



PM 22 62719-12 Page 18 10

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

AUG 12 1993

Mr. Douglas M. Roby  
Product Registration Manager  
DowElanco  
9002 Purdue Road  
Indianapolis, IN 46268-1189

Dear Mr. Roby:

SUBJECT: Review of Final Printed Labeling  
Telone C-17  
EPA Reg. No. 62719-12 ✓  
Telone II  
EPA Reg. No. 62719-32  
Your Letter Dated 06/08/93

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable subject to the comments listed below. Five copies of the finished labeling must be submitted prior to releasing the product for shipment.

1. This acceptance of your label does not relieve you of any obligation to comply with the Worker Protection Standard (WPS). Under the WPS labeling regulations at 40 CFR part 156, subpart K, §156.200(c)(3), you are prohibited from distributing or selling any product within the scope of the WPS requirements after April 21, 1994, without amended labeling accepted by the Agency.
2. On the Telone C-17 (EPA Reg. No. 62719-12) and Telone II (EPA Reg. No. 62719-32) labels, modify references to "MSHA" to read "OSHA" instead.

Sincerely yours,

Cynthia Giles-Parker  
Product Manager (22)  
Fungicide-Herbicide Branch  
Registration Division (H7505C)

Enclosure

cc: Lisa Engstrom  
Special Review Branch  
Special Review and Reregistration Division (H7508W)

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

AUG 12 1993

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

62719-12



**RESTRICTED USE PESTICIDE**

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.

# Telone C-17

A multi-purpose liquid fumigant for preplant treatment of soil to control nematodes, symphylans, wireworms and certain soil borne diseases in cropland

**Active Ingredients:**  
1,3-dichloropropene ..... 77.9%  
chloropicrin ..... 18.5%  
**Inert Ingredients** ..... 5.8%  
One gallon of Telone C-17 weighs about 10.6 lb.  
Contains 8.2 pounds of 1,3-dichloropropene and 1.7 pounds of chloropicrin per gallon

**Keep Out of Reach  
of Children**

**DANGER PELIGRO:**

Si Usted no entiende el español, busque a alguien que se lo explique o Usted al detalle.

If you do not understand the label, find someone to explain it to you in detail.

Refer to inside of label booklet for additional precautionary information and Directions for Use

including STORAGE, SHIPMENT AND DISPOSAL.

**Notice:** Read the entire label. Use only according to label directions. Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" inside label booklet.

In case of emergency endangering health or the environment involving this product, call collect 1-800-338-4400.

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

EPA Reg. No. 62719-12

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EPA Est. 62719-0017, 484-ME-1

Superscripts correspond to pieces 7 & 8 of the lot number.

RS432

900-0019w1

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Soil Fungicide and Nematocide

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Application Rate  
Recommendation  
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Warranty Disclaimer  
Inherent Risks of Use  
Limitation of Remedies

**Precautionary**

**Hazards to Humans and Domestic Animals**

**DANGER**

Si Usted no entiende el español, busque a alguien que se lo explique o Usted al detalle.

(If you do not understand someone to explain it to you in detail.)

**Hazardous Liquid And Fatal if Inhaled, Absorbed Or Swallowed • Causes Damage • Causes Birth Defects • Causes Lung, Liver And Respiratory System Problems • Allergic Skin Reaction • This Product May Be Harmful To Your Health • Telone C-17 • 1,3-dichloropropene • Nematodes • Been Determined To Be Harmful In Laboratory Animals • Reduced By Clostridia • Directions And Precautions • Wearing Protective Clothing • In This Booklet**

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## Personal Protective Equipment Requirements (PPE)

The chemical resistance selection category for this product is H. For more information about PPE materials that are resistant to this product for various lengths of time, consult an EPA chemical-resistance selection chart. Heat illness mitigation techniques are in practice, such as gradual adjustment to heat and respirator stress, fans for cooling, cooling vests, frequent breaks, frequent intake of drinking water, and maintaining weight from day-to-day.

