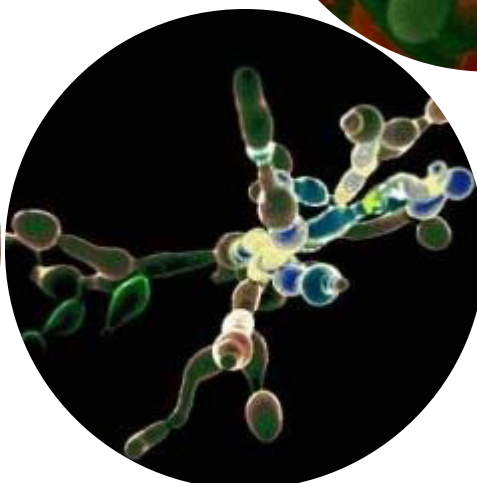
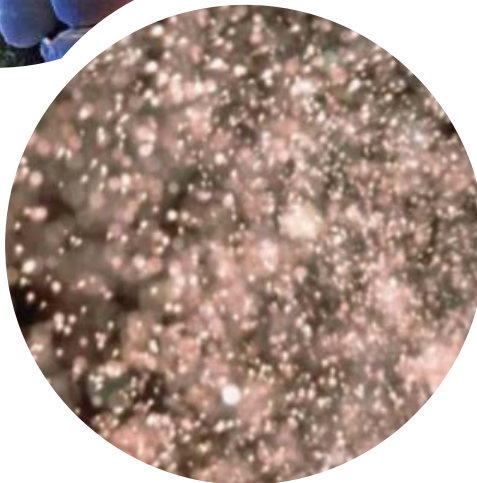


## ADVANCED OXIDATION TECHNOLOGIES



RGF first developed its Advanced Oxidation Technology over 20 years ago. Over 1 million RGF Cells are in use around the world. RGF has licensed its technology to many Fortune 500 companies for use in the medical, food, military, residential, commercial, marine, hospitality and government, etc. RGF cells in various products have been tested and approved by:

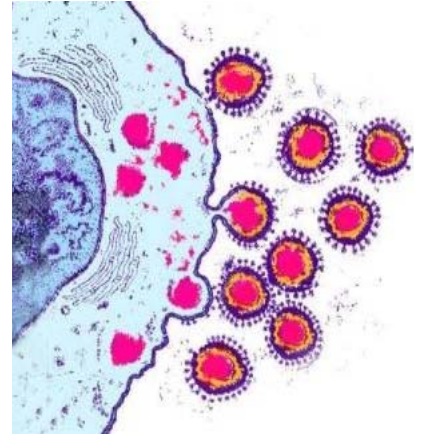
- UL, ETL, TUV, EU, EPA & CSA
- U.S. Military
- Electric Power Research Institute
- Chinese Government
- Japanese Government (TV commercials)
- Canadian Government
- U.S. Government – GSA
- European Union

In addition, RGF cells have been specified in the Norovirus & MRSA protection plan 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.

**SARS**

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. The main way SARS seems to spread is by close person-to-person contact. The disease can spread when droplets from the cough or sneeze of an infected person are propelled a short distance (generally up to 3 feet) through the air. The virus also can spread when a person touches a surface or object contaminated with the infectious droplets and then touches his or her mouth, nose or eye(s).

Source: CDC-Centers for Disease Control and Prevention

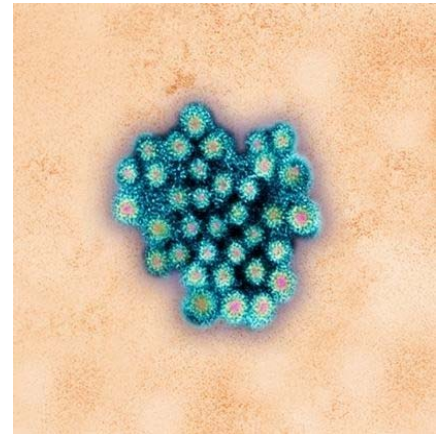
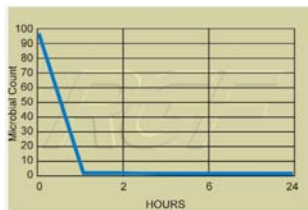


Tested by NEI-Chinese Government Inactivation Rate 73+%

**Norwalk Virus**

Noroviruses are a group of related, single-stranded RNA, nonenveloped viruses that cause acute gastroenteritis in humans. Noroviruses are named after the original strain "Norwalk virus," which caused an outbreak of gastroenteritis in a school in Norwalk, Ohio, in 1968. No evidence suggests that infection occurs through the respiratory system. Noroviruses are highly contagious and as few as 10 viral particles may be sufficient to infect an individual. During outbreaks of norovirus, several modes of transmission have been documented; for example, initial food-borne transmission in a restaurant, followed by secondary person-to-person transmission to household contacts. 50% of all food-borne outbreaks of gastroenteritis can be attributed to noroviruses. Among the 232 outbreaks of norovirus illness reported to CDC from 1997 to 2000 36% were in restaurants, 23% were in nursing homes, 13% were in schools and 10% were vacation settings or cruise ships.

