



integrated pest  
MANAGEMENT



fertigation



water  
TREATMENT



lighting  
SYSTEMS

# urban-gro

Providing Product Solutions for the  
Commercial Cannabis Cultivator

## Element Air™

### Air Purification Systems

#### PROTECTING YOUR GROW

Our patented Element Air treatment systems are the most practical and effective solutions for airborne and surface microbial contaminants, including powdery mildew, total yeast and mold (TYM) and *Cannabis* odors. Element Air has been independently verified to reduce bacterial and other microbial contaminants by 99+%.

The Element Air technology utilizes broad spectrum, high-intensity UV lights targeted on a hydrated quad-metallic catalyst which utilizes ambient moisture to generate hydro-peroxides and hydroxides that are propelled into the cultivation facility, to provide active microbial and odor mitigation.

As opposed to other units promoted to the *Cannabis* market which utilize a similar technology, Photocatalytic Oxidation (PCO), which only sanitize the air that is passed directly in its path, Element Air is an active purification system. It purifies the ducts and general growing spaces, while also removing odor at the source.

#### BENEFITS OF ELEMENT AIR SYSTEMS:

- Several different module types:
- Reduce airborne microbes by 99%
- Reduce airborne VOCs, including airborne *Cannabis* terpenoids and other odors
- Helps eliminate airborne bacteria, mold and odors
- Actively "scrubs" ducting, air and surfaces with airborne hydro-peroxides
- Completely safe for workers and plants
- Made for greenhouse and indoor cultivation environments
- Food grade stainless steel construction for years of trouble-free service
- 1 year warranty



Tower



Wall Mount



In-Duct Plus



UV



Light Commercial



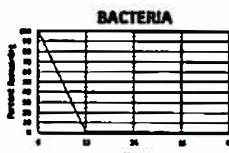
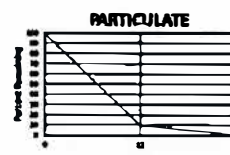
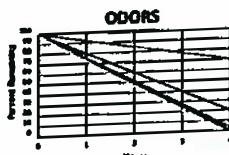
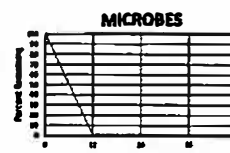
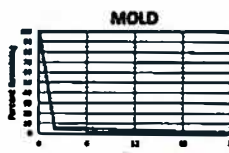




## ELEMENT AIR TOWER

Available in free standing floor units or horizontal/vertical wall mount

**Material:** Stainless Steel  
**Depth:** 18"  
**Width:** 20"  
**Height:** 78"  
**Weight:** 70 lbs.  
**Electrical:** 110V/28A



**REDUCES  
99+%**

**Element Air**  
Air Purification Systems

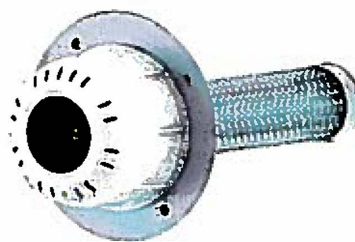
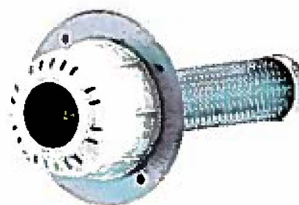
## ELEMENT AIR UV

**Dimensions:** 5" probe, 5.5" plate  
 9" probe, 5.5" plate  
 14" probe, 5.5" plate

**Weight:** 4 lbs.

**Electrical:** 24VAC

**In-duct unit (fixed mount)**



## ELEMENT AIR IN-DUCT

**Dimensions:**

5" probe, 5.5" diameter plate  
 9" probe, 5.5" diameter plate  
 14" probe, 5.5" diameter plate

**Weight:**

6 lbs.