**NOTE: Respiratory Protection (Only Full-Faced Respirators May Be Worn)**  
When using respiratory protection, chemical cartridges or canisters must be replaced daily or when the odor or irritation of Telone C-17 becomes apparent, whichever is sooner. The following respiratory protection is acceptable for use with Telone C-17:

- A MSHA/NIOSH approved full-face tight-fitting respirator or loose-fitting powered air purifying (PAPR) respirator with cartridge or canister specified below and only when all of the following criteria have been met:
  - a. Respirator fit-testing and fit-checking program conforming to MSHA as described in 29 CFR Part 1910.134.

b. Training for respirator user conforming to MSHA training requirement as described in 29 CFR Part 1910.134.

c. Examination of the respirator user by a qualified medical practitioner to ensure physical ability to safely wear that style of respirator.

### NOTE: Chemical Protective Clothing (CPC)

There are no protective clothing materials that are completely impervious to penetration by liquid Telone C-17. CPC constructed of SARANEX, neoprene and chlorinated polyethylene provide short-term liquid contact and splash protection. CPC constructed of EVAL laminate barriers (for example, RESPONDER suits manufactured by Life-guard or SILVERSHIELD gloves manufactured by North, Vitan and Teflon provide longer-term protection. Leather gloves and shoes offer no protection from Telone C-17 and if contaminated cannot be made safe to wear. Render unusable and dispose of contaminated leather goods, including shoes.

### 1. Direct Contact Activities

The following personal protective equipment (PPE) must be worn by individuals performing tasks that may involve direct contact with liquid Telone C-17 or from direct venting of 1,2-dichloropropane vapor to the atmosphere. These tasks, which must

be conducted outdoors or in a well-ventilated area, include but are not limited to:

- equipment calibration or adjustment
  - equipment clean-up and repair
  - product sampling
  - any activity less than 6 feet from an unshielded pressurized hose containing Telone C-17
  - rinseate disposal
  - fumigant transfer
  - clean-up of small spills
  - preparing containers for aeration
- a. An approved full-face tight-fitting respirator or loose-fitting powered air purifying (PAPR) respirator equipped with organic vapor cartridges (MSHA/NIOSH approval TC-23C) or canister approved for pesticides (MSHA/NIOSH approval TC-14G)
  - b. Coveralls.
  - c. Chemical resistant apron
  - d. Headgear if there is a potential for contact with liquid Telone C-17 from an overhead source
  - e. Chemical resistant gloves and footwear (e.g., EVAL or neoprene)

2. Application - Persons operating application equipment for Telone C-17 must wear:

- a. Coveralls
- b. Shoes and socks

In addition, the following PPE must be worn whenever the odor or irritation of Telone C-17 can be detected:

- a. An approved full-face tight-fitting respirator or loose-fitting powered air purifying (PAPR) respirator equipped with organic vapor cartridges (MSHA/NIOSH approval TC-23C) or canister approved for pesticides (MSHA/NIOSH approval TC-14G)

**Note:** The PPE specified above for "Direct Contact Activities" must be readily available at all times and worn if it is necessary to leave the vehicle applying Telone C-17 to perform any direct contact activity.

3. Early Entry Activities: Persons entering the treated area to perform soil sealing or any other early entry activity within 72 hours after application must wear:

- a. Coveralls or a long-sleeved shirt and pants
- b. Shoes and socks

In addition, the following PPE must be readily available at all times and worn under the conditions indicated:

- a. An approved full-face tight-fitting respirator or loose-fitting powered air

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purifying (PAPR) respirator equipped with organic vapor cartridges (MSHA/NIOSH approval TC-23C) or canister approved for pesticides (MSHA/NIOSH approval TC-14G) whenever the odor or irritation of Telone C-17 can be detected.

b. Chemical resistant gloves and footwear (e.g., EVAL or neoprene) whenever there is direct contact with soil treated with Telone C-17.

