



# **STANDARD OPERATING PROCEDURES (SOP's) V2.1**

MARCH 8, 2022 Developed by Tact Safety

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# Standard Operating Procedure – Pre-Cleaning, Sanitization, Disinfection

SOP-006	Grow Tents	Issued: Mar. 8, 2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly pre-clean, sanitize, and disinfect grow tents.

### 1.2 Purpose

Grow operation sanitation practices help prevent the introduction and spread of plant diseases and pests, as well as eliminate safety hazards. In general, being proactive in maintaining a clean growing environment will often be less expensive and more effective than reacting to a disease or pest after it emerges.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all grow tent operations.

Failure to give your grow tent an adequate cleaning can have many negative consequences. Many of them are a result of:

- **Bacterial growth** – bacteria and other pathogens can reside in your grow tent and cling to plants and other surfaces
- **Mold and mildew** – mold and mildew can also proliferate on various surfaces and spread rapidly under certain conditions
- **Pollen** – pollen is required to breed new generations of plants, but pollination occurring at the wrong time in the process can cause unwanted germination of seeds
- **Insects** – insect infestation can cause irreversible harm and ruin entire batches of crops. It is also critical to remove insect eggs during the cleaning process



Knowing best practices for cleaning your grow tents interior is essential to avoiding the consequences listed above.

### **Clean Interior Tent Canvas**

1. Remove everything out of the tent for easy access to inside surfaces
2. Wash down tent walls and surfaces. This can be done with a 9 part water to 1 part **Growers Oxide** sanitization mix.
3. Then disinfect by wetting all surfaces with full strength **Growers Oxide** and allow it to air dry
4. If powdery mildew contamination is visible or suspected pre-clean all grow tent surfaces with full strength **Growers Oxide**.

### **Clean Benches, Shelving**

1. Wood benches and shelving can be a source for root diseases and insect infestation. Pre clean benches to remove buildup of surface grime then disinfect using full strength **Growers Oxide** and allow to air dry
2. Potting tables, benches, shelving etc. made of a non-porous material can be disinfected in the same manner

### **Clean Trays, Pots, Containers, Tools**

1. Remove caked on soil, grime first to allow **Growers Oxide** contact with surfaces
2. Where possible completely immerse containers and tools in a sanitization mix of 9 parts water to 1 part **Growers Oxide** solution. Ensure solution can circulate freely to all portions of the containers and tools
3. Disinfect containers and tools by thoroughly wetting surfaces with full strength **Growers Oxide** and allowing to air dry
4. If there is any indication of mold, mildew or biofilm on trays, pots, containers etc. use full



strength Growers Oxide in Step 2 above.

### Clean Tent Fans or Filters

1. Clean fans and vents of built-up dirt or grime to allow **Growers Oxide** to contact surfaces
2. Spray or wipe full strength **Growers Oxide** on these components and allow to air dry 3.

Clean or replace filters as required.

### Clean Irrigation System

1. If system is automatic feed with pump, filter, etc., drain the system completely
2. Refill the system with a 9 to 1 solution of water and **Growers Oxide** and allow mixture to remain in lines for **10 to 20** minutes.
3. If there is any indication of algae growth in any part of the irrigation system use **full strength Growers Oxide** in Step 2 above
4. Flush the system with fresh water afterwards
5. Individual components such as sprinkler heads, driplines etc. may exhibit heavy salt buildup or biofilms. Immerse these parts in **full strength Growers Oxide** for 20 minutes and allow to air dry

Hard Surface Sanitization	Growers Oxide 9-1 ratio	30 sec. contact time
Soft/Porous Surface Sanitization	Growers Oxide 9-1 ratio	5 min. contact time
Disinfection Bacteria	Growers Oxide full strength	10 min. contact time
Mold/Mildew/Fungi	Growers Oxide full strength	10 min contact time

# Standard Operating Procedure – Containers, Tools

SOP-002	Trays, Pots, Containers, Tools	Issued: Mar. 8, 2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly pre-clean, sanitize, and disinfect grow space containers, tools, and equipment.