**Electrical:**

24VAC

**In-duct unit (fixed mount)**

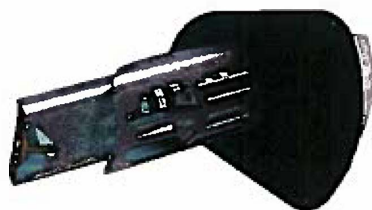
## ELEMENT AIR IN-DUCT PLUS

**Dimensions:** 12" probe, 6.5" x 7.5" plate

**Weight:** 6 lbs.

**Electrical:** 24VAC

**In-duct unit (fixed mount)**



## ELEMENT AIR LIGHT COMMERCIAL

**Dimensions:** 2.25" W x 10.5" L x 1.75" D

2.25" W x 13.5" L x 1.75" D

**Weight:** 1 lbs.

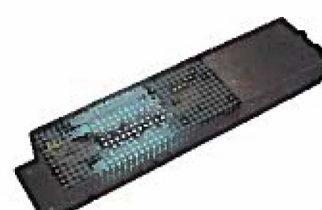
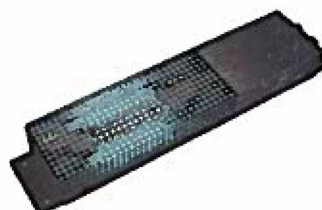
**Electrical:** 24VAC

**Dimensions:**

2.25" W x 18.5" L x 1.75" D

**Weight:** 2 lbs.

**Electrical:** 24VAC





# Element Air™

## ADVANCED OXIDATION TEST RESULTS 2000-2016

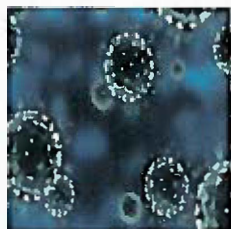
RGF first developed its Advanced Oxidation Technology over 20 years ago. Over one million RGF cells are in use around the world. RGF has licensed its technology to many Fortune 500 companies for use in medical, food, military, residential, commercial, marine, hospitality and government applications. RGF cells in various products have been tested and/or approved or registered by:

- ETL, TUV, EU, CSA
- U.S. Military
- Electric Power Research Institute

- Chinese Government
- Japanese Government (TV commercials)
- Canadian Government

- U.S. Government
- European Union
- USDA & FSIS

In addition, RGF cells have been specified in the Norovirus & MRSA protection plans of America's largest restaurant chains, hotel chains, theme parks, cruise lines, public schools and hospitals. The following is a summary of some of the testing and studies performed by third party independent labs and universities. RGF products are not medical devices and no medical claims are made.



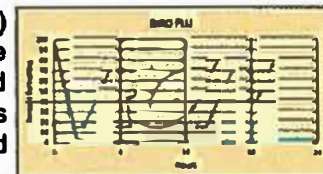
The H1N1 flu virus, or swine flu, caused a worldwide pandemic in 2009-2010. It is now considered a seasonal flu, which continues to circulate seasonally worldwide. Spread of the H1N1 virus occurs in the same way that seasonal flu spreads. Flu viruses are spread mainly from person to person through coughing or sneezing by people with influenza. Sometimes people may become infected by touching items – such as a surface or object – with flu viruses on it and then touching their mouth or nose. Kansas State University completed preliminary testing on RGF's Photohydroionization® (PHI-Cell®) and Reflective Electromagnetic Energy (REME® Cell) technologies with 99+% inactivation of H1N1 Swine Flu on a stainless steel surface.



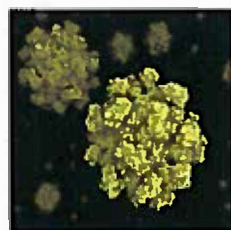
Tested by Kansas State University Inactivation Rate 99+%



Avian Influenza is an infection caused by avian (bird) influenza (flu) viruses. Avian Influenza is very contagious among birds and can make some domestic birds, including chickens, ducks and turkeys, very sick and kill them. Of the few avian influenza viruses that have crossed the species barrier to infect humans, H5N1 has had the largest number of detected cases of severe disease and death in humans. Of the human cases associated with the H5N1 outbreaks in poultry and wild birds in Asia, Europe, the Near East and Africa, more than half of those people reported infected with the virus died. Source: CDC: Center for Disease Control and Prevention



Tested by Kansas State University Inactivation Rate 99+%



Norovirus is a highly contagious virus and as few as 10 viral particles may be sufficient to infect an individual. Infections of the virus can occur by consuming contaminated food or water, by touching contaminated surfaces, or from person-to-person transmission. Norovirus is named after the original strain "Norwalk virus," which caused an outbreak of gastroenteritis in a school in Norwalk, Ohio in 1968. The most common Norovirus outbreak settings include healthcare facilities, restaurants and catered events, on cruise ships and in schools. 50% of all food-borne outbreaks of gastroenteritis can be attributed to norovirus.