4. **Special Activities:** The following personal protective equipment must be worn by persons exposed to high airborne concentrations of Telone C-17, such as clean-up following large spills, exposure to Telone C-17 in poorly ventilated areas and bulk tank cleaning:

- a. Body protection providing gas tight protection (level A) is required to prevent possible skin effects.
- b. A positive pressure atmosphere supplying respirator (MSHA/NIOSH approval number prefix TC-19C or TC-13F) must be worn.

### 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 have available to him the

manufacturer's written instructions for operation of the system and must read and understand (or have explained to him in detail) the proper operation and maintenance of the system.

With all bulk and mini-bulk containers, Telone C-17 must be transferred through connecting hoses, pipes, and/or couplings sufficiently tight to prevent leaks 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 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 Recommendations

READ LABEL VERY CAREFULLY

1. Do not get in eyes
2. Do not breathe the vapor
3. Do not get on skin
4. Do not swallow any Telone C-17
5. Never siphon Telone C-17 by mouth or use mouth to blow out clogged lines, nozzles, etc.

Do not eat, drink, smoke, or chew gum or tobacco while handling this product or before washing hands and face thoroughly with soap and water. Do not use the toilet before thoroughly washing hands.

If this product penetrates through your clothing or personal protective equipment, stop handling this product immediately, remove the clothing and equipment, wash your body thoroughly, and put on clean clothing and equipment before resuming the handling activity. Never wear protective gear having the odor of 1,3-dichloropropene.

After handling this product, remove personal protective equipment immediately. Wash the outside of gloves before taking them off. Shower or wash thoroughly and change into clean clothing as soon as possible.

Discard clothing and personal protective equipment that cannot be reused, including clothing or other absorbent materials that have been drenched or thoroughly contaminated with this product. Otherwise, wash clothing and personal protective equipment (including both the inside and outside of gloves) before each day of reuse according to manufacturer's directions or, if no such directions, in detergent and hot water. Keep and wash them separately from other laundry.

### First Aid

**If inhaled:** Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician. **If on skin:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. If water 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 physician. **If in eyes:** Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. **If swallowed:** Do not induce vomiting. Call a physician or Poison Control Center immediately. Never give anything by mouth to an unconscious person.

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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 leverage 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 contaminate water by cleaning of equipment or disposal of wastes. In case of spills properly dispose of contaminated materials.

**Ground water advisory:**  
1,3-dichloropropane is known to move through soil and under certain conditions has the potential to reach ground water as a result of agricultural use. Application in areas where soils are permeable and ground water is near the surface, or in karst geology, could result in ground water contamination.

### Physical or Chemical Hazards

Flammable - Do not use, pour, spill or store near heat or open flame. Do not cut or weld container.

### Directions for Use

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.

### Agricultural Use Requirements

Use this product only in accordance with its labeling. For any requirements specific to your State, consult the agency in your state responsible for pesticide regulation.

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

The restricted entry interval (REI) following application of Telone C-17 is 72 hours.

The following Personal Protective Equipment must be worn for early entry into treated areas that involves contact with treated soil:

- a. An approved full-face tight-fitting respirator or loose-fitting powered air purifying (PAPR) respirator equipped with organic vapor cartridges (MSHA/NIOSH approval TC-23C) or canister approved for pesticides (MSHA/NIOSH approval TC-14G) whenever odor or irritation of Telone C-17 can be detected.

### Agricultural Use Requirements (Cont.)

- b. Chemical resistant gloves and footwear. This footwear must be worn when walking on treated soil within 72 hours after application.

Notify workers of the application by providing oral or written warnings. Written or oral warning must be given to workers who are expected to be in a treated area or in any area about to be treated with this product. These oral warnings shall inform workers of areas or fields that may not be entered without protective equipment until 72 hours after treatment. In case of accidental exposure, follow directions as shown by the First Aid section on this label. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Written warnings must include the following information: DANGER. Area treated with Telone C-17 soil fumigant on (insert date of application) Do not enter without protective equipment until 72 hours after treatment.