### 1.2 Purpose

Remnant potting media in used containers, trays, pots, tools etc. can contain pathogens and become contaminated through poor sanitation practices.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all grow operations, regardless of size.

## Best Practices

1. Use only new or cleaned and sanitized containers, flats, racks, and trays or pots
2. Do not allow new or cleaned containers to become contaminated. Store off the ground on clean racks or shelves
3. Don't store dirty containers in or near clean areas of the grow space
4. Assume that used containers are contaminated and follow pre-clean, sanitize directions

## Pre-Cleaning – Sanitizing – Disinfecting

### Pre-Clean - Sanitize



1. Heavy dirt, grime or organic material create a surface barrier for disinfection and must be cleaned from the surfaces prior to application of the disinfectant. Pre-cleaning is required prior to sanitizing and disinfecting in order to allow **Growers Oxide** to make contact with the surface.
2. Containers, tools must be brushed or rinsed to remove as much potting media as possible before sanitizing and/or disinfecting.
3. Pre-cleaning should be done using the sanitization ratio of 9 parts water to 1 part **Growers Oxide**
4. Containers should be fully immersed in the solution and loosely stacked so that the solution can circulate freely to all portions of the containers or tools
5. Containers or tools that cannot be immersed in the solution should be cleaned with sponge or rag
6. For immersion, replace solution daily, or more frequently if it becomes significantly soiled or diluted

### Disinfection

1. Disinfection should be completed by wetting surface with full strength (undiluted) **Growers Oxide** and allowing to air dry.
2. Allow surfaces to remain wet for a minimum of 10 minutes for bacterial disinfection and virus inactivation.

See **Growers Oxide Kill List** for contact times.

Hard Surface Sanitization	Growers Oxide 9-1 ratio	30 sec. contact time
Soft/Porous Surface Sanitization	Growers Oxide 9-1 ratio	5 min. contact time
Disinfection Bacteria	Growers Oxide full strength	10 min. contact time
Mold/Mildew/Fungi	Growers Oxide full strength	10 min contact time

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# Standard Operating Procedure – Fungus, Mold, Mildew Algae

SOP-003	Fungus, Mold, Mildew, Algae	Issue Date: Mar. 8,2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly sanitize, and disinfect grow spaces and ensure growth of fungus, mold, mildew and algae is checked. The following cleaning and sanitizing protocol applies to all commercial grow operations, regardless of size.

### 1.2 Purpose

Greenhouse and nursery sanitation practices help prevent the introduction and spread of plant diseases and pests, as well as eliminate safety hazards. In general, being proactive in maintaining a clean growing environment will often be less expensive and more effective than reacting to a disease or pest issue after it emerges.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all commercial grow operations, regardless of size.

The most effective way to get rid of mold in a greenhouse is to prevent it from spreading. Mold can be prevented by maintaining proper temperature, controlling humidity levels, allowing sufficient air flow, keeping excess water to a minimum, avoiding overcrowding of plants, and paying attention to cleaning.

To kill and destroy mold, mildew, fungus or algae, Growers **Oxide** must come in contact with contaminants to be effective. See **SOP-001** for instructions on how to properly pre-clean surfaces prior to application of sanitizer and disinfectant.

**1. Prevention:** on surfaces with no visible signs or suspicion of fungal contamination use the



sanitization mix of 9 parts water to 1 part **Growers Oxide**. Keep surface wet for a minimum of 10 minutes.

- 2. Remediation:** on surfaces with visible, active fungal contamination use full strength (undiluted) **Growers Oxide**. Keep surface wet for a minimum of 10 minutes.
- 3.** On irregular or porous surfaces, electrostatic spray application is preferred, as the electrical charge of the particles (positive) allows them to stick to neutral (negative) surfaces. This provides more effective coating of surfaces, using less solution, in a shorter time.
- 4. Deodorizing:** **Growers Oxide** works by oxidation, not masking of odors. Simply spray, fog, or wipe on solution at full strength and let it air dry to provide long lasting residual deodorizing action. When fogging to deodorize, apply 1 quart per 2,000 cubic feet., following fogger manufacturers directions for use.

