

**NEO Organics  
4 Marc Road  
Medway, Massachusetts**

**Mechanical Systems  
Ventilation and Odor Mitigation Plan**

**September 12, 2019**

**Prepared For:**

NEO Organics  
4 Marc Road  
Medway, Massachusetts

**Prepared By:**



554 Remington Place  
Castle Rock,  
Colorado 80108

# **VENTILATION AND ODOR MITIGATION PLAN**

**NEO Organics**

**Bay City, Michigan**

**Marijuana Cultivation and Processing Facility**

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## **1. Facility Information**

### **1. Facility general information:**

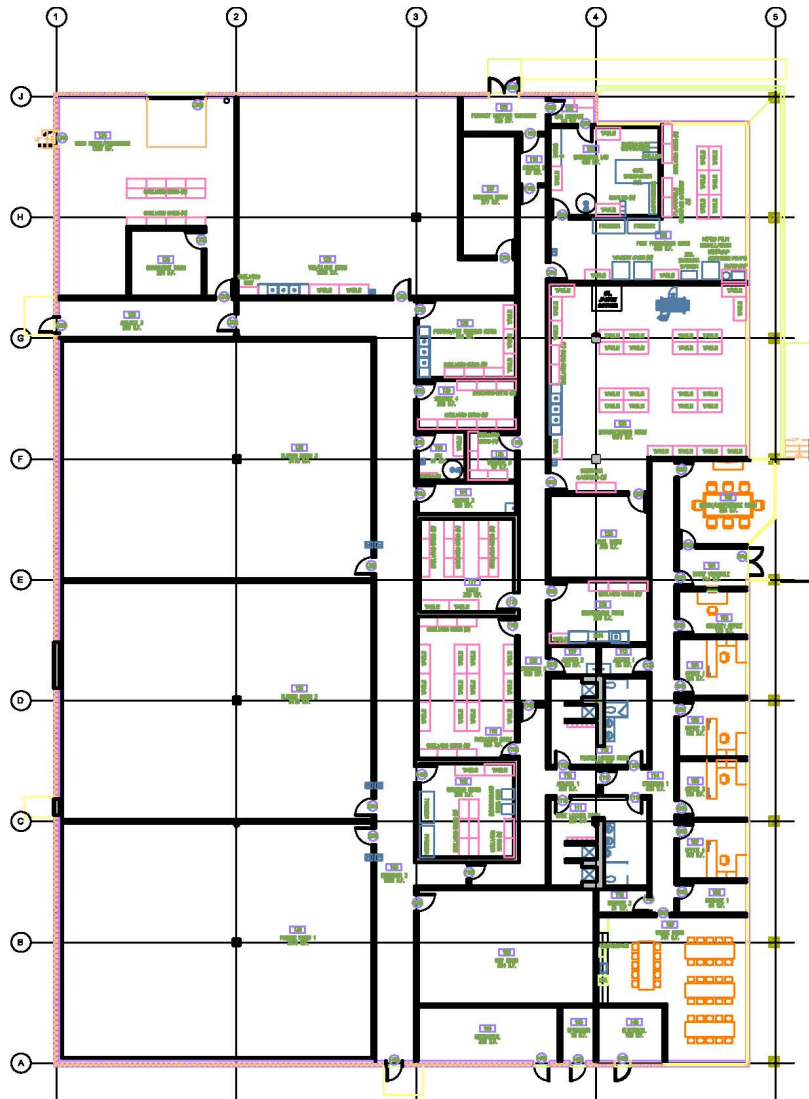
- a. NEO Organics
- b. Jamie Lewis  
415-519-1063
- c. 4 Marc Way, Medway, Massachusetts
- d. Hours of Operation 7am-7pm
- e. Marijuana Cultivation and Processing Facility

## **2. Facility Odor Emissions Information**

### **1. Facility floor plan:**

- a. Facility floor plan:

This section includes a facility floor plan, with locations of odor emitting activity(s) and emissions locations specified. Relevant information including, but not limited to, doors, windows, ventilation system, and odor source locations.



b. Specific odor-emitting activities

Specific odor-emitting processes at the NEO Organics Facility include the following:

- **Mother Room:** These operations include the initial growing stage of new plant. The process emits plant terpenes into the atmosphere. Plants are moved from here to the Vegetative Rooms.
- **Vegetative/ Cone Room:** These operations include the initial growing stage of new plant. The process emits plant terpenes into the atmosphere. Plants are moved from here to the Flower Rooms.
- **Flower Rooms:** Trimming or budding operations including plant-stressing occur during a 60-70 day process. At the time of harvest the rooms will be

“pulled down” in order to get product into the drying process. This process will occur in the Drying Room.