### STORAGE, SHIPMENT AND DISPOSAL

**Shipment:** Do not ship or store with food, feeds, drugs, or clothing.  
**Storage:** Store in tightly-closed original container in a cool place away from dwellings. Do not allow contamination of seeds, plants, fertilizers, or other pesticide chemicals. Do not contaminate food, feedstuffs, drugs, or domestic water supplies.

**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.

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## STORAGE, SHIPMENT AND DISPOSAL (Cont.)

**Metal Container Disposal:** To dispose of container emptied during application operation, remove bungs, invert container in the field just treated and ensure that the container is free of liquid. Orient container such that ventilation of bung holes is not restricted. Allow containers to aerate for at least 14 days. Replace bungs prior to transport. After aeration, offer container to qualified reconditioner or dispose of as directed by State or local regulations.

**Refillable Containers:** Follow cleaning and handling directions in Telone User's Guide.

**Bulk Product Transfers:** Dry break or dry disconnect couplings are required for all product transfers involving bulk containers for Telone C-17 as of September 30, 1993.

## General Information

Telone C-17 is a multi-purpose liquid fumigant for preplant treatment of soil to control nematodes, symphylans, wireworms and certain soil borne diseases in cropland.

Telone C-17 soil fungicide and nematicide may be applied as a preplant soil treatment to control or 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 white potatoes and mint, pink rot of onions, pod rot of peanuts); plant parasitic nematodes (root-knot, root lesion, citrus, cyst formers (golden, sugar beet, soybean), burrowing, lance, reniform, ring, spiral, sting, pin, stubby root, stylet, 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 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.

## General Use Precautions

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

**Formulator use of Telone C-17:** Labeling for end use products containing Telone C-17 that are prepared and sold by formulators must comply with all precautionary statements, use precautions, environmental hazards, handling and protective equipment requirements, maximum application rates and other exposure mitigation measures specified in this product labeling.

**Recontamination prevention:** Telone C-17 will control 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 bare soil in treated fields and soil contamination from equipment or crop remains. Clean equipment carefully before entering treated fields.

**Bulk Product Transfers:** Dry break or dry disconnect couplings are required for all product transfers involving bulk containers for Telone C-17 as of September 30, 1993.

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 rinseate by incorporation into field just treated or by other approved means. Never introduce rinseate 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, acid, or high in organic matter. To avoid injury to certain crops including red beets, carrots, corn, radishes, cole crops, legumes (beans), lettuce, onions, and sugar beets, fertilize as indicated by soil tests made after fumigation. To avoid ammonia injury or nitrate starvation (or both) to crops grown on high organic

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soils, do not use fertilizers containing ammonium salts. Use only fertilizers containing nitrates until after the crop is well established and the soil temperature is above 65°F. In mineral soils, do not apply more than 2/3 of the nitrogen requirements from fertilizers containing ammonium salts until the crop is well established and the soil temperature is above 65°F.

When using high rates of Telone C-17 as required by certain state nursery regulations, timing 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 (later applied) is recommended where experience indicates a deficiency may occur.

### Application Directions

#### Application Timing

Telone C-17 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 60°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 throughout the desired treatment zone should be at or near the permanent wilting point to allow optimum dispersion of the fumigant, which moves as a gas through the soil air spaces. The permanent wilting point varies with soil texture and organic matter content.

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 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 may be useful.

#### 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. Undecomposed 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 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 10 inches below the final soil surface. When soil conditions allow, placement a minimum of 12 inches below the final soil surface is recommended. Deeper placement is recommended when fumigating soil to be planted to deep-rooted plants, such as perennial fruit and nut crops, or to control deeply distributed pests.

#### Application Methods and Equipment

**Broadcast Application:** Use chisel (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 as described under "Soil Preparation". Choose application equipment which 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 equipment a fumigant shank spacing of 12 to 24 inches is recommended. 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. The maximum outlet spacing should not exceed 24 inches.

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 9-12 inches along the sweeps.

Broadcast application can be made in the same direction or at an angle to the direction of row planting.

