Telone C-17 at a single point in the center of each planting site at a depth of 5 feet below the original soil surface, or into at least three points per planting site, at a depth of 3 feet below the original soil surface.

#### **System Flush:**

- Before removing the application wand from the soil the wand must be cleared using nitrogen or compressed air.



**Soil Sealing:**

- After the wand is cleared and removed from the soil, the injection hole must be either covered with soil and tamped or the soil must be compacted over the injection hole.

**Planting Interval:**

- To prevent phototoxicity, ensure that the chemical has dissipated completely before planting. Dissipation is slower in cold, wet soils. Prepare and treat planting sites in the fall and plant in the spring. Do not place in groundwater.

**Table 1. Rates for Flat Fume, “Broadcast” Application for Nematodes, Symphylans, Wireworms, and Certain Soil Borne Diseases**

Crops	Soil Type	Per Treated Application Rates (Gallons/Acre)	
		Untarped Shank Injection	Tarped Shank or Untarped Deep (18” Minimum) Shank Injection
vegetable crops	mineral muck or peat	10.8 to 17.1 <sup>2</sup> 27.4 <sup>3</sup> to 30	
potato <sup>1,2</sup> and onion <sup>1</sup>	mineral muck or peat	18 to 27.5 <sup>1</sup> 30	
field crops <sup>4</sup>	mineral muck or peat	10.8 to 17.1 <sup>2</sup> 21.6	
fruit and nut crops <sup>5,6</sup> , including strawberries	mineral, muck, or peat	32.4 to 37	32.4 to 42
nursery crops	mineral, muck, or peat	---	50.4 to 66
mint	mineral, muck, or peat	27.5	

**Note:** For control of symphylans (garden centipedes) or suppression of wireworms, consult the Soil Insects section below for more specific directions and application rates.

<sup>1</sup> Potatoes and onions: To control root knot nematode and suppress wireworms in mineral soils, apply Telone C-17 at the rate of 24 gpa. To control northern root knot nematode in mineral soils, apply Telone C-17 at the rate of 18 to 21 gpa. To control stubby root nematode in mineral soils, apply Telone C-17 at the rate of 27.5 gpa. For best results, apply the fumigant consistently at least 18 inches below the final soil/air interface.

Preharvest soil sampling and preharvest tuber sampling is recommended to detect developing nematode populations or early tuber infection.

There are a range of soil conditions under which Telone C-17 can be applied. Within that range, product performance will improve as the soil condition moves toward optimum. Using Telone C-17 under soil conditions outside the range will yield less than satisfactory performance.

<sup>2</sup> Potatoes: Before fumigation, soil sampling for the type and number of pests present is recommended and can help to determine the need for additional treatment with a contact nematicide. Preharvest tuber sampling for nematodes also is recommended. For best timing and sampling methods, consult a local extension service agent, pest control advisor, or Dow AgroSciences representative for assistance. If the nematode population is high enough to damage the crop, the potatoes can be harvested early. Fumigation cannot be expected to eradicate the entire pest population. Therefore, post-treatment and preplant soil sampling is recommended to determine the need for additional pest population control or other management practices. Do not store potatoes with a detectable nematode infestation. Row treatment is not recommended for potatoes in irrigated areas of western and northwestern states. Do not use plow-sole application.

Using Telone C-17 does not guarantee pest-free potatoes at harvest. Using Telone C-17 according to use directions will control only the nematode populations present within the fumigated zone at the time of fumigation. The fumigated zone can vary depending upon a number of factors such as fumigant rate, application methods used, depth of application, soil moisture, soil type, soil temperature and soil tilth (including soil compaction and soil porosity). Telone C-17 will not control or prevent reinfestation subsequent to treatment. Subsequent pest populations may infest the fumigated zone from irrigation water, equipment or other sources of contamination, or may invade the fumigated zone from surrounding untreated soil such as from beneath the fumigated zone or from unfumigated pockets within the fumigated zone.

Do not plow the ground in the spring in such a way that inverts the soil prior to a spring fumigation. Conduct such tillage operations in the fall to allow winter kill of residual nematode populations in the top 1 to 2 inches of the soil profile. A cover crop, such as wheat or grass, can be planted to reduce the potential for soil erosion following a fall soil fumigation and undisturbed soil interval.

<sup>3</sup> When using the coulter system (e.g., Yetter 30-inch Avenger) in moderate to heavy disease pressure, use the maximum rate of Telone C-17 followed by chloropicrin in-bed. Consult your local certified dealer for rate recommendations.

<sup>4</sup> For muck soils containing less than 30% organic matter use 21.6 gpa. **In New York:** for high organic matter soils, use up to 41 gpa.

<sup>5</sup> Citrus Fruits: For burrowing nematode control, inject Telone C-17 on 18-inch centers at least 12 inches deep. To protect existing trees near tree planting sites within existing groves, do not apply within 5 feet of living trees. Keep the field free of plants susceptible to burrowing nematodes for 2 years before replanting to citrus.

<sup>6</sup> Tree Replanting Sites in the U.S. use 31 fl oz of Telone C-17.