- **Drying Room:** During the drying process moisture will be removed from the plants at which point plant terpenes will be released into the atmosphere. Once the plants are sufficiently dried or cured they will be moved into the Trimming Room.
- **Post Production/ Manufacturing Rooms:** this is the process of distillation and processing product for infusion into edible products. This room is also post-production for the extraction oil. The post production process of distillation can also produce terrapin odors.
- **Packaging Room:** Occupants will handle open dried plant material for the purposes of packaging for shipment.
- **Grinding Room:** this is the process of trimming the buds from main stalk. This room is also post-production for the extraction oil. The post production process of distillation can also produce terrapin odors.

Note: Office and general support areas are not considered odor emitting locations with activities.

The Extraction Process is not considered to be an odor generating process all material is sealed prior to entering the room. The extraction exhaust process is considered Hazardous Exhaust. Per Section 510, of the 2015 IMC: No filtration can be installed between the exhaust inlet and the fan outlet.

- c. Phases (timing, length, etc.) of odor-emitting activities at 4237 Josephine Street include the following:

- **Dry/ Clone Room:** Plants are in clone stage for 2-3 weeks. The process to move to the Vegetative Room is 1-2 hours.
- **Vegetative Room:** Plants are in vegetative stage for 2-3 weeks. The process to move the Flower Rooms is 2-4 hours.
- **Flower Rooms:** Plants are in the flowering stage for 60-70 days. The process to harvest and transport to Trimming and Extraction is 2-3 days.
- **Drying Room:** Plants are in the drying stage for 7-10 days. The process to transport to the Trimming and Extraction is 2-4 hours.
- **Post Production/ Manufacturing Rooms:** Trimming operations occur approximately 4 hours per day between the hours of 8 AM-5 PM.
- **Packaging Room:** Trimming operations occur approximately 4 hours per day between the hours of 8 AM-5 PM.

- **Grinding Room:** Trimming operations occur approximately 4 hours per day between the hours of 8 AM-5 PM.

### 3. Odor Mitigation Practices

For each odor-emitting source/process outlined in the Odor Control Plan's Section 2(b), specify the administrative and engineering controls to be implemented.

The following are the list of 'administrative controls' and 'engineering controls' that include, but not limited to:

a. Administrative Controls

- i. **Procedural activities:** NEO Organics has taken extreme measures to isolate all odor emitting activities. These include, carbon filters installed in each room and isolating all odor producing activities in their own rooms that have heavy duty doors with door closers to insure doors are always closed. In addition we have installed the top of the line HVAC and Environmental Control System. This procedures will be applied to the following odor-emitting areas of activity:
  - Mother Room
  - Vegetative/ Clone Room
  - Flower Rooms
  - Drying Rooms
  - Packaging Room
  - Post Production
  - Grinding Room
- ii. **Staff training procedures:** NEO Organics has an extensive training program that includes training specifically for odor mitigation. The importance of keeping doors shut, changing carbon filters, and keeping all trash cans tightly locked and secured, among the other Standard Operating Procedures, that all employees must follow. NEO Organics conducts weekly staff meetings on Tuesday's from 1-2 pm. At these meetings we discuss odor mitigation and discuss with all departments the importance of keeping up with the processes we have in place.

