



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

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

FEB 6 2006

Mr. Bruce Houtman  
Dow AgroSciences, LLC  
9330 Zionsville Road  
Indianapolis, IN 46268-1054

Subject: Telone C-17  
EPA Reg. No. 62719-12  
Your Amendment dated August 13, 2002  
Decision Number: 185798

Dear Mr. Houtman:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act as amended is acceptable provided the following changes are made:

- 1) Revise the karst geology restriction statement to read, "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".
- 2) Page 5 and 14: under the "End-Row Spillage Control" section, delete the word "should" and add the word "must" within the sentence, "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.
- 3) Page 6: under the "Environmental Hazards" section, within the groundwater advisory statement, revise the word "streatms" to "streams."
- 4) Page 16: under the "Storage and Disposal" section, delete the word "should" and add the word "must" within the sentence, "Store in tightly-closed original container from dwellings. Prolonged exposure of the container to direct sunlight must be avoided."

2/26

EPA Reg. No. 62719-12  
Telone C-17  
Page 2 of 2

- 5) Page 23: under the "Limitation of Remedies" section, revise the sentence to read, "To the extent allowed by state law, Dow AgroSciences shall not be liable for losses or damages resulting from....."
- 6) The supplemental labeling accepted on June 19, 2003 must be incorporated into the main label within 18 months or at your next label printing, whichever comes first.
- 7) Submit one copy of the final printed label before the product is release for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e).

One copy of the label stamped "Accepted with comments" is enclosed for your records. Additionally, a copy of the Environmental Fate and Effects Division's memo dated December 22, 2005 (Decision # 49768; DP Barcode; D323168) is enclosed. As noted in the EFED review, it is suggested that Dow AgroSciences consider conducting groundwater monitoring studies in a representative number of new Telone use areas in Florida to ensure that Telone contaminated storm water does not potentially contaminate karst aquifers.

If you have any questions, please contact Tamue L. Gibson by phone at (703) 305-9096 or via email at [gibson.tamue@epa.gov](mailto:gibson.tamue@epa.gov).

Sincerely,



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

Enclosure

ACCEPTED  
with COMMENTS  
In EPA Letter Dated

FEB 6 2006

Q1A / Telone C-17 / Amend / 02-28-05

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No. 62719-12

(Base Label):

**RESTRICTED USE PESTICIDE**  
Due to high acute inhalation toxicity and carcinogenicity.  
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

(Logo) Dow AgroSciences

# Telone® C-17

Soil Fungicide and Nematicide

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.

Active Ingredients:

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

One gallon of Telone C-17 weighs about 10.6 lb at 70°F. Contains 8.6 lb of 1,3-dichloropropene and 1.75 lb of chloropicrin per gallon.

Keep Out of Reach of Children

## DANGER PELIGRO

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

See back panel for First Aid statements.

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### Precautionary Statements

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#### Hazards to Humans and Domestic Animals

##### Hazardous Liquid and Vapor

- Do not swallow any of this product. May be fatal if swallowed.
- Do not get in eyes. Corrosive. Causes Irreversible Eye Damage.
- Do not get on skin. May be fatal if absorbed through the skin. Causes skin burns. May cause allergic skin reaction.
- Do not breathe vapor. May be fatal if inhaled. 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.
- This fumigant has the capacity to cause marked irritation to the upper respiratory tract. A strong lachrymator (tear-producing eye irritant). Low concentrations are capable of causing

painful eye irritation. The effect may be so powerful that a person may become temporarily blinded and panic-stricken. That, in turn, may lead to accidents.

#### Air Concentration Level

The acceptable air concentration level for persons exposed to chloropicrin is 0.1 ppm (0.7 mg/M<sup>3</sup>). The air concentration level is measured by a direct reading detection device, such as a Matheson-Kitagawa, Draeger, or Sensidyne.