Tested by Midwest Research Institute Inactivation Rate 99+%



Methicillin-Resistant Staphylococcus Aureus (MRSA) is a type of bacterium responsible for difficult to treat infections due to its resistance to certain antibiotics. These antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin. Staph infections, including MRSA, occur most frequently among persons in hospitals and healthcare facilities (such as nursing homes and dialysis centers) who have weakened immune systems. In the community, most MRSA infections are skin infections. In medical facilities, MRSA causes life-threatening bloodstream infections, pneumonia and surgical site infections. RGF along with a major hospital participated in a two-year study evaluating PHI technology, which resulted in a 33.4% reduction in infections.



Tested by Kansas State University Inactivation Rate 99+%





**Streptococcal (strep) infections** are caused by group A streptococcus, a bacterium responsible for a variety of health problems. Most infections are relatively mild illnesses, such as "strep throat". These bacteria spread through direct contact with mucus from the nose or throat of people who are sick with an infection, or through contact with infected wounds or sores on the skin. Source: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES



Tested by Kansas State University Inactivation Rate 96+%



#### **Pseudomonas Sp.**

The bacterial genus *Pseudomonas* includes plant pathogenic bacteria such as *P. syringae*, the opportunistic human pathogen *P. aeruginosa*, the ubiquitous soil bacterium *P. putida*, and some species that are known to cause spoilage of unpasteurized milk and other dairy products.

Source: CDC: Center for Disease Control and Prevention



Tested by Kansas State University Inactivation Rate 99+%



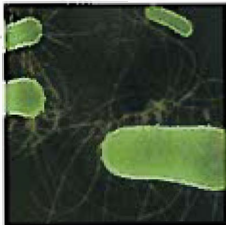
#### **Listeria Monocytogenes**

*Listeria Monocytogenes* is a bacterium that causes listeriosis. They are commonly found in soil and water. Most human infections follow consumption of contaminated food such as uncooked meats; unpasteurized milk and cheeses, and cooked or processed foods such as ready-to-eat meats. Unlike most bacteria, *Listeria* is able to grow at refrigerated temperatures. The disease primarily affects older adults, pregnant women, newborns, and adults with weakened immune systems.

Source: CDC Centers for Disease Control

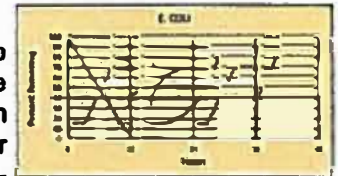


Tested by Kansas State University Inactivation Rate 99+%



#### **Escherichia coli**

*Escherichia coli*, usually abbreviated *E. coli*, are a large and diverse group of bacteria, which are found in the lower intestines of mammals. Some strains such as enterohaemorrhagic *E. coli* (EHEC) that are pathogenic can cause severe foodborne illness. Outbreaks are most often linked to raw or undercooked meat products, raw milk, and fecal contamination of vegetables. Source: CDC: Center for Disease Control and Prevention



Tested by Kansas State University Inactivation Rate 99+%



#### **Salmonella**

*Salmonella* is the name of a group of bacteria and is one of the most common causes of food poisoning in the United States. Every year one million people are infected, with more than 19,000 hospitalizations and 380 deaths. Source: Food Safety /CDC Center for Disease Control

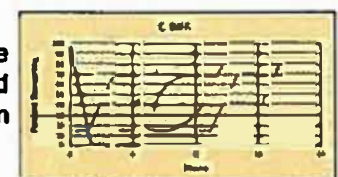


Tested by Kansas State University Inactivation Rate 99+%



#### **Clostridium difficile (C-Diff)**

*Clostridium difficile*, also known as C-diff or *C. difficile*, is a gram-positive bacterium that can cause an inflammation known as colitis. It is considered a healthcare-associated infection (HAI). C-Diff infection rates have been on the rise and are becoming more severe and difficult to treat.