- iii. **Recordkeeping systems and forms:** Attached you will find our Carbon Filter Report Card, this card is maintained and filled out monthly by our Operations Manager, to be determined. NEO Organics will have a 2 month supply of Carbon Filters on site that will be re-ordered by the Operations manager as to never fall behind on changing. If a Filter needs to be changed sooner than the 1 month. Filters will be on premises to do so. If maintenance is needed it will be done immediately as to not affect the neighboring areas around the project.
- iv. **Monitoring and inspection:** Every odor emitting room will be continuously monitored with daily inspections for odor. If a high volume of odor is detected by an employee, they will directly inform the Operations Manager. If a filter needs to be changed it will be done so at this time. If doors are not closing by themselves, doors will be fixed as soon as the problem is detected.

b. **Engineering Controls**

- v. The engineering odor control system has been designed by a Professional Engineer licensed in the State of Colorado.
- vi. HVAC system odor control plan: Closed Loop System.  
Active Carbon Odor Control (Element Air, GPS-2400 bi-polar ionization, Can-Lite Fans, Carbon Filters and Rolled Carbon Filter Material)

**Odor Control** – The Can-Lite active carbon filters absorbs its molecular weight of contaminants it comes in contact with. Adsorption is a distinct process where organic compounds in the air react chemically with the activated carbon, which causes them to stick to the filter. The more porous the activated carbon is, the more contaminants it will capture. These filters are most notably used to remove terrapin compounds in MMJ facility, air purification systems.

Element Air units pass air through a REME® / PHI oxidation chamber, which destroys airborne microbes with high intensity UV light rays targeted on a quad-metallic compound. The process develops a highly charged atmosphere of hydroxyl radicals, hydro-peroxides and super oxide ions. This atmosphere oxidizes contaminants in the air with friendly oxidizers. By friendly oxidizers, we mean oxidizers that revert back to oxygen and hydrogen after the oxidation process. No chemical residue or dangerous compounds are emitted from the system. This eliminates bacterial growth as well as terpene odor produced by the plants.

1) Odor Mitigation System design

- a. **General:** All the HVAC systems, serving the cultivation areas of the building installed will be considered “closed-loop”

systems. Other than ventilation air, all the of the HVAC equipment will recirculate 100% of the supply being distributed to the various applications areas throughout the facility. Active carbon filtering will be installed to mitigate odors within the facility. To the extent possible, the odor mitigation will be intended to mitigate odor migration to the outside of the building and surrounding areas. It is no way intended to remove all of the terpene odors from within the facility, itself.

All the HVAC systems, serving the general office and support areas areas of the building will be designed as standard air conditioning with economizers, to comply with the latest IMC and IECC. Codes.

- a. **Mother Room:** Mother Room will also have installed Can-Light active carbon filters to operate as “scrubbers” the room. The Dry/ Clone Room will have the quantity of 12” Can-Light fans sufficient to provide a minimum of 6 air-changes per hour of active carbon filtration for each room.
- b. **Vegetative/ Clone Room:** Vegetative Room will also have installed Can-Light active carbon filters to operate as “scrubbers” the room. Vegetative Room will have the quantity of 12” Can-Light fans sufficient to provide a minimum of 6 air-changes per hour of active carbon filtration for each room.
- c. **Flower Rooms:** Flower Rooms will also have installed Can-Light active carbon filters to operate as “scrubbers” the room. The Flower Rooms will have the quantity of 12” Can-Light fans sufficient to provide a minimum of 6 air-changes per hour of active carbon filtration for each room. Element Air units installed to mitigate odors and provide biosecurity.
- d. **Drying Room:** Provide nominally sized vertical high-efficiency split- system AC/ Furnace unit(s) with outdoor remote condensing unit(s). Ventilation air will be provided as required for listed occupancy. The units will utilize GPS-2400 bi-polar Ionization units for odor and bacterial mitigation.
- e. **Post Production/ Manufacturing Rooms:** Provide nominally sized vertical high-efficiency split- system AC/ Furnace unit(s) with outdoor remote condensing unit(s). Ventilation air will be provided as required for listed occupancy. The units will utilize GPS-2400 bi-polar Ionization units for odor and bacterial mitigation.
- f. **Packaging Room:** Provide nominally sized vertical high-efficiency split- system AC/ Furnace unit(s) with outdoor remote condensing unit(s). Ventilation air will be provided as required for listed occupancy. The units will utilize GPS-2400 bi-polar Ionization units for odor and bacterial mitigation.