# Standard Operating Procedure – Irrigation Systems

SOP-004	Irrigation Systems	Issue Date: Mar. 8,2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly clean, sanitize, and disinfect grow space irrigation systems and equipment. The following cleaning and sanitizing protocol applies to all commercial grow operations, regardless of size.

### 1.2 Purpose

Greenhouse and nursery sanitation practices help prevent the introduction and spread of plant diseases and pests, as well as eliminate safety hazards. In general, being proactive in maintaining a clean growing environment will often be less expensive and more effective than reacting to a disease or pest issue after it emerges.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all commercial grow operations, regardless of size.

## Types of Irrigation Systems

A clean, well maintained irrigation system is vital to the growth of your plants. Regardless of the type of irrigation system in use a thorough cleaning must be completed after every grow cycle.

## Self Watering Trays and Capillary Mats

1. Trays must be thoroughly cleaned then sanitized using a 9 to 1 mix of water and Growers **Oxide** to clean and sanitize them



2. Trays should then be disinfected by immersing in, or sponging/washing with full strength (undiluted) **Growers Oxide** and allowing to air dry
3. Capillary mats should be pre-cleaned by brushing/vacuuming prior to being sprayed or immersed in full strength (undiluted) **Growers Oxide** and allowed to air dry then re-immersed in water to keep them wet

### **Over-head Sprinklers – Mist (spray) – Drip System – Soaker Hoses**

1. Mix 1 part Growers Oxide to 9 parts water in reservoir or tank and pump through irrigation system until mixture starts to come out of sprinkler heads or driplines. Turn off pump and let mixture sit in lines for **10 to 20** minutes. Pro-tip – prepare enough mixture to repeat this process 2-3 times. Flush the system until empty
2. Repeat the process 2 or 3 times or until reservoir is empty. Then flush entire irrigation system with clean water.
3. If during the final flush or upon inspection of lines there is an indication of algae growth the lines should be filled with full strength (undiluted) **Growers Oxide** and allowed to soak for a minimum of 10 minutes. Then flush with clean water.
4. Individual components (pressure regulators, filters, tubing, valves, emitters, sprinklers, etc.) should be broken down and where possible immersed in full strength (undiluted) **Growers Oxide** for a minimum of 10 minutes and allowed to air dry.
5. To strip heavy salt buildup and biofilms from driplines or sprinkler heads use full strength (undiluted) **Growers Oxide** for 20 minutes and allow to air dry.

### **Reservoirs/Tanks**

1. Pre-clean all reservoir and/or tank surfaces using the 9 to 1 sanitization ratio of Growers Oxide.
2. Disinfect by spraying Growers Oxide full strength onto all surfaces and allow to air dry. Surfaces must remain wet for 10 minutes for viral and bacterial disinfection.



**Growers Oxide Sanitize-Disinfect Table**

Hard Surface Sanitization	Growers Oxide 9-1 ratio	30 sec. contact time
Soft/Porous Surface Sanitization	Growers Oxide 9-1 ratio	5 min. contact time
Disinfection Bacteria	Growers Oxide full strength	10 min. contact time
Mold/Mildew/Fungi	Growers Oxide full strength	10 min contact time



# Standard Operating Procedure – HVAC Equipment

SOP-005	HVAC Equipment	Issued: Mar. 8, 2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly pre-clean, sanitize, and disinfect HVAC systems.

### 1.2 Purpose

Grow operation sanitation practices help prevent the introduction and spread of plant diseases and pests, as well as eliminate safety hazards. In general, being proactive in maintaining a clean growing environment will often be less expensive and more effective than reacting to a disease or pest after it emerges.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all grow operations, regardless of size.