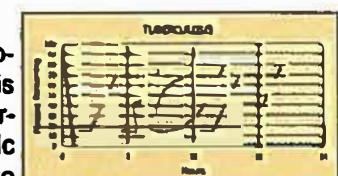
Tested by Kansas State University Inactivation Rate 99+%



#### **Tuberculosis**

Tuberculosis is caused by the bacterium *Mycobacterium tuberculosis*. It typically attacks the lungs, but can also affect other parts of the body. It is spread through the air when people with infection cough, sneeze, or otherwise transmit their saliva through the air. Most infections are asymptomatic and latent, but about one in ten latent infections eventually progresses to active disease which, if left untreated, kills more than 50% of those so infected

Source: Centers for Disease Control



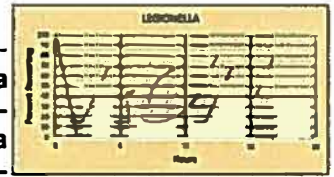
Tested by Kansas State University Inactivation Rate 99+%





### Legionella

Legionella is a group of pathogenic bacteria that is one of the most frequent causes of waterborne disease in humans. One type of pneumonia caused by Legionella is called legionellosis, or commonly known as Legionnaires' disease. The disease is transmitted when people breathe in a mist or vapor with the bacteria. Source: CDC Centers for Disease Control

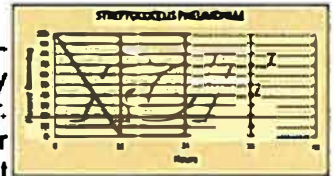


Tested on Pan Saver by Kansas State University Inactivation Rate 99+%



### Streptococcus Pneumoniae

*S. pneumonia* is an exclusively human pathogen and is spread from person-to-person by respiratory droplets, meaning that transmission generally occurs during coughing or sneezing to others within 6 feet of the carrier. The bacteria can cause many types of illnesses, including meningitis, ear infections, sinus infections, and bacteremia. Health experts estimate that more than 10 million mild infections (throat and skin) like these occur every year. Source: CDC Centers for Disease Control



Tested by Kansas State University Inactivation Rate 99+%

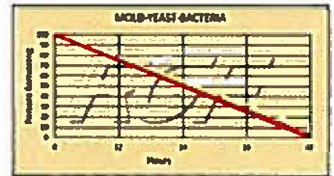


### Bacteria/Mold/Yeast

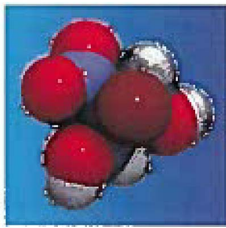
The purpose of these tests was to evaluate the effect RGF's Advanced Oxidation Technology has on mold, yeast and bacteria (TPC). This test was performed utilizing a standard 2,000 sq. ft. home and 3,000 sq. ft. simulated home.

#### Reduction %

■ Bacteria 99% ■ Mold 97-98% ■ Yeast 90+%



Tested by California Microbiology Center



### Chemical Compounds

Gas Chromatograph/Mass Spectrometer test performed by Nelap Accredited Lab on airborne chemical compound reduction using RGF's AOT.

Hydrogen Sulfide	- Rotten eggs	Butyl Acetate	- Sweet banana
Methyl mercaptan	- Rotten cabbage	Methyl Methacrylate	- Plastic
Carbon Disulfide	- Vegetable sulfide		

#### Reduction %

■ Hydrogen Sulfide 80% ■ Methyl mercaptan 100% ■ Carbon Disulfide 30% ■ Butyl Acetate 100% ■ Methyl Methacrylate 100%



Tested by GC/MS Nelap Accredited Independent Lab



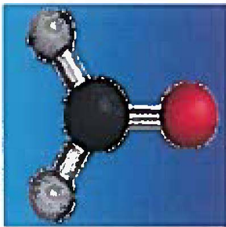
### Odors

The purpose of this test was to evaluate to what effect the RGF's AOT unit has on cleaning chemicals, pet odors, and perfume odors. This test was performed utilizing two 500 cubic foot test chambers and a ten-person odor panel. The qualitative assessments of the ten-person odor panel were then used as a means to determine the odor reduction.