- g. **Grinding Room:** The Grinding Room will also have installed Can-Light active carbon filters to operate as “scrubbers” the room. The Grinding Room will have the quantity of 12” Can-Light fans sufficient to provide a minimum of 6 air-changes per hour of active carbon filtration for each room. Carbon filtered exhaust hood will also be provided for this room. Provide nominally sized vertical high-efficiency split- system AC/ Furnace unit(s) with outdoor remote condensing unit(s). Ventilation air will be provided as required for listed occupancy. The units will utilize GPS-2400 bi-polar Ionization units for odor and bacterial mitigation.

## 2) Building Exhaust Systems

- a. **Toilet/ Locker Room Exhaust Fans:** The toilet exhaust fans will have active carbon rolled filter material installed on the fan inlets. The filters will be roll-type material secured to the fan inlet.
- b. **Service Sink Exhaust Fan:** The service sink exhaust fans will have active carbon rolled filter material installed on the fan inlets. The filters will be roll-type material secured to the fan inlet.
- c. **CO2 Purge Fans:** Areas where CO2 is utilized will have an alarm system to initiate CO2 evacuation when levels reach 5000 PPM. Each purge fan will consist of 12” Can-Light fans sufficient to provide a minimum of 1 CFM per sq. ft. of exhaust. Each fan will have installed active carbon filtration to mitigate the exhaust air.

**Note:** The Extraction Process is not considered to be an odor generating process all material is sealed prior to entering the room. The extraction exhaust process is considered Hazardous Exhaust. Per Section 510, of the 2015 IMC: No filtration can be installed between the exhaust inlet and the fan outlet.

## 3) Operational processes

**Mother Room:** The can light fans operate 24 hour/ day and provide a minimum of 6 air changes per hour of constant odor filtration.

**Vegetative/ Clone Room:** The can light fans operate 24 hour/ day and provide a minimum of 6 air changes per hour of constant odor filtration.

**Flower Rooms:** The can light fans operate 24 hour/ day and provide a minimum of 6 air changes per hour of constant odor filtration. Element Air units will operate 24 hours/ day.

**Drying Room:** The can light fans operate 24 hour/ day and provide a minimum of 6 air changes per hour of constant odor filtration.

**Post Production/ Manufacturing Rooms:** The GPS-2400 bi-polar ionization units operate 24 hours/ per day. The GPS-2400 will be installed in the HVAC system serving this room.

**Packaging Room:** The GPS-2400 bi-polar ionization units operate 24 hours/ per day. The GPS-2400 will be installed in the HVAC system serving this room.

**Grinding Room:** The can light fans operate 24 hour/ day and provide a minimum of 6 air changes per hour of constant odor filtration. Exhaust hood will operate intermittently, based on operational requirements.

#### 4) Maintenance plan

- a. **Active Carbon:** The Can-Lite active carbon filters absorbs its molecular weight of contaminants it comes in contact with. Adsorption is a distinct process where organic compounds in the air react chemically with the activated carbon, which causes them to stick to the filter. The more porous the activated carbon is, the more contaminants it will capture. These filters are most notably used to remove terpenoid compounds in MMJ facility, air purification systems.

The physical process of adsorption is followed by chemical adsorption (chemisorption). This is a chemical reaction in which the two substances react together and the resultant chemical is trapped on the filter material. The impregnation of filter media can greatly extend the range of gases that can be removed from the air stream.

- Terpenes commonly occur in the oils that give plants their fragrance.
- The fundamental building block of MMJ terpenes is the isoprene unit,  $C_5H_8$
- The larger structures are "assembled" from several isoprene units, usually by "head-to-tail" linked isoprene units.

- b. **Mother Room:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the

Transplant Clone Room is 12 lbs (one fan). Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 6 air-changes/ hour and an average MMJ plant size and plant totals, for each room.