#### Personal Protective Equipment (PPE)

**Chemical-Resistant Materials:** Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category H on an EPA 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 knot cotton or cotton/polyester), non-woven fabrics (e.g., Tyvek or Sontara), or fabrics containing microporous Teflon.

#### 1. Handlers Performing Tasks with Liquid Contact Potential

Tasks with liquid contact potential are tasks performed outdoors or in a well-ventilated area. They include:

- Equipment calibration or adjustment
- Equipment clean-up and repair
- Product sampling
- Any activity less than 6 feet from an unshielded pressurized hose containing this product
- Rinsate disposal
- Fumigant transfer
- Clean-up of small spills
- Preparing containers for aeration
- Any other task not otherwise listed in (2), (3), or (4) below

Handlers performing tasks with liquid contact potential must wear at minimum:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). See further respirator requirements in the User Safety Requirements section on this label.
- If air concentrations of chloropicrin exceed 0.1 ppm, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

#### 2a. Handlers Performing Tasks with No Liquid Contact Potential - Broadcast applications, in-bed applications or applications at the time of bedding except as in 2b.

5/26

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area. These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

## **2b. Handlers Performing Tasks with No Liquid Contact Potential - Pre-bed, row product applications (e.g., Yetter rig)**

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area. These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

## **3. Handlers in Treated Area 1 to 5 Days After Application**

6/20

Only the following handler tasks may be performed in the treated area within 5 days after the application is complete:

- Assessing/adjusting the soil seal
- Assessing pest control, application technique, or application efficacy
- Sampling air or soil for this product
- Removing tarp or plastic film

All other tasks are prohibited until the 5-day period has expired.

Handlers in treated area 1 to 5 days after application must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- If air concentrations of chloropicrin exceed 0.1 ppm, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

#### 4. Handlers Exposed to High Concentrations

Handlers exposed to high airborne concentrations of this product, such as cleanup following large spills and exposure to this product in poorly ventilated areas, must wear at minimum:

- Chemical-resistant suit
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear
- Supplied-air respirator with MSHA/NIOSH approval number prefix TC-19C or self-contained breathing apparatus (SCBA) with MSHA/NIOSH approval number prefix TC-13F. See further respirator requirements in the User Safety Requirements section on this label.

**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 and the Storage and Handling Guide.

#### Engineering Controls Requirements

**Mechanical Transfer System:** Personal protective equipment specified for Direct Contact Activities must be worn by the operator of the mechanical transfer system. The operator of the mechanical transfer system must follow instructions on proper operation of the system found in the "Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone C-17 for more information or for these materials.

**End-Row Spillage Control:** 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. The applicator must follow instructions on proper operation and maintenance of the system found in the

7/20

"Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone C-17 for more information or for these materials.

- 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 should 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.

**With all 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.

1. 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.
2. External sight gauges shall be equipped with valves so that pipes to sight gauge can be shut off in case of breakage or leakage.
3. The mechanical transfer system must be adequate to make necessary measurements of the pesticide being used.
4. Shut-off devices must be installed on the exit end of all hoses and at all disconnect points to prevent leakage of Telone product 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.
5. The pressure in hoses used to move Telone C-17 beyond a pump **must not exceed** the manufacturer's maximum pressure specification.

### User Safety Requirements

1. **Respirator Requirements:** When a respirator is required for use with this product, the following criteria must be met:
  - a. Cartridges or canisters must be replaced daily or when odor or irritation from this product becomes apparent, whichever is sooner.
  - b. Respirators must be fit-tested and fit-checked using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
  - c. Respirator users must be trained using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
  - d. Respirator users must be examined by a qualified medical practitioner to ensure physical ability to safely wear the style of respirator to be worn.
2. **Never fumigate alone:** It is imperative to always have an assistant and proper protective equipment in case of accidents.
3. **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.
4. **Dispose of Contaminated Clothing:** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.

8/26

5. **Clean and Maintain PPE:** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each day's use.
6. **Contact With Mouth:** Never siphon this product by mouth or use mouth to blow out clogged lines, nozzles, etc.
7. **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 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.