**Table 2. Rates Bedded or Stripped Applications to Control Nematodes, Symphylans, Wireworms, and Certain Soil Borne Diseases**

Crops	Soil Type	Per Treated Application Rates (Gallons/Acre)	
		Untarped Shank Injection	Tarped Shank or Untarped Deep (18” Minimum) Shank Injection
vegetable crops	mineral muck or peat	10.8 to 25.6 27.4 to 45	
potato and onion	mineral muck or peat	18 to 41.3 30 to 45	
field crops	mineral muck or peat	10.8 to 25.6 21.6 to 32.4	
fruit and nut crops including strawberries	mineral, muck, or peat	32.4 to 55.5	32.4 to 63
nursery crops	mineral, muck, or peat	---	50.4 to 90
mint	mineral, muck, or peat	27.5 to 41.3	

The per treated acre rate range for bedded or stripped applications (Table 2) is wider than the rates listed in Table 1 because flat fume or broadcast rates can be concentrated in the bed or strip and the width of these beds or strips can vary significantly. In no case can the total number of gallons of Telone C-17 applied on an acre exceed the volume listed in Table 1.

## Control of Nematodes

Use Telone C-17 for control of nematodes and symphylans, management of soil diseases, and suppression of wireworms in soils to be planted to vegetable crops, field crops, fruit and nut crops, nursery crops and mint.

## Control of Soil Insects

**Symphylans (Garden Centipedes):** Use Telone C-17 for treatment of soil to be planted to crops where these pests have been shown to be a

problem. Apply the fumigant only as a broadcast treatment at the rate of 21.6 to 42 gpa. For best results, apply during late summer or early fall when the soil is warm.

**Wireworms:** Use Telone C-17 for treatment of soil to be planted to crops where these pests have been shown to be a problem. Apply the fumigant as a broadcast treatment at 24 gpa by injection at least 18 inches below the final soil surface.

## Calculating the Broadcast Equivalent Application Rate

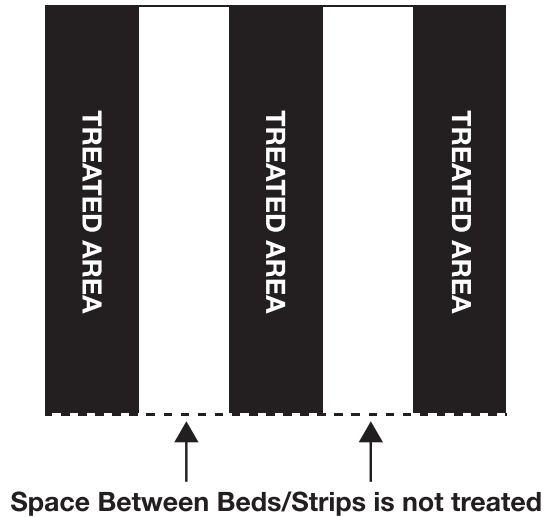
To calculate the broadcast equivalent rate for bedded or strip applications the following information is needed:

- gallons of product per treated acre
- strip or bed bottom width (inches)
- center-to-center row spacing (inches)
- application block size (acres)

Gallons of product **per treated acre** is the ratio of total amount of product applied to the size of the **total area treated** (e.g., the rate of product applied in the bed). For bedded or strip applications, the **total area treated** is the summation of the area (i.e., length x width) of each treated bed bottom or strip that is located within the application block as shown by the black areas in Figure 1 (e.g., black areas are 0.6A or 60% of the area within the application block). The area of the space between the beds/strips is not factored in the total area treated.

The **application block size** is the acreage within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

Figure 1. Bedded/Strip Application (1 acre application block)



The “broadcast equivalent rate” must be calculated with the following formula:

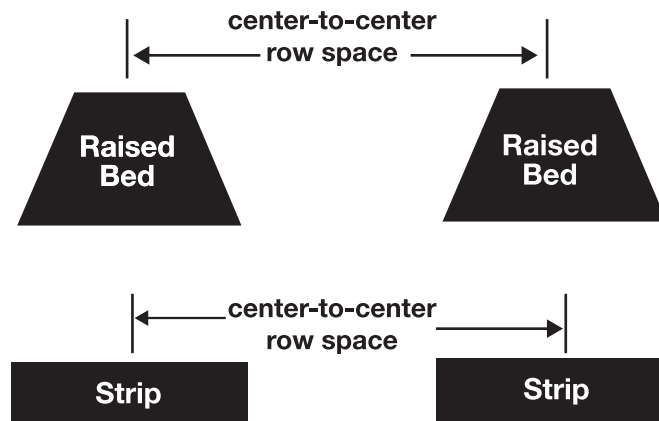
$$\text{Broadcast equivalent rate (gallons product/acre)} = \frac{\text{strip or bed bottom width (inches)}}{\text{center-to-center row spacing (inches)}} \times \text{gallons of product/ treated acre applied in the strip or bed}$$

-The bed width must be measured from the bottom of bed.

-The center-to-center row spacing must be calculated as shown in Figure 2.