HVAC systems are possibly the most important feature of a controlled grow environment. Using a network of fans, air conditioners, heaters, humidifiers and/or other equipment the HVAC system provides plants with an ideal environment of temperature, humidity, and ventilation levels.

Typical HVAC systems can include air distribution components such as air handlers, mixing boxes, transitions, dampers, grills, fans, fan housings, and air ducts.

Maintaining these components in a clean and sanitized condition will assist in eliminating pest and/or disease propagation.

With the wide variety of systems used in greenhouses, it is difficult to outline a specific plan that will cover all circumstances. However some general standards can be implemented, and when followed as a routine maintenance program, can have the desired results.



**Note:** if there are any signs or suspicions of fungal contamination of any of the components of the HVAC system a thorough disinfection of the system must be undertaken to prevent the further spread of pests or diseases. Such disinfecting must be done using full strength (undiluted) **Growers Oxide**.

### **General Standards**

1. Ensure all dirt, grime, biofilm, or other barrier is removed from the surface by pre-cleaning with the 9 to 1 sanitization ratio and wiping clean
2. Wet surfaces by spray, cloth, etc. with full strength **Growers Oxide**, paying special attention to cracks and crevices. Allow 10 to 20 minutes to air dry
3. In cases where microbial growth has been detected, remove the growth by cleaning and identify and correct the conditions that led to the growth prior to disinfection with full strength **Growers Oxide**.
4. If microbial growth persists in air ducts following application, reinspect for duct leaks, carry over of water from cooling coils or humidifiers, and other sources of moisture.
5. If surface dirt, grime, biofilm etc. is found within air ducts, the cause should be determined and corrected. Ducts should be safely cleaned in accordance with accepted industry practice.
6. To disinfect and deodorize HVAC system ductwork, spray full strength Growers Oxide into the systems intake while the fan is running and the compressor is off.
7. Allow enough spray time for the solution to reach all air duct system surfaces. Allow system to air dry. Ensure AC coils are completely dry before restarting AC.

**Pro-tip: to regularly disinfect and deodorize HVAC system ductwork as in Step 7 above, place 2 inch ports in ducting approximately every 24 inches. Using a Victory Electrostatic sprayer outfitted with an extension wand, and with the fan running at low speed, spray inside the ducting, allowing the charged particles to complete 100% coverage**

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# Standard Operating Procedure – Grow Tents

SOP-006	Grow Tents	Issued: Mar. 8, 2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly pre-clean, sanitize, and disinfect grow tents.

### 1.2 Purpose

Grow operation sanitation practices help prevent the introduction and spread of plant diseases and pests, as well as eliminate safety hazards. In general, being proactive in maintaining a clean growing environment will often be less expensive and more effective than reacting to a disease or pest after it emerges.

### 1.3 Applicability

The following cleaning and sanitizing protocol applies to all grow tent operations.

Failure to give your grow tent an adequate cleaning can have many negative consequences. Many of them are a result of:

- **Bacterial growth** – bacteria and other pathogens can reside in your grow tent and cling to plants and other surfaces
- **Mold and mildew** – mold and mildew can also proliferate on various surfaces and spread rapidly under certain conditions
- **Pollen** – pollen is required to breed new generations of plants, but pollination occurring at the wrong time in the process can cause unwanted germination of seeds
- **Insects** – insect infestation can cause irreversible harm and ruin entire batches of crops. It is also critical to remove insect eggs during the cleaning process



Knowing best practices for cleaning your grow tents interior is essential to avoiding the consequences listed above.

### **Clean Interior Tent Canvas**

1. Remove everything out of the tent for easy access to inside surfaces
2. Wash down tent walls and surfaces. This can be done with a 9 part water to 1 part **Growers Oxide** sanitization mix.
3. Then disinfect by wetting all surfaces with full strength **Growers Oxide** and allow it to air dry
4. If powdery mildew contamination is visible or suspected pre-clean all grow tent surfaces with full strength **Growers Oxide**.