**Row Application:** Use chisel equipment to treat a band of soil where the crop is to be planted, i.e. the plant row. One or two chisels per plant row is recommended. In general, when one chisel is used, apply Telone C-17 at the flow rates given. When two chisels per plant row are used, space the chisels (fumigant outlets) 8 to 12 inches apart and divide the flow rates equally between the two outlets. Regardless of the number of chisels used, the amount of fumigant applied per 1000 feet of plant row should remain the same. With certain deeper rooted crops such as potatoes and sugar beets, higher flow rates may be necessary to ensure adequate treatment of the zone of soil where primary root growth occurs; however, in no case should the amount of fumigant applied per acre exceed the gallons per acre rates for broadcast treatment.

To prevent seed germination problems caused by improper seed-to-soil contact or improper seeding 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.

**Sealing the Soil After Application**  
Immediately after chisel application of Telone C-17 the soil should 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. For broadcast treatment (flat fumigation), sealing can be accomplished with equipment that will uniformly mix the soil to a depth of 3 to 4 inches to effectively 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 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, cultipacker or roller in combination with tillage equipment. Compaction of the soil surface alone may give the appearance of adequate sealing without effectively disrupting chisel or plow traces.

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. The closest soil/air interface could be the furrow for multiple knife applications or the top of the bed for single knife applications. Row treatments into preformed beds should be sealed by disrupting the chisel trace using press sealers, ring rollers or by reforming the beds and following with such equipment.

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.

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 interval is required if the soil becomes cold or wet, and for deep-rooted tree, shrub and vine planting sites.

After the fumigation interval, to prevent phytotoxicity, allow the fumigant to dissipate completely before planting the crop. Under optimum soil conditions for dissipation, 1 week for each 10 gallons/acre is recommended. For fruit, nut, and nursery crops at least three months should elapse between treatment and planting. 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.



## Approved Uses

### Control of Nematodes

Telone C-17 is recommended for control of nematodes, symphytans and wireworms in soils to be planted to various crops including those listed below.

#### Vegetable crops:

asparagus	endive	potatoes
beans	garlic	pumpkins
beets, red	horseradish	radishes
black-eyed peas	kale	rutabaga
broccoli	kohlrabi	salad
Brussels sprouts	leeks	shallots
cabbage	lettuce	spinach
carrotoupe	melons	squash
carrots	mustard	(summer)
cauliflower	greens	squash
celery	cicra	(winter)
collards	onions	sweet potatoes
corn	parsnips	Swiss chard
cowpeas	peas	tomatoes
cucumbers	peppers	tumpe
egg plant	pimientos	watermelons

#### Field crops:

alfalfa	kanaf	rye
barley	lespedeza	safflower
birdfoot trefoil	millet	sorghum
buckwheat	mlt	soybeans
clover	mint	sugar beets
corn	oats	sugarcane
cotton	pasture	tobacco <sup>1</sup>
flax	grass	vetch
grasses	peanuts	wheat
hops	popcorn	

#### Fruit and nut crops:

almonds	gooseberries	pears
apples	grapefruit	pecans
apricots	grapes	persimmons
bananas	hazelnuts	pineapple
blackberries	(Alberta)	plums
blueberries	hickory nuts	pomegranates
boysenberries	huckleberries	prunes
cashew nuts	kumquats	quince
cherries	lemons	raspberries
chestnuts	limes	strawberries
cranberries	loganberries	tangerines
currants	nectarines	tangelos
dates	olives	youngberries
dewberries	oranges	walnuts
figs	peaches	

<sup>1</sup>For soil borne disease control in tobacco, do not apply more than 20 gallons of Telone C-17 per acre.

#### Nursery crops:

Floral plants, ornamentals, shrubs and bushes; forest, shade, fruit and nut trees; and vine and bramble fruits of all types.