-If there are any ditches, waterways, drive rows and other areas that are not fumigated that are in the application block, multiply the above broadcast equivalent equation by **(total area of strips or beds + row spacing)/(application block size)**. A sample calculation is provided below.

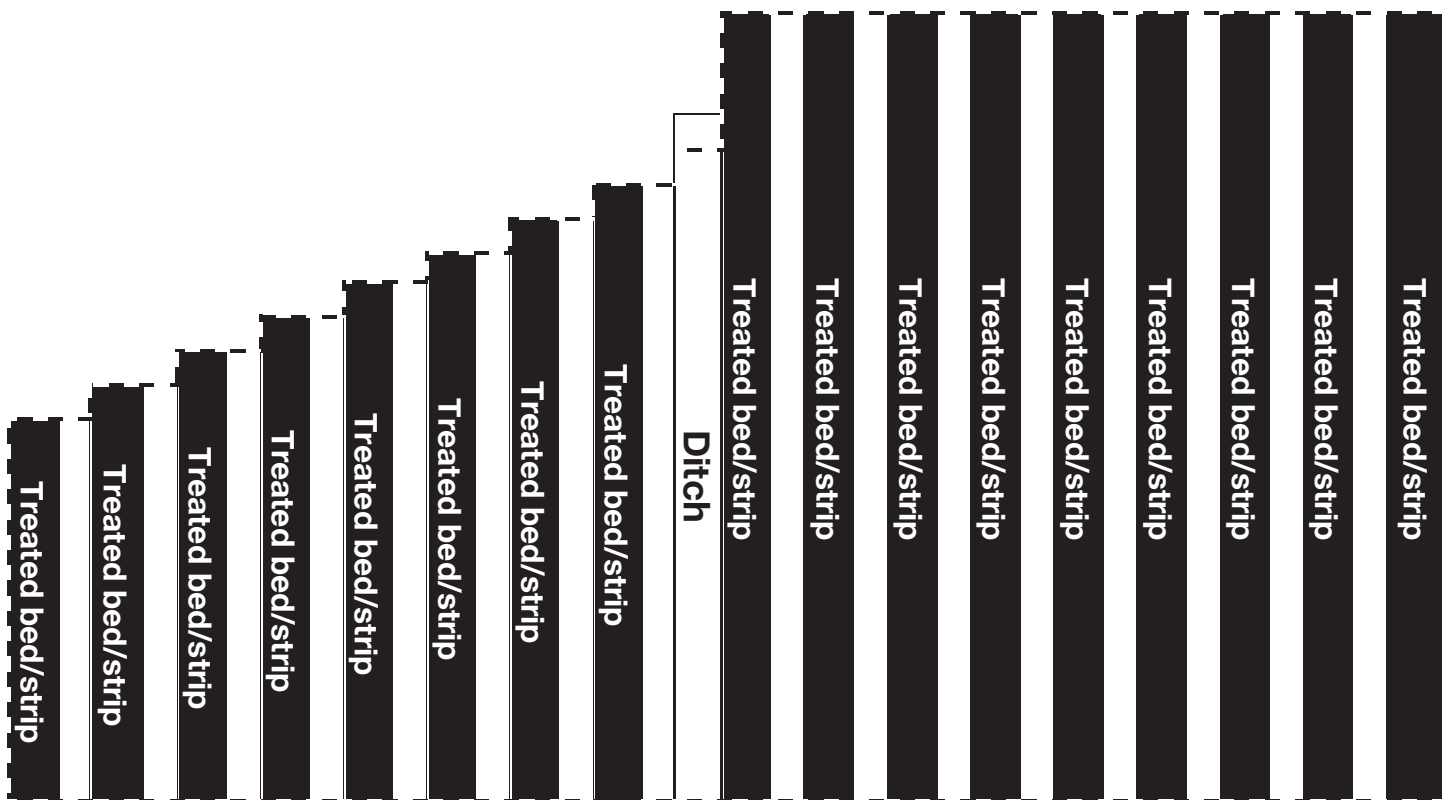
Figure 2. Center Row Spacing



**Sample broadcast equivalent rate calculation**

Assumptions:

- Application method is shank bedded
- Bed width is 30 inches (measured at the bottom of bed)
- Center-to-center row spacing is 60 inches
- 20 gallons of product per treated acre is applied in the beds
- Total application block size is 10 acres
- Ditch in the middle of application block is 0.25 acres
- Area of beds + row spacing is 9.75 acres



$$\begin{aligned}
 &\text{broadcast equivalent rate (gallons product/acre)} = \frac{\text{strip or bed bottom width (inches)}}{\text{center-to-center row spacing (inches)}} \times \frac{\text{area of strips or beds + row spacing application block size}}{\text{9.75 acres}} \times \frac{\text{gallons product/treated acre applied in the bed}}{\text{20 gallons product/treated acre}} \\
 &= \frac{30 \text{ inch width beds}}{60 \text{ inch row spacing}} \times \frac{9.75 \text{ acres}}{10 \text{ acres}} \times 20 \\
 &= 9.75 \text{ gallons product/acre}
 \end{aligned}$$

**Buffer Zone Requirements**

A buffer zone must be established for every fumigant application. The following describes the buffer zone requirements:

- The buffer zone must extend outward from the edge of the application block perimeter equally in all directions.
- All non-handlers, including field workers, residents, pedestrians, and other bystanders, must be excluded from the buffer zone during the buffer zone period except for transit (see *Buffer Zone Exemption for Transit on Roadways*).
  - o Local, state, or federal officials performing inspection, sampling, or other similar official duties are not excluded from the application block or the buffer zone by this labeling. The certified applicator supervising the application and the owner of the establishment where the application is taking place are not authorized to, or responsible for, excluding those officials from the application block or the buffer zone.
- The buffer zone period begins at the start of the application and lasts for a minimum of 48 hours after the application is complete.