**If on skin or clothing:** Immediately flush skin with plenty of water for at least 15 - 20 minutes while removing contaminated clothing and shoes. If water is not immediately available, remove excess chemical from skin with sorbent material such as towel or dry soil, then proceed at once to location where water is available and thoroughly wash contaminated skin with plenty of water. Call a poison control center or doctor for treatment advice.

**If in eyes:** Hold eyelids open and flush with a steady, gentle stream of 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.

### Environmental Hazards

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 rinsate. See Storage and Disposal section. In case of spills properly dispose of contaminated materials.

**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 ground water contamination. Do not apply within 100 feet of any well used for potable water. Do not apply this product within 100 feet 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



9/20

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.

**Physical or Chemical Hazards**

Combustible. Do not use or store near heat or open flame.

**Agricultural Use Requirements**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to label booklet for additional precautionary information and Directions for Use.

**Notice:** Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at [www.dowagro.com](http://www.dowagro.com).

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-12

EPA Est. \_\_\_\_\_

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**Net Contents XXX**

19/20

(Datapack cover):

**RESTRICTED USE PESTICIDE**

Due to high acute inhalation toxicity and carcinogenicity.  
For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

(Logo) Dow AgroSciences

**Telone<sup>®</sup> C-17**

**Soil Fungicide and Nematicide**

**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.**

Active Ingredients:

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

One gallon of Telone C-17 weighs about 10.6 lb at 70°F. Contains 8.6 lb of 1,3-dichloropropene and 1.75 lb of chloropicrin per gallon.

**Keep Out of Reach of Children**

**DANGER PELIGRO**

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

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Refer to label booklet for additional precautionary information including Personal Protective Equipment (PPE), User Safety Recommendations and Directions for Use including Storage and Disposal.

**Notice:** Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

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11/26

EPA Reg. No. 62719-12

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**Net Contents XXX**

12/20

(Page 1 through end):

<b>Table of Contents</b>	<b>Page</b>
Precautionary Statements	-
Hazards to Humans and Domestic Animals	-
Personal Protective Equipment (PPE)	-
Engineering Controls Requirements	-
User Safety Requirements	-
User Safety Recommendations	-
First Aid	-
Environmental Hazards	-
Physical or Chemical Hazards	-
Directions for Use	-
Agricultural Use Requirements	-
Storage and Disposal	-
General Information	-
General Use Precautions	-
Application Directions	-
Application Timing	-
Soil Conditions	-
Soil Moisture	-
Soil Preparation	-
Placement of Fumigant	-
Application Methods and Equipment	-
Sealing the Soil after Application	-
Soil Fumigation Interval	-
Uses	-
Control of Nematodes	-
Control of Soil Insects	-
Terms and Conditions of Use	-
Warranty Disclaimer	-
Inherent Risks of Use	-
Limitation of Remedies	-

13/26

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## Precautionary Statements

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### Hazards to Humans and Domestic Animals

## DANGER

### Hazardous Liquid and Vapor

- Do not swallow any of this product. May be fatal if swallowed.
- Do not get in eyes. Corrosive. Causes Irreversible Eye Damage.
- Do not get on skin. May be fatal if absorbed through the skin. Causes skin burns. May cause allergic skin reaction.
- Do not breathe vapor. May be fatal if inhaled. 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.
- This fumigant has the capacity to cause marked irritation to the upper respiratory tract. A strong lachrymator (tear-producing eye irritant). Low concentrations are capable of causing painful eye irritation. The effect may be so powerful that a person may become temporarily blinded and panic-stricken. That, in turn, may lead to accidents.

### Air Concentration Level

The acceptable air concentration level for persons exposed to chloropicrin is 0.1 ppm (0.7 mg/M<sup>3</sup>). The air concentration level is measured by a direct reading detection device, such as a Matheson-Kitagawa, Draeger, or Sensidyne.