Tested by C&W Engineering (Independent PE Firm)

#### Reduction %

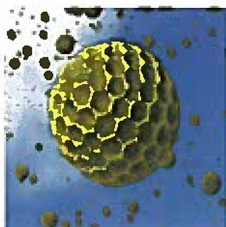
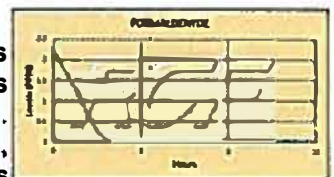
■ Cleaning chemicals 55+% ■ Pet odors 72% ■ Perfume odors 63+% ■ Smoke odors 70%



### Formaldehyde

Formaldehyde is a colorless, flammable, strong-smelling chemical that is used in building materials and to produce many household products. It is commonly used as an industrial fungicide, germicide and disinfectant. When formaldehyde is present in the air at levels exceeding 0.1 ppm, some people may experience adverse effects including burning sensations in the eyes, nose, and throat, watery eyes, coughing, nausea, as well as skin irritation. The purpose of this test was to evaluate the effect RGF's Advanced Oxidation Technology has on formaldehyde.

Tests by Kansas State University | Formaldehyde levels less than 0.05 ppm in 4 hours



### Suspended Particulate Reduction-REME®

The REME® Cell was evaluated for particulate reduction in a particle test chamber. Particle counts were reduced to ISO Class 4 levels (10,000 – 0.1µm) within 12 hours of exposure to the REME® Cell. After 24 hours of treatment, ISO Class 3 levels (1,000 – 0.1µm) were achieved. Typical HEPA filtration is effective down to .3µm



Tested by Kansas State University Inactivation Rate 99+%



### **Electrical / Ozone / EMF**

All RGF AOP devices have been thoroughly tested for electrical safety, ozone / emf - Electro Magnetic Frequency and have passed Federal Safety Standards.

Tested by: TUV, ETL, UL, CSA, NEI China, RGF Labs. The Japanese Government, GSA, and Electrical Power Research Institute.

Note: Many household appliances emit some ozone and emf in safe low levels such as fluorescent lights, motors, computers, copy machines, refrigerators, blenders, electronic air filters, air conditioners, electric fans, microwave ovens, etc.

### **Sneeze Test - RGF PHI and REME®**

A testing protocol concept was used which included a "Sneeze Simulation Machine" and "Sneeze" chamber. A sneeze can travel at up to 100 mph, so lung capacity, sneeze pressure, and liquid volume had to be taken into consideration to properly simulate a human sneeze. This was accomplished and the test proceeded with outstanding results. An average of 99% reduction of sneeze germs was achieved with PHI/ REME® in a double blind test, at three feet from the sneeze source.

Simulated Sneeze Lab Test at three feet in a 250 cu ft Bio Test Chamber. An independent PE double blind study.



Tested by: Kansas State University, inactivation 99%

### **SAFETY**

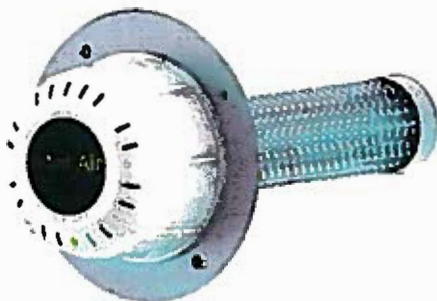
It is a normal reaction to question the long term safety of any product that is effective and uses new or "breakthrough" technology. This type of question has become common as our litigious society has taught us to question things that significantly outperform existing methods or products.

The RGF *advanced oxidation technologies* that produced the results found on the pages of this report certainly fall into the category of breakthrough technology. This is evident by its outstanding test results across the entire range of microbes.