**Buffer Zone Proximity**

- Before the start of application, the certified applicator must determine whether their buffer zone will overlap any chloropicrin buffer zone(s).

- To reduce the potential for off-site movement from multiple fumigated fields, buffer zones from multiple chloropicrin application blocks must not overlap UNLESS:
  1. A minimum of 12 hours have elapsed from the time the earlier application(s) is complete until the start of the later application, and
  2. *Fumigant Site Monitoring or Response Information for Neighbors* have been implemented if there are any residences or businesses within 300 feet of any of the buffer zones.

**Structures Under the Control of the Owner of the Application Block**

- Buffer zones must not include buildings used for storage (e.g., sheds, barns, garages) UNLESS:
  1. The storage buildings are not occupied during the buffer zone period, and
  2. The storage buildings do not share a common wall with an occupied structure.

**Areas Not Under the Control of the Owner of the Application Block**

- Buffer zones must not include residential areas (e.g., employee housing, private property), buildings (e.g., commercial, industrial), outdoor residential areas (e.g., lawns, gardens, play areas) and other areas that people may occupy, UNLESS:



1. The occupants provide written agreement, prior to the start of the application, that they will voluntarily vacate the buffer zone during the entire buffer zone period, and
  2. Reentry by occupants and other non-handlers must not occur until,
    - o The buffer zone period has ended, and
    - o Sensory irritation is not experienced upon re-entry.
- Buffer zones must not include agricultural areas owned and/or operated by persons other than the owner of the application block, UNLESS:
    1. The owner of the application block can ensure that the buffer zone will not overlap with a chloropicrin buffer zone from any other property owners, except as provided in the *Buffer Zone Proximity* section, and
    2. The owner of the other property provides written agreement to the applicator that they, their employees, and other persons will stay out of the buffer zone during the entire buffer zone period.
  - Buffer zones must not include roadways and rights of way UNLESS:
    1. The area is not occupied during the buffer zone period, and
    2. Entry by non-handlers is prohibited during the buffer zone period.

**Buffer Zone Exemption for Transit on Roadways**  
 Vehicular and bicycle traffic on public and private roadways through the buffer zone is permitted. (NOTE: Buffer zones are not permitted to include bus stops or other locations where persons wait for public transit.)
  - For all other publicly owned and/or operated areas such as parks, sidewalks, permanent walking paths, playgrounds, and athletic fields,

buffer zones must not include these areas UNLESS:

1. The area is not occupied during the buffer zone period,
2. Entry by non-handlers is prohibited during the buffer zone period, and
3. Written permission to include the public area in the buffer zone is granted by the appropriate state and/or local authorities responsible for management and operation of the area.

Certified applicators must comply with all local laws and regulations.

See the *Posting* section for additional requirements that may apply.

### **Buffer Zone Distances**

Buffer zone distances must be calculated using the application rate and the size of the application block.

- Buffer zone distances must be based on look-up tables in this labeling (25 feet is the minimum distance regardless of site-specific application parameters).
- For selective tree replant fumigation in an orchard using handheld application methods, the minimum buffer zone will be 25 feet measured from the center of each injection site.
- For all other applications, Tables 3 through 8 as appropriate for the methods of application must be used to determine the minimum buffer distances. Round up the nearest rate and block size, where applicable. Applications are prohibited for rates or block sizes that exceed what is presented in the buffer zone table.









**Table 6. Broadcast Tarp Buffer Zone Distances (in Feet)**

gal	Application Block Size (Acres)																												
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	150	160	
12	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45
15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45
18	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	40	45	45
20	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	45
23	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	50
26	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	50
29	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	50
32	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	50
35	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
37	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
40	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
46	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
52	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
55	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
58	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
60	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
63	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55
66	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	30	35	40	45	50	55