### Personal Protective Equipment (PPE)

**Chemical-Resistant Materials:** Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category H on an EPA 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 knot cotton or cotton/polyester), non-woven fabrics (e.g., Tyvek or Sontara), or fabrics containing microporous Teflon.

#### 1. Handlers Performing Tasks with Liquid Contact Potential

Tasks with liquid contact potential are tasks performed outdoors or in a well-ventilated area. They include:

- Equipment calibration or adjustment
- Equipment clean-up and repair
- Product sampling
- Any activity less than 6 feet from an unshielded pressurized hose containing this product
- Rinsate disposal
- Fumigant transfer
- Clean-up of small spills
- Preparing containers for aeration
- Any other task not otherwise listed in (2), (3), or (4) below

14/26

Handlers performing tasks with liquid contact potential must wear at minimum:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). See further respirator requirements in the User Safety Requirements section on this label.
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

**2a. Handlers Performing Tasks with No Liquid Contact Potential - Broadcast applications, in-bed applications or applications at the time of bedding except as in 2b.**

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area.

These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/SAE S525-1.1 MAY98 sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

**2b. Handlers Performing Tasks with No Liquid Contact Potential - Pre-bed, row product applications (e.g., Yetter rig)**

Tasks with no liquid contact potential are tasks performed outdoors or in a well-ventilated area.

These tasks include:

- Tractor driving
- Soil sealing
- Field activities on the day of application that do not disrupt the soil at the depth of liquid injection

Handlers performing tasks with no liquid contact potential must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98\_sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

**3. Handlers in Treated Area 1 to 5 Days After Application**

Only the following handler tasks may be performed in the treated area within 5 days after the application is complete:

- Assessing/adjusting the soil seal
- Assessing pest control, application technique, or application efficacy
- Sampling air or soil for this product
- Removing tarp or plastic film

**All other tasks are prohibited until the 5-day period has expired.**

Handlers in treated area 1 to 5 days after application must wear at minimum:

- Loose fitting or well ventilated long-sleeved shirt and long pants
- Shoes and socks
- A face shield or safety glasses with brow and temple shields (do not wear chemical goggles)
- A half-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).
- **If air concentrations of chloropicrin exceed 0.1 ppm**, handlers must wear a full-face respirator with either an organic-vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C) or canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). A respirator is not required if the occupants are within an enclosed cab that is in conformance with one of the following: 1) ANSI/ASAE S525-1.1 MAY98\_sections 7.1.5, 7.1.7, 7.2.3, and 9, or 2) the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides -- 40 CFR 170.240(d)(5). The cab must be equipped with a vapor-adsorptive filter containing a minimum of 1000 grams activated charcoal. The filter must be changed after no more than 50 hours of application time. See further respirator requirements in the User Safety Requirements section on this label.
- In addition, the PPE specified in (1) for activities with direct liquid contact potential must be immediately available and must be worn if the handler is to perform any direct-contact activity with a potential for liquid contact

**4. Handlers Exposed to High Concentrations**

Handlers exposed to high airborne concentrations of this product, such as cleanup following large spills and exposure to this product in poorly ventilated areas, must wear at minimum:

- Chemical-resistant suit
- Chemical-resistant gloves, such as barrier laminate (EVAL) or viton
- Chemical-resistant footwear plus socks

16/26

- Chemical-resistant headgear
- Supplied-air respirator with MSHA/NIOSH approval number prefix TC-19C or self-contained breathing apparatus (SCBA) with MSHA/NIOSH approval number prefix TC-13F. See further respirator requirements in the User Safety Requirements section on this label.

**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 and the Storage and Handling Guide.

### Engineering Controls Requirements

**Mechanical Transfer System:** Personal protective equipment specified for Direct Contact Activities must be worn by the operator of the mechanical transfer system. The operator of the mechanical transfer system must follow instructions on proper operation of the system found in the "Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone® C-17 soil fungicide and nematicide for more information or for these materials.