## Application Rates and Use Information for Control of Nematodes, Symphytans, Wireworms and Certain Soil Borne Diseases in Soils Planted to Crops Listed

Crops (Consult list of individual crops listed above)	Type of Treatment	Soil Type	Application Rates			
			Gallons per Acre <sup>1</sup>	Fl oz/1000 ft of Row per Chisel		
Shallow rooted plants: field crops floral crops grasses and turf small fruits vegetables <sup>2</sup> ornamentals	42" row <sup>3</sup>	mineral	5.1 to 6.9	52.5 to 71		
		muck or peat	10.3 to 13.7	106 to 141		
	broadcast	mineral	10.3 to 17.1 <sup>2</sup>	30.3 to 50.2		
		muck or peat	27.4 <sup>3</sup> to 41.1	80.5 to 120.8		
strawberries	broadcast	mineral	27.4 to 41.1	80.5 to 120.8		
sugarbeets	42" row	mineral	6	61.7		
root knot nematode	broadcast		12.8 to 17.1	37.6 to 50.2		
sugar beet nematode	42" row	mineral	10.3	106		
	broadcast		12.8 to 21.4	37.6 to 62.9		
pineapple	Row	mineral	25.7 to 51.4	—		
citrus - Florida <sup>4</sup>	broadcast	mineral	34.2	100.5		
Nursery and field grown:						
Broadcast: gallons per acre to penetrate to specified depth						
citrus fruit trees deciduous fruit trees forest trees grapes nut trees ornamentals (deep rooted)	Mineral Soils		3 ft	4 ft	6 ft	8 ft
	sand		17.1	23.9	30.8	37.6
	sandy loam		30.8	34.2	41.1	54.7
	silt loam		47.9	58.1	71.8	85.5
	clay loam		61.6	78.7	95.8	116.3

<sup>1</sup> Use the higher rates in heavier soil

<sup>2</sup> For cyst-forming nematodes increase dosage to 21.4 gallons/acre (62.9 fl oz/1000 ft row per chisel).

<sup>3</sup> For muck soils containing less than 30% organic matter use 21.4 gallons/acre

<sup>4</sup> For burrowing nematode in citrus inject on 18-inch centers, 12 inches deep. Keep free of plants susceptible to burrowing nematodes for 2 years before replanting to citrus.

<sup>5</sup> Row treatment is not recommended for potatoes in irrigated areas of western and northwestern states.

<sup>6</sup> In Idaho, Nevada, Oregon and Washington, refer to Telone C-17 supplemental labeling entitled "For Nematode and Wireworm Control in Potatoes" for directions for use.

<sup>7</sup> Note: To control symphytans (garden centipedes) use only overall at 21.4 or more gallons per acre, and apply during late summer or early fall when the soil is warm.

To control wireworms use dosages recommended for nematodes in overall or broadcast treatments. For wireworm control in soils to be planted to potatoes in Idaho, Nevada, Oregon and Washington, refer to supplemental labeling referenced in footnote 6 above.

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**Application Rates and Use Recommendations to Control Soil Borne Disease †**

Crop	Type of Treatment	Application Rate	
		Gallons Per Acre	Fl oz per 1000 ft of Row Per Chisel
sweet potatoes	42" row broadcast	8.5 to 10.5 24 to 27.5	88 †† to 108 †† 70 to 81
tobacco †††	42" row broadcast	8.5 to 10.5 15 to 20	88 †† to 108 †† 44 to 59
peanuts	42" row	2.5 to 5	26 †† to 52 ††
white potatoes	broadcast	24 to 27.5	70 to 81
mint	broadcast	24 to 27.5	70 to 81
onions	broadcast	24 to 27.5	70 to 81

† Note: Consult "General Information" to determine diseases controlled in crops listed. Nematodes also will be controlled.

†† Use the same flow rate per chisel for other single chisel row spacings. As the distance between rows increases, the gallons required per acre will decrease and vice versa.

††† Use the higher rate in the rate range when high disease pressure is anticipated, when planting varieties susceptible to Granville wilt, or where tobacco was planted the previous year. The lower rate in the rate range may be used where low to moderate disease pressure is anticipated, where tobacco was not planted the previous year, and when planting a variety resistant to Granville wilt.

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