**Table 7. Broadcast Untarp Buffer Distances (in Feet)**

gal	Application Block Size (Acres)																												
	1	2	3	4	5	6	7	8	9	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120	130	140	150	160	
6.7	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	40	45	50	50	60	
8.6	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	40	45	50	50	60
12	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	40	45	50	50	60
15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	40	45	50	55	55	65
18	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	35	40	45	50	55	60	65	70
20	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	35	43	50	63	75	85	95	105	115	125	134	144	153	
23	25	25	25	25	25	25	25	25	25	25	25	25	25	25	38	50	80	110	138	165	175	185	200	210	228	245	263	280	
26	25	25	25	25	25	25	25	25	25	25	25	25	41	58	76	95	133	170	201	233	253	283	310	330	358	385	413	440	
29	25	25	25	25	25	25	25	25	25	25	25	25	58	90	115	140	185	230	265	300	335	370	405	440	477	513	550	587	
32	25	25	25	25	25	25	25	25	25	25	46	68	100	133	161	190	238	285	325	365	405	445	485	520	563	607	650	693	
35	25	25	25	25	25	25	25	25	25	25	68	110	143	175	208	240	290	340	385	430	470	510	550	585	634	683	731	780	
38	25	25	25	25	25	25	33	37	41	45	95	145	183	220	253	285	343	400	448	495	540	585	630	670	726	782	838	893	
40	25	25	25	25	25	25	33	41	49	57	65	123	180	223	265	298	330	395	460	510	560	610	660	710	755	818	881	944	1007
43	25	25	30	30	30	42	56	70	84	98	158	218	263	307	343	380	452	523	578	633	688	743	798	848	919	989	1060	1131	
46	25	30	30	30	32	52	72	92	112	132	194	257	303	348	389	430	508	587	647	707	767	827	887	942	1021	1099	1178	1256	
49	25	30	30	33	35	61	87	113	139	165	230	295	343	390	435	480	565	650	715	780	845	910	975	1035	1121	1208	1294	1380	
52	25	34	43	52	61	86	111	136	161	186	248	309	366	423	473	523	616	709	794	879	949	1019	1089	1154	1250	1346	1443	1539	
55	25	41	56	72	88	112	136	160	184	208	265	323	389	455	510	565	666	768	873	978	1053	1128	1203	1273	1379	1485	1591	1697	
58	25	47	69	92	114	137	160	183	206	229	283	336	412	488	548	608	717	826	951	1076	1156	1236	1316	1391	1507	1623	1739	1855	
60	25	54	83	111	140	162	184	206	228	250	300	350	435	520	585	650	768	885	1030	1175	1260	1345	1430	1510	1636	1762	1888	2013	
63	25	56	88	119	150	173	196	218	241	264	325	386	473	559	628	696	817	938	1079	1220	1310	1400	1490	1575	1706	1838	1969	2100	
66	25	59	93	126	160	184	207	231	254	278	350	422	510	598	670	742	867	991	1128	1265	1360	1455	1550	1640	1777	1913	2050	2187	

Broadcast Equivalent Application Rate (Gallons product/A)





## Buffer Zone Credits

The buffer zone distances for Telone C-17 applications may be reduced by the percentages listed below. Credits may be added, but credits cannot exceed 80%. Also the minimum buffer zone distance is 25 feet regardless of buffer zone credits available.

See [www.tarpcredits.epa.gov](http://www.tarpcredits.epa.gov) for a list of tarps that have been tested and determined to qualify for buffer reduction credits. Only tarps listed on this website qualify for buffer reduction credits.

Reduction in Buffer Zone Distance (%)		
15	<b>IF</b>	potassium thiosulfate (KTS) is applied at a minimum rate of 300 lb per acre.
15	<b>IF</b>	1/4 to 1/2 inch of water is applied
10	<b>IF</b>	the organic content of the soil in the application block is >1% to 2%
20	<b>IF</b>	the organic content of the soil in the application block is >2% to 3%
30	<b>IF</b>	the organic content of the soil in the application block is >3%
10	<b>IF</b>	the soil temperature is measured to be 50°F or less. Record temperature measurements at the application depth or 12 inches, whichever is shallower.
10	<b>IF</b>	the clay content of the soil in the application block is greater than 27%.

### Examples of Buffer Zone Calculations with Credits Applied

If the buffer zone is 50 feet and the application qualifies for a buffer zone credit since the soil organic content is 1.5%, then the buffer zone can be reduced by 10%, i.e., reduced by 5 feet based on the following calculation: 50 feet – (50 feet x 10%) = 45 feet.

If the buffer zone is 50 feet and the application qualifies for two buffer zone credits since the soil organic content is 1.5% and the clay content is greater than 27%, then the buffer zone can be reduced by 20% (10% organic content credit + 10% clay content credit), i.e., reduced by 10 feet based on the following calculation: 50 feet – (50 feet x 20%) = 40 feet.

### Posting Fumigant Buffer Zones

- Posting of a **buffer zone** is required unless there is a physical barrier that prevents bystander access to the buffer zone.
- Buffer Zone signs must be placed along or outside the perimeter of the buffer zone, at all usual points of entry and along likely routes of approach from areas where people not under the owner's control may approach the buffer zone.
  - Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths and bike trails.
  - Some examples of likely routes of approach include, but are not limited to, the area between a buffer zone and a roadway, or the area between a buffer zone and a housing development.
  - When posting, the certified applicator supervising the application must ensure compliance with all local laws and regulations.
- Buffer Zone signs must meet the following criteria:
  - The printed side of the sign must face away from the application block toward areas from which people could approach.
  - Signs must remain legible during the entire posting period and must meet the general standards outlined in the WPS for sign size, text size and legibility (see 40 CFR §170.120).
  - Signs must be posted no sooner than 24 hours prior to the start of the application and remain posted until the buffer zone period has expired.
  - Signs must be removed within 3 days after the end of the buffer zone period.
  - Buffer Zone signs which meet the criteria above will be provided at points of sale for applicators to use. Templates may be downloaded from [http://www.epa.gov/pesticides/reregistration/soil\\_fumigants/index.htm](http://www.epa.gov/pesticides/reregistration/soil_fumigants/index.htm).
  - The Buffer Zone signs must contain the following information:
    - The "Do Not Walk" symbol
    - DO NOT ENTER/NO ENTRE
    - Chloropicrin/1,3-dichloropropene Telone C-17 Fumigant BUFFER ZONE
    - Contact information for the certified applicator in charge of the fumigation.