The breakthrough in the RGF *advanced oxidation technologies* is not found in the final product (hydroperoxides), but rather in the method by which they are produced. The active ingredient created by the RGF products is a group of oxidants known as Hydroperoxides. Hydroperoxides have been a common part of our environment for over 3.5 billion years. Hydroperoxides are created in our atmosphere whenever three components are present: unstable oxygen molecules, water vapor and energy (electro magnetic).

Hydroperoxides are very effective (as demonstrated by the test results in this book) at destroying harmful microblals. As oxidants, they do this by either destroying the microbe through a process known as cell lysing or by changing its molecular structure and rendering it harmless (which is the case in VOC's and odors). The amount of hydroperoxides required to accomplish this task in a conditioned space is well below the level that is constantly in our outside air. The advanced oxidation technology found in RGF's Guardian Air product family has brought the oxidants found in the outside air into the conditioned space of your home, office, business, etc.

There is no known case of hydroperoxides ever creating a health risk. Considering we have been exposed to hydroperoxides in nature since the day man stepped on the planet, it is a reasonable assumption that hydroperoxides do not constitute a health risk. Over the past 20 plus years RGF has more than one million Advanced Oxidation products successfully used worldwide.



### **Disclaimer:**

All the above tests were performed on RGF Advanced Oxidation products with Advanced Oxidation Plasma of less than .02 ppm unless noted otherwise. They were conducted by independent accredited labs and university studies. They were funded and conducted by RGF's major clients to assure third party credibility. RGF products are not medical devices and no medical claims are made.

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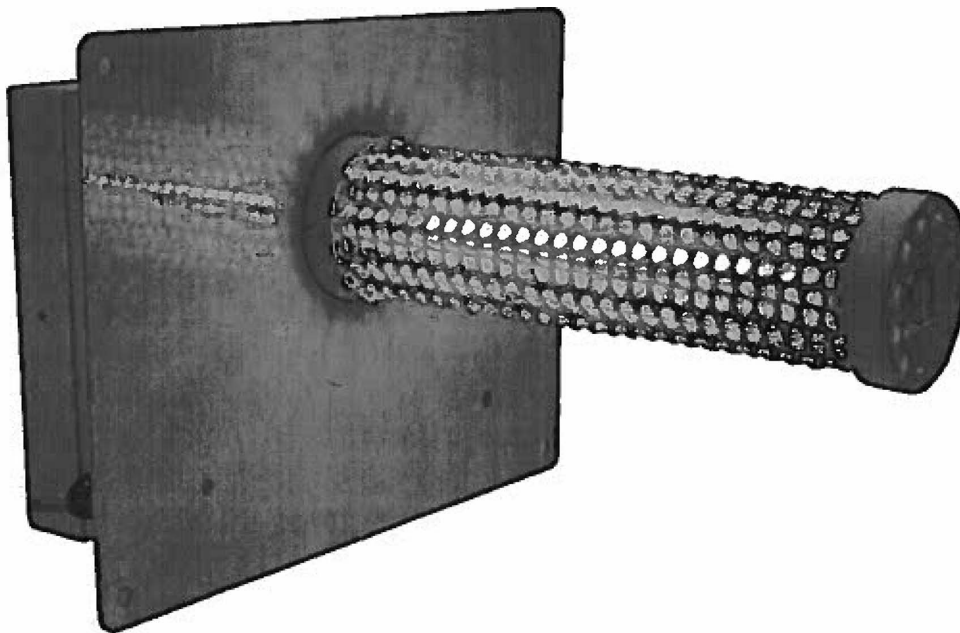
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# Element Air™

A Division of RGF Environmental Group, Inc.