### **Clean Benches, Shelving**

1. Wood benches and shelving can be a source for root diseases and insect infestation. Pre clean benches to remove buildup of surface grime then disinfect using full strength **Growers Oxide** and allow to air dry
2. Potting tables, benches, shelving etc. made of a non-porous material can be disinfected in the same manner

### **Clean Trays, Pots, Containers, Tools**

1. Remove caked on soil, grime first to allow **Growers Oxide** contact with surfaces
2. Where possible completely immerse containers and tools in a sanitization mix of 9 parts water to 1 part **Growers Oxide** solution. Ensure solution can circulate freely to all portions of the containers and tools
3. Disinfect containers and tools by thoroughly wetting surfaces with full strength **Growers Oxide** and allowing to air dry
4. If there is any indication of mold, mildew or biofilm on trays, pots, containers etc. use full



strength Growers Oxide in Step 2 above.

### Clean Tent Fans or Filters

1. Clean fans and vents of built-up dirt or grime to allow **Growers Oxide** to contact surfaces
2. Spray or wipe full strength **Growers Oxide** on these components and allow to air dry 3.

Clean or replace filters as required.

### Clean Irrigation System

1. If system is automatic feed with pump, filter, etc., drain the system completely
2. Refill the system with a 9 to 1 solution of water and **Growers Oxide** and allow mixture to remain in lines for **10 to 20** minutes.
3. If there is any indication of algae growth in any part of the irrigation system use **full strength Growers Oxide** in Step 2 above
4. Flush the system with fresh water afterwards
5. Individual components such as sprinkler heads, driplines etc. may exhibit heavy salt buildup or biofilms. Immerse these parts in **full strength Growers Oxide** for 20 minutes and allow to air dry

Hard Surface Sanitization	Growers Oxide 9-1 ratio	30 sec. contact time
Soft/Porous Surface Sanitization	Growers Oxide 9-1 ratio	5 min. contact time
Disinfection Bacteria	Growers Oxide full strength	10 min. contact time
Mold/Mildew/Fungi	Growers Oxide full strength	10 min contact time



# Standard Operating Procedure – Electrostatic Sprayer

SOP-007	Electrostatic Sprayer	Issued: Mar. 8, 2022
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## 1. Introduction

### 1.1 Scope

This Standard Operating Procedure (SOP) describes how to properly operate and maintain Victory Electrostatic Sprayers.

### Purpose

This SOP is intended to be used by employees, in conjunction with the Operating Manuals as a standard procedure for operating electrostatic equipment for disinfection spraying.

### 1.2 Applicability

The following procedure applies to the use of Victory backpack and handheld sprayers.

## 2. Background

The following are key advantages of using cordless electrostatic technology for disinfection spraying:

- Electrostatic sprayers change the electrical charge of the particles being sprayed to positive allowing the particles to stick to neutral/negative surfaces. This type of sprayer is very effective in coating all sides of a surface to provide more uniform coverage
- Provides better coverage, with less solution, in a shorter time.
- After the solution has been applied you do not need to wipe it off. Allowing it to dry for the required time (10 minutes), ensures the surface is disinfected.
- Use of battery powered sprayers eliminates the need for electrical outlets and prevents cross-contamination by dragging electrical cords through cleaned areas.

### 3. Responsibilities

It is the responsibility of the operator to:

- read and understand this SOP before using the sprayer
- review the operating manuals for the VP200ESK handheld sprayer and the VP300ES backpack sprayer
- watch the following online training videos