Exception: If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks' buffer zones may be posted. Buffer Zone signs must be posted no sooner than 24 hours prior to the start of the first application. The signs must remain posted until the

last buffer zone period expires and signs must be removed within 3 days after the buffer zone period for the last block has expired.

### Restrictions for Difficult to Evacuate Sites

Difficult to evacuate sites are pre-K to grade 12 schools, state licensed daycare centers, nursing homes, assisted living facilities, hospitals, in-patient clinics, and prisons.

- No fumigant application with a buffer zone greater than 300 feet is permitted within 1/4 mile (1320 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the start of the application.
- No fumigant application with a buffer zone of 300 feet or less is permitted within 1/8 mile (660 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

### Emergency Preparedness and Response Measures

If the buffer zone is 25 feet, then the *Emergency Preparedness and Response Measures* are not applicable.

#### Triggers for Emergency Preparedness and Response Measures

The certified applicator must either follow the directions under the *Fumigant Site Monitoring* section or follow the directions under the *Response Information for Neighbors* section if:

- the buffer zone is greater than 25 feet but less than or equal to 100 feet, and there are residences or businesses within 50 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 100 feet but less than or equal to 200 feet, and there are residences or businesses within 100 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 200 feet but less than or equal to 300 feet, and there are residences or businesses within 200 feet from the outer edge of the buffer zone, or
- the buffer zone is greater than 300 feet or the buffer zones overlap, and there are residences or businesses within 300 feet from the outer edge of the buffer zone.

#### Fumigant Site Monitoring

NOTE: *Fumigant Site Monitoring* is ONLY required if the *Emergency Preparedness and Response Measures* are triggered AND directions from the *Response Information for Neighbors* section are not followed.

From the start of the application until the buffer zone period expires, a certified applicator or handler(s) under his/her supervision must:

- Monitor for sensory irritation in areas between the buffer zone outer perimeter and residences and businesses that trigger this requirement.
- Monitoring for sensory irritation must begin in the evening on the day of application and continue until the buffer zone period expires. Monitor a minimum of 8 times during the buffer zone period, including these periods:
  - 1 hour before sunset,
  - during the night,
  - 1 hour after sunrise, and
  - during daylight hours.

Implement the emergency response plan immediately if a handler monitoring experiences sensory irritation.

Handlers performing fumigant site monitoring tasks outside of the buffer zone are not required to wear an air-purifying respirator.

#### Response Information for Neighbors

NOTE: *Response Information for Neighbors* is ONLY required if the *Emergency Preparedness and Response Measures* are triggered AND directions from the *Fumigant Site Monitoring* section are not followed.

The certified applicator supervising the application must ensure that residences and businesses that trigger the requirement have been provided the response information at least 1 week before the application starts. The information provided may include application dates that range for no more than 4 weeks. If the application does not occur when specified, the information must be delivered again.

Information that must be included:

- The location of the application block.
- Fumigant(s) applied including the active ingredient, name of the fumigant product(s), and the EPA Registration number.
- Contact information for the applicator and property owner.
- Time period in which the application is planned to take place (must not range more than 4 weeks).
- Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and who to call if you believe you are being exposed (911 in most cases).
- How to find additional information about fumigants.

The method used to share the response information for neighbors can be accomplished through mailings, door hangers, or other methods that will effectively inform the residences and businesses within the required distance from the edge of the buffer zone.

## Notice to State and Tribal Lead Agencies

If your state and/or tribal lead agency requires notice, information must be provided to the appropriate state or tribal lead agency prior to the application. Please refer to [www.epa.gov/fumigantstatenotice](http://www.epa.gov/fumigantstatenotice) for a list of states and tribal lead agencies that require notice and information on how to submit the information.

The information that must be provided to state and tribal lead agencies includes the following:

- Location of the application blocks,
- Fumigant(s) applied including EPA registration number,
- Applicator and property owner contact information, and
- Time period that fumigation may occur.

## Emergency Response Plan

The certified applicator must include in the FMP a written emergency response plan that identifies:

- Evacuation routes,
- Locations of telephones,
- Contact information for first responders and local/state/federal/tribal personnel, and
- Emergency procedures/responsibilities (e.g., adding water to the field, repairing tarps, fixing equipment, evacuating upwind) if:
  - o there is an incident,
  - o sensory irritation is experienced outside of the buffer zone, and/or
  - o there are equipment/tarp/seal failure or complaints, or other emergencies.