**End-Row Spillage Control:** 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. The applicator must follow instructions on proper operation and maintenance of the system found in the "Telone Soil Fumigants - A Guide to Application" manual. Contact your distributor for Telone C-17 for more information or for these materials.

- 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 should 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.

**With all 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.

1. 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.
2. External sight gauges shall be equipped with valves so that pipes to sight gauge can be shut off in case of breakage or leakage.
3. The mechanical transfer system must be adequate to make necessary measurements of the pesticide being used.
4. Shut-off devices must be installed on the exit end of all hoses and at all disconnect points to prevent leakage of Telone product 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.
5. The pressure in hoses used to move Telone C-17 beyond a pump **must not exceed** the manufacturer's maximum pressure specification.



17/20

### User Safety Requirements

1. **Respirator Requirements:** When a respirator is required for use with this product, the following criteria must be met:
  - a. Cartridges or canisters must be replaced daily or when odor or irritation from this product becomes apparent, whichever is sooner.
  - b. Respirators must be fit-tested and fit-checked using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
  - c. Respirator users must be trained using a program that conforms to OSHA's requirements (described in 29 CFR Part 1910.134).
  - d. Respirator users must be examined by a qualified medical practitioner to ensure physical ability to safely wear the style of respirator to be worn.
2. **Never fumigate alone:** It is imperative to always have an assistant and proper protective equipment in case of accidents.
3. **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.
4. **Dispose of Contaminated Clothing:** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with liquid from this product. Do not reuse them.
5. **Clean and Maintain PPE:** Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each day's use.
6. **Contact With Mouth:** Never siphon this product by mouth or use mouth to blow out clogged lines, nozzles, etc.
7. **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 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.

**If on skin or clothing:** Immediately flush skin with plenty of water for at least 15 - 20 minutes while removing contaminated clothing and shoes. If water is not immediately available, remove excess chemical from skin with sorbent material such as towel or dry soil, then proceed at once to location where water is available and thoroughly wash contaminated skin with plenty of water. Call a poison control center or doctor for treatment advice.

**If in eyes:** Hold eyelids open and flush with a steady, gentle stream of 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.

18/20

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.

### Environmental Hazards

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 rinsate. See Storage and Disposal section. In case of spills properly dispose of contaminated materials.

**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. Do not apply within 100 feet of any well used for potable water. Do not apply this product within 100 feet 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.

### Physical or Chemical Hazards

**Combustible.** Do not use or store near heat or open flame.

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### Directions for Use

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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 protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

### Agricultural Use Requirements

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

#### Entry Restriction:

Entry (including early entry that would otherwise be permitted under the WPS) by any person -- other than a correctly trained and equipped handler who is performing a handling task permitted on this labeling -- is prohibited from the start of application until 5 days after application. In addition, if tarps are used for the application, non-handler entry is prohibited while tarps are being removed.

#### Notification:

Notify workers of the application by warning them orally and by posting fumigant warning signs at entrances to treated areas. The sign must bear the skull and crossbones symbol and state: (1) "DANGER/PELIGRO," (2) Areas under fumigation, DO NOT ENTER/NO ENTRE," (3) the date and time of fumigation. (4) "Telone C-17 Fumigant in use," and (5) name, address, and telephone number of the

19/26

applicator." Post the fumigant warning sign instead of the WPS sign for this application, but follow all WPS requirements pertaining to location, legibility, size and timing of posting and removal.

**PPE For Reentry During The Entry-Restricted Period:**

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

**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 should be avoided. Do not allow contamination of seeds, plants, fertilizers, or other pesticide chemicals. Do not contaminate food, feedstuffs, drugs, or domestic water supplies.

**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.

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 applicable Federal, state and local regulations. Never introduce rinsate or unused Telone C-17 into surface or underground water supplies.

**Refillable Containers:** Follow cleaning and handling directions in the Storage and Handling Guide.

**General Information**

Telone<sup>®</sup> C-17 soil fungicide and nematicide is a multi-purpose liquid fumigant for preplant treatment of cropland soil. Telone C-17 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 infestations.