- c. **Vegetative Room:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in each Veg. Room is 12 lbs. Recommended rate of replacement of the carbon filter material is every 18-24 months. This is empirically based on 6 air-changes/ hour and an average MMJ plant size and plant totals, for each room.
- d. **Flower Rooms** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in each Flower Room is 24 lbs. Recommended rate of replacement of the carbon filter material is every 18-24 months. This is empirically based on 15 air-changes/ hour and an average MMJ plant size and plant totals, for each room.
- e. **Drying Room:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Drying Room is 12 lbs. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 15 air-changes/ hour and an average MMJ plant size and plant totals, for each room.
- f. **Post Production/ Manufacturing Rooms:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Drying Room is 12 lbs. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 15 air-changes/ hour and an average MMJ plant size and plant totals, for each room. GPS-2400 bi-polar Ionization unit nodes to be replaced every 3-4 years.
- g. **Packaging Room:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is 358.4733 g/ mole. The amount of active carbon in the Drying Room is 12 lbs. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 15 air-changes/ hour and an average MMJ plant size and plant totals, for each room. GPS-2400 bi-polar Ionization unit nodes to be replaced every 3-4 years.
- h. **Grinding Room:** Maintenance Active carbon Can-lite Fans: The molecular weight of the MMJ terpene isoprene unit is

358.4733 g/ mole. The amount of active carbon in the Drying Room is 24 lbs. Recommended rate of replacement of the carbon filter material is every 24-30 months. This is empirically based on 15 air-changes/ hour and an average MMJ plant size and plant totals, for each room. GPS-2400 bi-polar Ionization unit nodes to be replaced every 3-4 years.

- i. **Toilet/ Service Sink Exhaust Fans:** Maintenance of active carbon roll material will be replaced on a monthly basis.

#### 4. Timeline for implementation of odor mitigation practices

- iv. The Department's approval of plan: TBD
- v. Other agencies' approval of plan: TBD
- vi. Purchase and installation of engineering controls: Upon approval of plan.
- vii. Inspections and approval by City agencies: TBD
- viii. Complaint tracking system: By City agencies. TBD

## Appendices

### Filter Replacement Documentation

Location	Filter Type	Activity: Replace/ Clean	Date
Mother Room	Can lite Filter		
Vegetative/ Clone Room	Can lite Filter		
Flower Room	Can lite Filter		
Post Production	Can lite Filter		
Packaging	Can lite Filter		
Dry Room	Can lite Filter		
Toilet/ Janitor Room	Carbon Filter		
CO2 Purge	Can lite Filter		

## CARBON FILTER



Air Handler Carbon Pleat filters are designed for the control of intermittent odor problems, removing a wide range of odors and common indoor air pollutants such as cigarette smoke, industrial process, copiers, pets, and musty areas. The advanced media has improved capability to help absorb nuisance odors. The pleated filter packs are enclosed in a heavy duty, moisture-resistant (beverage board) die-cut frames that will not crack, warp, or distort under normal operating conditions. Use in air make-up systems and re-circulation applications in office buildings, hospitals, airports, food courts, and manufacturing facilities.

# GPS - 2400

## Cold Plasma Air Purification Device



Patent(s) #US 9025303 B2  
US 9289779 B2

# PRODUCT DATA SHEET

**Product Description:** The GPS-2400 series of products are designed to be mounted inside of fan coils, heatpumps and air handlers up to 2,400 CFM or 6 tons. Their compact size and single screw mounting requirement allows them to be mounted almost anywhere in just a few minutes. The cold plasma produced will travel down the duct disinfecting everywhere the air is traveling.

**Standard Features Include:** Carbon Fiber Brushes, LED Operation Status and In-Line Fuse

**Benefits:** Neutralizes Odors, Kills Mold, Bacteria and Virus, Helps to Control Allergens\* and Asthma\*, Particle Reduction, Smoke Control, Ease of Installation and Service and Prevents Dirty Sock Syndrome (DSS)

**Applications:** Residential Including Odor, Smoke, Pathogen, Mold/Mildew Control and Particle Reduction, Light Commercial

**Specifications:**

Input Voltage:	24VAC—GPS-2400-3 115VAC—GPS-2400-1 208-277VAC—GPS-2400-2
Power Required:	9.6 VA
Frequency:	50/60HZ
Capacity:	0-2,400 CFM
Unit Dimensions:	2.4"L x 1.7"H x 1.2"D
Weight:	0.25 lbs
Electric Approvals:	UL Recognized, cUL Recognized, ETL Recognized