## Site Specific Fumigant Management Plan (FMP)

Prior to the start of the application, the certified applicator supervising the application must verify that a site-specific FMP exists for each application block. In addition, an agricultural operation fumigating multiple application blocks may format the FMP in a manner whereby all of the information that is common to all the application blocks is captured once, and any information unique to a particular application block or blocks is captured in subsequent sections.

The FMP must be prepared by the certified applicator, the site owner, registrant, or other party.

The certified applicator supervising the application must verify in writing (sign and date) that the site-specific FMP(s) reflects current site conditions before the start of application.

Each site specific FMP must contain the following elements:

- **Certified Applicator Supervising the Application**
  - o Name,
  - o Phone number,
  - o Pesticide applicator license and/or certificate number,
  - o Specify if commercial or private applicator,
  - o Employer name,
  - o Employer address, and
  - o Date and location of completing EPA approved soil fumigant training program.
- **General Site Information**
  - o Application block location (e.g., county, township-range-section quadrant), address or global positioning system (GPS) coordinates
  - o Verify if 1,3-dichloropropene has been used on this application block in the previous two years
  - o Confirm that there will be no occupied structures within 100 feet of the application block during the 7 consecutive day period after the application is complete
  - o Name, address, and phone number of application block owner
  - o Map, aerial photo, or detailed sketch showing
    - application block location
    - application block dimensions
    - buffer zone dimensions
    - property lines
    - roadways
    - rights-of-ways
    - sidewalks
    - permanent walking paths
    - bus stops
    - wells
    - karst topography
    - nearby application blocks
    - surrounding structures (occupied and non-occupied)
- locations of Buffer Zone signs, and
- locations of difficult to evacuate sites with distances from the application block labeled.
- **General Application Information**
  - o Target application date/window,
  - o Fumigant Product Name, and
  - o EPA registration number.
- **Tarp Plan (if Tarp is Used)**
  - o Schedule for checking tarps for damage, tears, and other problems,
  - o Minimum size of damage that will be repaired,
  - o Factors used to determine when tarp repair will be conducted,
  - o Equipment/methods used to perforate tarps,
  - o Target dates for perforating tarps, and
  - o Target dates for removing tarps.
- **Soil Conditions**
  - o Description of soil texture and moisture in application block,
  - o Method used to determine soil moisture, and
  - o Soil temperature measurement if air temperatures were above 100°F in any of the 3 days prior to the application.
- **Buffer Zones**
  - o Application method,
  - o Injection depth,
  - o Application rate from lookup table on label,
  - o Application block size from lookup table on label,
  - o Credits applied and measurements taken (if applicable),
    - Tarp brand name, lot number, thickness, manufacturer, batch number, and part number
    - Potassium thiosulfate
    - Water seal
    - Organic matter content
    - Clay content
    - Soil temperature
  - o Buffer zone distance, and
  - o Description of areas in the buffer zone that are not under the control of the owner of the application block. If buffer zones extend onto areas not under the control of the owner, attach the written agreement and keep it with the FMP.
- Record Emergency Response Plan as described in the *Emergency Response Plan* section.
- **Posting of Fumigant Treated Area and Buffer Zone**
  - o Person(s) who will post and remove (if different) Fumigant Treated Area and Buffer Zone signs, and
  - o Location of Buffer Zone signs.
- **Emergency Preparedness and Response Measures (if Applicable):**
  - o Fumigant site monitoring (if applicable):
    - When and where it will be conducted
  - o Response information for neighbors (if applicable):
    - List of residences and businesses informed,
    - Name and phone number of person providing information, and
    - Method of providing the information.
- State and/or tribal lead agency advance notification (if state and/or tribal lead agency requires notice, provide a list of contacts that were notified and date notified).
- Plan describing how communication will take place between the certified applicator supervising the application, the owner, and other on-site handlers (e.g., tarp perforators/removers, irrigators) for complying with label requirements (e.g., buffer zone location, buffer zone start and end times, timing of tarp perforation and removal, PPE).
  - o Name and phone number of persons contacted by the certified applicator, and
  - o Date contacted.
- **Handler (Including Certified Applicators) Information and PPE**
  - o Names, addresses and phone numbers of handlers
  - o Names, addresses and phone numbers for employers of handlers
  - o Tasks that each handler is authorized and trained to perform
  - o Date of PPE training for each handler
  - o Applicable handler PPE including:
    - Long-sleeved shirts/long pants, shoes, socks
    - Chemical-resistant apron
    - Chemical-resistant footwear
    - Protective eyewear (not goggles)
    - Chemical-resistant gloves
    - Chemical-resistant suit
    - Chemical-resistant headgear
    - Air-purifying respirators
      - o Respirator make, model, type, style, size, and cartridge/canister type