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 mint, and pink root of onions. 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**.

Soil sampling for the type and number of pests present is recommended before fumigation. 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.

Supplemental labels are available for certain crops in selected geographies. Refer to these supplemental labels for specific use directions. Consult a Dow AgroSciences representative or visit the Dow AgroSciences website at [www.dowagro.com](http://www.dowagro.com) for additional information.

20/20

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.

### General Use Precautions

Soil fumigation using Telone C-17 should be conducted only according to directions and conditions of use described in this labeling.

**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.

**Do not use containers, pumps or other transfer equipment made of aluminum, magnesium or their alloys, as under certain conditions Telone C-17 may be severely corrosive to such metals.**

**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.

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

**Fertility Interactions:** Fumigation may temporarily raise the level of ammonia nitrogen and soluble salts in the soil. This is most likely to occur when heavy 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 as indicated by soil tests made after fumigation. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic soils, fertilizers containing ammonium salts are not recommended.

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, *Comus* 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.

**Use Restrictions for Certain Florida Counties:** For application of this product in Brevard, Broward, Charlotte, Citrus, Collier, Dade, 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) FL990004 in their possession and comply with stated requirements.

**Use Restrictions for Certain New York Counties:** This product is prohibited from sale, use or distribution in Nassau and Suffolk counties.

### Application Directions

21/20

**Application Timing**

Telone<sup>®</sup> C-17 soil fungicide and nematicide can be applied 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 best results. Because Telone C-17 does not provide residual control of soil pests, it should be used as a preplant application before planting each crop. The following soil temperature and moisture conditions should exist at time of treatment. Failure to meet these conditions may result in unsatisfactory product performance.

**Soil Conditions**

**Soil temperature** at the depth of application must be between 40°F and 80°F. In areas where the soil temperature in the spring may not reach 40°F in time to allow application of Telone C-17 prior to planting, late summer or early fall treatment is recommended.

**Soil Moisture**

It is critical to manage soil moisture properly before fumigation. Plan fumigation for seasons, crop rotations, or irrigation schedules which leave moisture in the soil. For fumigation depths greater than 18 inches, the soil should be moist within a 16-inch radius upwards from the point of injection as determined by the feel method (see below). For all other applications, the soil must be moist from 2 inches below the soil surface to at least 12 inches deep as determined by the feel method (see below). The amount of moisture needed in this zone will vary according to soil type. The surface soil generally dries very rapidly and should not be considered in this determination. If there is insufficient moisture at the 2 to 6 inch depth, the soil moisture must be adjusted. If irrigation is not available and there is adequate soil moisture below 6 inches, it may be brought to the surface by disking or plowing before or during the injection. To conserve existing soil moisture, pretreatment or treatment tillage practices should be done as close to the time of application as possible. 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 you do not know how to determine the soil moisture content of the area to be treated, consult your local extension service or soil conservation service specialist or pest control advisor (ag consultant) for assistance.

In general, no irrigation should immediately precede subsoiling or fumigation; however, when irrigation is available and surface soil moisture conditions are not likely to provide an adequate seal against fumigant loss, a very light sprinkler irrigation to wet the top 1 to 2 inches of soil is recommended before and/or immediately after fumigation.

**The following descriptions will aid in determining acceptable soil moisture conditions by the "feel method."** For coarse soils (sand and loamy sand), there must be enough moisture to allow formation of a weak ball when compressed in the hand. Due to soil texture, this ball is easily broken with little disturbance. In loamy, moderately coarse, or medium textured soils (coarse sandy loam, sandy loam, and fine sandy loam), a soil sample with the proper moisture content can be formed into a ball which holds together with moderate disturbance, but does not stick between the thumb and forefinger. Fine textured soils (clay loam, silty clay loam, sandy clay, silty clay, sandy clay loam and clay), should be pliable and not crumbly, but should not form a ribbon when compressed between the thumb and forefinger.