\*These statements are based on numerous customer testimonials and have not been evaluated by the FDA

Global Plasma Solutions  
10 Mall Terrace, Building C  
Savannah, GA 31406



Phone: 912-356-0115  
Fax: 877-270-5353  
Web: [www.globalplasmasolutions.com](http://www.globalplasmasolutions.com)

## ROLLED CARBON FILTER

SureSorb Activated Carbon 50Ft Roll 19 1/2 x 5/8 | Air Filters, Inc.

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# Carbon Rolls

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[SureSorb Activated Carbon 50Ft Roll 19-1/2x5/8](#)



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Choose an Option...



**Qty:**

1



**ADD TO CART**

**Ship within 5 - 7 days**

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If you are interested in a larger pack size or have a question about this product, please click here to request a quote.

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[Description](#)

<https://www.airfilterusa.com/suresorb-activated-carbon-50-ft-roll-19-1-2x5-8.html>

2/6/2017




## CAN-LITE FILTER FAN

Can-Lite Carbon Filter 12 inch - 1800 CFM for Sale - Reviews, Prices, & More - Grower... Page 1 of 4

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### Can-Lite Carbon Filter 12 inch - 1800 CFM

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Can Lite Carbon Filters use a finer grade carbon so they are lighter and easier to hang from ceilings as part of your ventilation. The Can Lite 12" carbon filter comes with a 12" flange attached to one side of the carbon filter. Use a fan that's approximately 1800 CFM or less with this filter.

**JOIN THE GROW CREW SAVE UP TO 5% OFF** [Learn More](#)

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**\$293.26**

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### Additional Information

Name	Can-Lite Carbon Filter 12 inch - 1800 CFM
Brand	Can Fans & Filters
SKU	700593
Weight (lbs)	66.00
Dimensions	40 x 16 x 16
CFM	1800 CFM
MSRP	\$348.00

### Details

CF group has added a new series of canister filters to their already dominant line of activated carbon filters. After years of research and field testing of the light-weight carbon filter, CF group will proudly place their trusted name in air filtration on this new series of filters. The Can-Lite™ has been developed with ease of installation, durability and effectiveness in mind. The Can-Lite™ is manufactured the same way as the Original Can-Filters® (proven packed bed design). The difference is in the carbon; high density carbon is used in the Can-Lite™.

- Built in flange
- 10% More Virgin Activated Australian RC Light Weight Granular Carbon than the competition
- 2" Bed Depth of Pure Virgin Activated Australian RC Light Weight Granular Carbon
- 51% Perforated Open Area For Maximum Air Flow
- Up to 2.5 Years Life Expectancy
- Weight saving aluminum top and bottom
- Pre filter included
- Ease of installation with the low overall weight

### Write Your Own Review

**You're reviewing: Can-Lite Carbon Filter 12 inch - 1800 CFM**

How do you rate this product? \*

<http://growershouse.com/can-lite-carbon-filter-12-inch-1800-cfm?keyword=&gclid=Cj0KE...> 2/6/2017



## ELEMENT AIR UNITS

Most facilities do not check the air for microorganisms on a daily or monthly basis. Bacteria and mold can continuously breed within the environment and on plants. RGF® developed this air treatment system to provide continuous protection in sensitive air spaces. Air passes through a REME® / PHI oxidation chamber, which destroys airborne microbes with high intensity UV light rays targeted on a quad-metallic compound. The process develops a highly charged atmosphere of hydroxyl radicals, hydro-peroxides and super oxide ions. This atmosphere oxidizes contaminants in the air with friendly oxidizers. By friendly oxidizers, we mean oxidizers that revert back to oxygen and hydrogen after the oxidation process. No chemical residue or dangerous compounds are emitted from the system. Airborne contaminants in the form of bacteria, mold, and yeast continue to be one of the least addressed issues in most facilities. The unit was designed for MMJ cultivation applications and does



**END OF REPORT**