- SCBAs
  - Respirator make, model, type, style, size
- Other PPE
- For handlers: Confirmation of receipt of Fumigant Safe Handling Information.
- For certified applicator(s) supervising the application: Completion date and location of the soil fumigant training program listed on the following EPA web site <http://www.epa.gov/fumiganttraining> for the active ingredient(s) in this product.
- For handlers designated to wear respirators (air-purifying respirator or SCBA):
  - date of medical qualification to wear a respirator,
  - date of respirator training, and
  - date of fit-testing for the respirator.
- Unless exempted in the *Protection of Handlers* section, verify that:
  - handlers have the appropriate respirators and cartridges/canisters during handler activities, and
  - the employer has confirmed that the appropriate respirator and cartridges/canisters are immediately available for each handler who will wear one.
- If using an enclosed cab in lieu of wearing an air-purifying respirator, verify that the cab:
  - Has positive pressure (6 mm H<sub>2</sub>O Gauge).
  - Has a minimum air intake flow of 43 m<sup>3</sup>/hour.
  - Is equipped with activated charcoal filter-media containing no less than 1000 grams of activated charcoal.
  - Document the application hours of the filter to confirm that the filter has been used for no more than 50 hours of application time.
  - In addition document that the ventilation system has been maintained according to manufacturer's instructions.
- **Air Monitoring Plan**
  - If sensory irritation is experienced, indicate whether operations will cease or operations will continue with use of an air-purifying respirator
  - For monitoring the breathing zone:
    - Representative handler tasks to be monitored,
    - Monitoring equipment to be used, and
    - Timing of monitoring.
- **Good Agricultural Practices (GAPs)**
  - Identify (e.g., list, attach applicable label section) applicable mandatory GAPs.
- **Pesticide Product Labels and Material Safety Data Sheets (MSDS)**
  - Ensure that labels and MSDS are on-site and readily available for employees to review.

#### Recordkeeping Procedures

The owner of the application block as well as the certified applicator supervising the application must keep a signed copy of the site-specific FMP for 2 years from the date of the application.

For situations where an initial FMP is developed and certain elements do not change for multiple application blocks (e.g., applicator information, certified applicator, handlers, record-keeping procedures, emergency procedures) only elements that have changed need to be updated in the site-specific FMP provided the following:

- The certified applicator supervising the application has verified that those elements are current and applicable to the application block before it is fumigated.
- Recordkeeping requirements are followed for the entire FMP (including elements that do not change).

The certified applicator must make a copy of the FMP immediately available for viewing by handlers involved in the application. The certified applicator or the owner of the application block must provide a copy of the FMP to any local/state/federal/tribal enforcement personnel who request the FMP. In the case of an emergency, the FMP must be made immediately available when requested by local/state/federal/tribal emergency response and enforcement personnel. The certified applicator supervising the application must ensure the FMP is at the application block during all handler activities.

Within 30 days after the application is complete, the certified applicator supervising the application must complete a Post-Application Summary.

#### Post-Application Summary

The Post-Application Summary must contain the following elements:

- Actual date and time of the application
- Application rate
- Size of application block

- Weather Conditions
  - Summary of the National Weather Service weather forecast during the application and the 48-hours after the application is complete including:
    - wind speed, and
    - air stagnation advisory (if applicable).
  - Forecast must be checked on the day of, but prior to the start of the application, and on a daily basis during the application if the time period from the start of the application until the application is complete is greater than 24 hours.
- Tarp Damage and Repair Information (if Applicable)
  - Date of tarp damage discovery,
  - Location and size of tarp damage,
  - Description of tarp/tarp seal/tarp equipment failure, and
  - Date and time of tarp repair completion.
- Tarp Perforation/Removal Details (if Applicable)
  - Date and time tarps were perforated,
  - Date and time tarps were removed, and
  - Record if tarps were perforated and/or removed early. Describe the conditions that caused early tarp perforation and/or removal.
- Complaint Details (if Applicable)
  - Person filing complaint (e.g., on site handler, person off-site),
  - If off-site person, name, address, and phone number of person filing complaint, and
  - Description of control measures or emergency procedures followed after complaint.
- Description of incidents, equipment failure, or other emergency and emergency procedures followed (if applicable).
- Air Monitoring Results
  - When sensory irritation was experienced:
    - Date, time, location, and handler task/activity where irritation was observed and
    - Resulting action (e.g., implement emergency response plan, cease operations, continue operations with appropriate air-purifying respirators).
  - When using a direct read detection device:
    - Sample date(s), time(s), location(s), and concentration(s),
    - Handler task/activity monitored (if applicable), and
    - Resulting action (e.g., cease operations, continue operations with appropriate air-purifying respirators).
- Fumigant Treated Area and Buffer Zone Signs:
  - Dates of posting and removal.
- Any deviations from the FMP (e.g., changes in emergency response actions, changes in handler information, changes in handlers responsible for completing emergency tasks, changes in communication between certified applicator, owner, and other handlers).

#### Recordkeeping Procedures

The owner of the application block, as well as the certified applicator supervising the application, must keep a signed copy of the Post-Application Summary for 2 years from the date of application.

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If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

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#### Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of

other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

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To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

- (1) Refund of purchase price paid by buyer or user for product bought, or
- (2) Replacement of amount of product used

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### **Revisions:**

1. Addition of Applications in California Only in the Application Restrictions section.
2. Addition of Applications in California Only to Table of Contents