**Soil Preparation**

The soil should be free of clods. Large clods can prevent effective soil sealing and reduce effectiveness of Telone C-17. Plant residues should be thoroughly incorporated into the soil prior to treatment to avoid interfering with application. Non-decomposed plant material may harbor pests that will not be controlled by fumigation. Little or no crop residue should be present on the soil surface. Crop residue that is

22/20

present should lie flat to permit the soil to be sealed effectively. Compacted soil layers within the desired treatment zone should be fractured before or during application of the fumigant. Deviation from the above conditions may result in unsatisfactory results.

#### **Placement of Fumigant**

Telone C-17 may be applied as either a broadcast (overall) or row treatment. It must be placed at least 12 inches below the final soil surface. When soil conditions allow, placement at a minimum of 14 inches below the final soil surface is recommended. Deeper placement is required when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests. For row application, the fumigant must be placed at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top).

#### **Application Methods and Equipment**

**Broadcast Application:** Use chisel (shank) or coulter (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 non-decomposed plant material. Subsoiling may be necessary before application as described under Soil Preparation. 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 coulter 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. Application should be made to a depth of at least 15 inches.

Broadcast application can be made in the same direction or at an angle to the direction of row planting. Refer to Table 1 for broadcast treatment rates for various crops.

**Row Application (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. Regardless of the number or spacing of chisels used, the fumigant must be placed at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top).

With certain deeper rooted crops such as potatoes and sugarbeets, higher 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 regardless of application method, do not place the seed directly over the furrow left by the applicator chisel(s)/coulter(s). When 1 chisel is used per plant row, place the seed about 4 inches to one side of the chisel furrow. When 2 chisels are used per plant row, plant the seed offset from the chisel trace.

#### **Sealing the Soil After Application**

**For broadcast treatment (flat fumigation),** immediately after chisel application of Telone C-17, the soil must be "sealed" to prevent fumigant loss and ensure that an effective concentration of fumigant is maintained within the soil for a period of several days. To create an effective seal, it is important that the shank traces be disrupted and the soil surface compacted. Disruption of shank traces can be

23/20

accomplished with equipment that will uniformly mix the soil to a depth of 3 to 4 inches to eliminate chisel or plow traces which can allow direct escape of the fumigant. A tandem disc or similar equipment may be used for this purpose. To maximize soil sealing, steps should also be taken to compact the soil surface to further retard the rate of fumigant loss by following with a ring roller or cultipacker in combination with the aforementioned tillage equipment. Compaction of the soil surface alone does not effectively disrupt chisel or plow traces. When using coulters (e.g., Yetter 30-inch Avenger) applications, additional sealing may not be necessary when soil moisture conditions are optimal and a beaver tail is used.

**For row treatment**, forming the beds at the time of application should be accomplished in a manner that places the fumigant at least 12 inches from the nearest soil/air interface (e.g., furrow or bed top). The closest soil/air interface could be the furrow for multiple knife applications or the top of the bed for single knife applications. It is recommended that additional soil sealing be accomplished by going over the bed with a bed shaper, press sealer, rolling cultivator, ring roller, or rolling basket.

Sealing can also be improved by applying non-perforated plastic film, such as polyethylene, over the entire area or in strips. Use of a film to seal the soil surface does not eliminate the need to eliminate chisel traces prior to application of the plastic film. When using coulters (e.g., Yetter prebedder) applications, a beaver tail may be used for sealing.

Proper soil conditions at the time of application (see Soil Preparation section) are important to ensure proper placement of fumigant (see Placement of Fumigant section) and obtaining adequate sealing. Prior tillage should be adequate to eliminate clods and thoroughly mix crop residues into the soil.

#### **Soil Fumigation Interval**

Leave the soil undisturbed and unplanted for at least 7 days after application of the fumigant. A longer undisturbed fumigation interval is required if the soil becomes cold or wet, and for deep-rooted tree, shrub and vine planting sites.