**Table 1: Training Videos**

Topic	Link
How to use handheld sprayer	<a href="https://www.youtube.com/watch?v=rE7Jit-NCI8">https://www.youtube.com/watch?v=rE7Jit-NCI8</a>
How to use backpack sprayer	<a href="https://www.youtube.com/watch?v=GPFLqt-JbpY">https://www.youtube.com/watch?v=GPFLqt-JbpY</a>
General uses for backpack	<a href="https://www.youtube.com/watch?v=yPjlO9RDihA">https://www.youtube.com/watch?v=yPjlO9RDihA</a>
General uses for handheld	<a href="https://www.youtube.com/watch?v=TOhXaBHT3Ho">https://www.youtube.com/watch?v=TOhXaBHT3Ho</a>
Electrostatic spray demo	<a href="https://www.youtube.com/watch?v=oNAXfSoxQsg">https://www.youtube.com/watch?v=oNAXfSoxQsg</a>
Sprayer cleaning & maintenance	<a href="https://www.youtube.com/watch?v=ALwbzyqmQGI">https://www.youtube.com/watch?v=ALwbzyqmQGI</a>
Sprayer nozzle settings	<a href="https://www.youtube.com/watch?time_continue=18&amp;v=dkXkRZJnnOc">https://www.youtube.com/watch?time_continue=18&amp;v=dkXkRZJnnOc</a>

#### 3.1 User Guidelines for Spraying

1. **Note:** heavy dirt, grime or organic material must be removed from surfaces prior to spraying to allow Growers Oxide to come into direct contact with contaminated surfaces
2. Use 80 micron setting on spray nozzle
3. Spray about 24 inches from horizontal surfaces and 18 inches from vertical surfaces
4. To ensure proper electrostatic performance always keep your hand firmly wrapped around the handle of the spray nozzle. The sprayer handle contains a metal strap that grounds the

user.

5. Apply solution in a thin, even coating. Do not soak the surface. If spraying a porous surface such as wood apply slightly thicker coat to allow for absorption.
6. Do not use on computer monitors or tv screens

#### **4.1 Health and Safety Considerations**

- Use PPE as specified by provincial standards and company requirements. Safety glasses and gloves at minimum.
- Do not operate sprayer while standing in water or other liquids
- Do not operate sprayer in explosive atmosphere or in the presence of flammable liquids, gases, dust, or other potentially hazardous environments
- Avoid slips, trips or falls. Do not overreach.
- Do not use sprayer to apply any other liquids than the ones provided to you. Water may be sprayed to clean the unit.
- Disconnect batter pack from sprayer, or place switch in locked position before refilling, storing, or making adjustments to the sprayer.

#### **4.2 Filling Handheld Sprayer Tank**

- Ensure the sprayer is turned off or battery removed
- Release locking collar and pull tank release ring. Hold tank to prevent it from dropping to floor
- Fill tank with desired liquid. Tank holds 1 litre
- Insert tank into sprayer and rotate tank locking collar until you hear the click

#### **4.3 Filling Backpack Sprayer Tank**

- Ensure sprayer is turned off or battery removed.
  - Unlatch tank lock by lifting upward and outward from the backpack base •
- Fill tank with desired liquid. Tank holds 8.5 litres (2.25 gallons)
- Insert tank into backpack housing

#### 4.4 Installing Nozzle on Sprayer

- Insert nozzle inside nozzle wrench and insert into front of spray gun
  - Rotate the wrench until the tabs on the nozzle and the slots on the wrench line up •
- Push in and rotate the wrench ¼ turn counter clockwise until a click is heard

#### 4.5 Adjusting Nozzle Spray Size

- To adjust the spray nozzle size insert the nozzle wrench and rotate it clockwise to the next micron adjustment
- Typical micron size to be used is 80 micron

#### 5.0 Cleaning of Sprayers

- After use, spray or wipe down the electrostatic sprayer with disinfectant. Allow to air dry for 10 minutes then wipe off any residue
- Do not leave chemicals in tank when sprayer not in use.
- Run water through sprayer after use to prevent rusting or corrosion of electrical components or pump

#### 5.1 Clean or unclog Nozzle

- Remove nozzle by inserting nozzle wrench into the front of the sprayer •
  - Rotate wrench until tabs on the nozzle line up with the slots in the wrench •
  - Rotate the wrench counter clockwise ¼ turn until the nozzle comes loose •
- Soak nozzle in full strength **Growers Oxide**