## ***In-Duct High Output***

***A Photohydroionization® (PHI) Technology***



**1 year warranty**

### **REDUCES**

- Microbials
- Mold
- Bacteria
- Pathogens
- Odors/VOCs

### **APPLICATIONS**

- Greenhouses
- Cultivation rooms
- Large harvest rooms
- Processing rooms

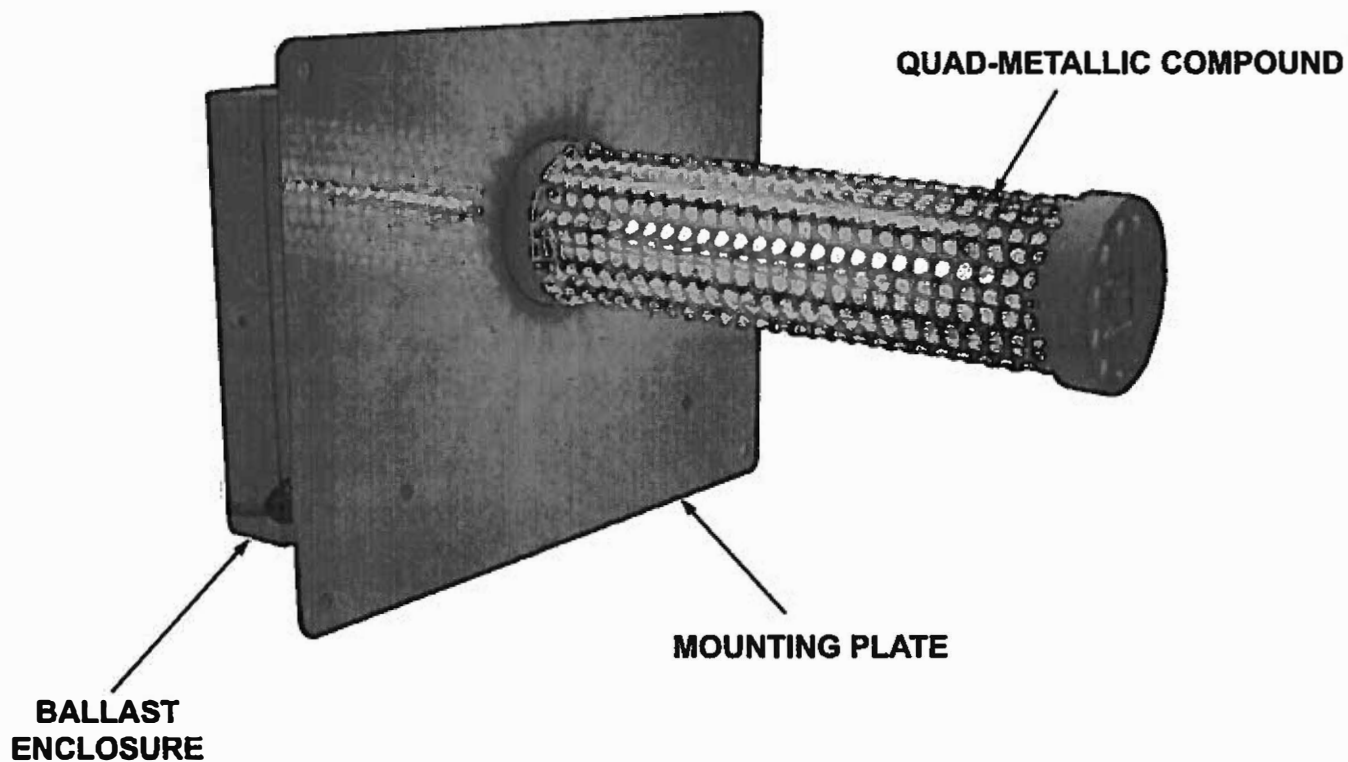
Most facilities do not check the air for microorganisms on a daily or monthly basis. Bacteria and mold can continuously breed within the environment and on plants. RGF® developed this air treatment system to provide continuous protection in sensitive air spaces.

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.

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## ***In-Duct High Output***



<i>Item #</i>	<i>Replacement Cell</i>	<i>Electrical</i>	<i>Dimensions</i>	<i>Ship Wt.</i>
EAID-COM	EAIDHO-14C-RC (1)	24 VAC	12" probe / 6.5" x 7.5" plate	6 lbs.

***RGF Environmental Group, Inc.***

1101 West 13th Street (Port of Palm Beach Enterprise Zone) Riviera Beach, Florida 33404

561-318-4690 • [www.rgf.com/elementalr](http://www.rgf.com/elementalr)

Doc# SPEC-EA-IHO Rev B App: LB