Following completion of the fumigation interval 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 virtually impermeable films (VIF) 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 the odor of 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 the odor of Telone C-17 is present within the zone of fumigation.

**Buffer Zone:** An application of Telone C-17 shall not be made within 100 feet of an occupied structure, such as a school, hospital, business or residence. No person shall be present at this structure at any time during the seven consecutive day period following application. **This buffer zone does not apply to use on soils that will not experience an additional 1,3-D treatment for at least three years. For example, on soils to be planted with fruit trees, nut and nursery crops, perennial vines, hops, mint or pineapple. Note:** Telone C-17 shall not be applied to soils more frequently than once each year.

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### Uses

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#### **Control of Nematodes**

24/26

Telone® C-17 soil fungicide and nematicide is recommended for control of nematodes and symphylans, and suppression of wireworms in soils to be planted to vegetable crops, field crops, fruit and nut crops and nursery crops.

**Table 1. Broadcast Application Rates and Use Information for Control of Nematodes and Symphylans†, Suppression of Wireworms†, and to Help Manage Certain Soil Borne Diseases in Soils Planted to Crops Listed**

Crops (listed but not limited to)	Soil Type	Broadcast Application Rates <sup>1</sup> (Gallons/Acre)
Vegetable Crops <sup>2</sup>	Mineral	10.8 to 17.1 <sup>3</sup>
	Muck or Peat	27.4 <sup>4</sup> to 30.0
Field Crops <sup>5</sup>	Mineral	10.8 to 17.1 <sup>3</sup>
	Muck or Peat	21.6
Fruit and Nut Crops <sup>6,7</sup>	Mineral, Muck, or Peat	32.4 to 42.0
Nursery Crops	Mineral, Muck, or Peat	50.4 to 66.0

†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> Rates given may be concentrated in the row, but in no case should the amount applied per acre exceed the maximum broadcast application rates [gallons per acre (gpa)] given in the above table.

<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. If the nematode population is high enough to damage the crop, potatoes can be harvested early. Do not store potatoes with a detectable nematode infestation.

Row treatment is not recommended for potatoes in irrigated areas of western and northwestern states.

In Colorado, Idaho, Nevada, Oregon, Utah, and Washington, refer to Telone C-17 supplemental labeling entitled: "For the Control of Nematodes and the Suppression of Wireworms in Soils to be Planted to Potatoes or Onions" for directions for use.

<sup>3</sup> For cyst-forming nematodes increase dosage to 21.6 gallons gpa.

<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 41 gpa.

<sup>5</sup> For mint, apply 27.5 gpa.

<sup>6</sup> Citrus Fruits: For burrowing nematode control, inject Telone C-17 on 18-inch centers at least 12 inches deep. For buffers within existing groves or for 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>7</sup> Tree Planting Sites in the Western U.S.: Use 31 fl oz (1.9 pints) of Telone C-17 by applying the fumigant 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 3 points per planting site, at a depth of 3 feet below the original soil surface. The recommended procedure is to prepare the site by backhoeing to break up restrictive soil layers that may retard fumigant movement. The backhoe site should be dug in the approximate dimensions of 10 x 10 x 10 feet. The hole should then be backfilled and the fumigant applied using a closed-system application tube. For sites where no restrictive soil layers are present, the fumigant can be applied to a depth of 5 feet using an injection auger. If backhoe procedure is not used, product performance may be reduced. To prevent phytotoxicity, assure 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



25/26

the spring. In other areas of the U.S., the above may be followed. Regardless of method, ensure thorough fumigation of the desired area. Do not place in groundwater.

### **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. Applications made during late summer or early fall when the soil is warm are recommended.

**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 14 inches below the final soil surface.

Supplemental labels are available for certain crops in selected geographies. Refer to these supplemental labels for specific use directions. Consult a Dow AgroSciences representative or visit the Dow AgroSciences website at [www.dowagro.com](http://www.dowagro.com) for additional information.

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20/20

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