Source: CDC-Centers for Disease Control and Prevention

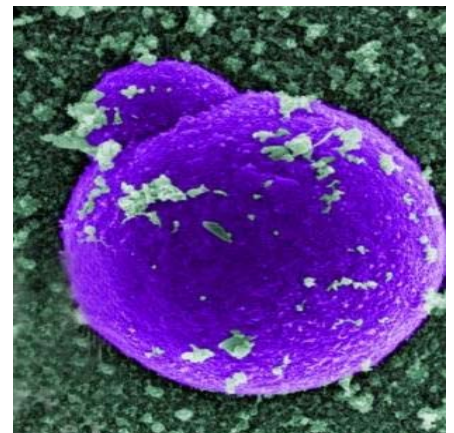


Tested by Midwest Research Institute Inactivation Rate 99+%

**Methicillin Resistant *Staphylococcus aureus***

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a type of bacteria that is resistant 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.

Source: CDC Centers for Disease Control and Prevention



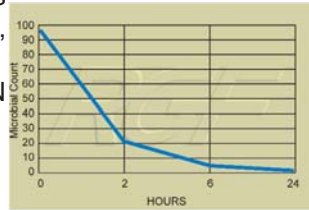
Tested by Kansas State University Inactivation Rate 99+%

### ***Streptococcus Sp.***

Group A *Streptococcal* (strep) infections are caused by group A *streptococcus*, a bacterium responsible for a variety of health problems. These infections can range from mild skin infection or sore throat to severe, life-threatening conditions such as toxic shock syndrome and necrotizing fasciitis, commonly known as flesh eating disease. Health experts estimate that more than 10 million mild infections (throat and skin) like these occur every year. Secondary infections include: Rheumatic Fever, Impetigo, Cellulites, Erysipelas and Scarlet Fever.

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 unpasteurised milk and other dairy products. The *Pseudomonads* are metabolically diverse, can consequently colonize a wide range of niches, and are generally perceived to be agents of spoilage and degradation.

Source: CDC: Center for Disease Control and Prevention

Tested by Kansas State University Inactivation Rate 99+%



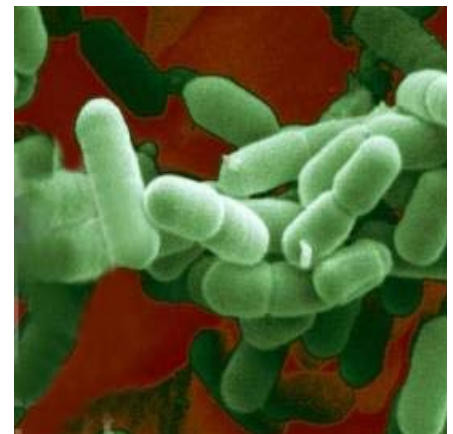
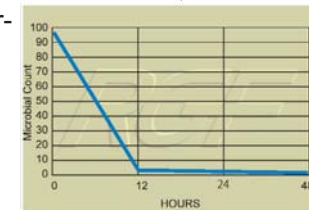
### ***Listeria***

This is a Gram-positive bacterium, motile by means of flagella. Some studies suggest that 1-10% of humans may be intestinal carriers of *L. monocytogenes*. It has been found in at least 37 mammalian species, both domestic and feral, as well as at least 17 species of birds and possibly some species of fish and shellfish. The manifestations of listeriosis include septicemia, meningitis (or meningoenzephalitis), encephalitis, and intrauterine or cervical infections in pregnant women, which may result in spontaneous abortion or stillbirth.

Source: U.S. Food and Drug Administration

Tested by Kansas State University  
Steris Labs  
KAG / Eco Labs

Inactivation Rate 99+%

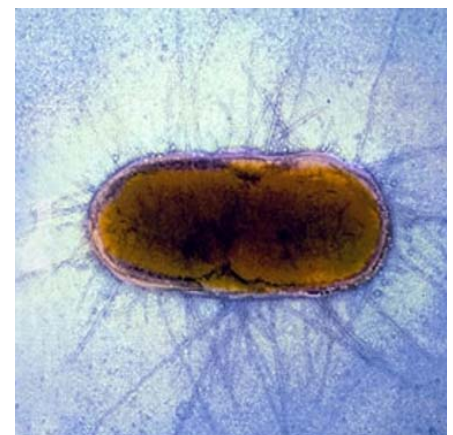


### ***Escherichia coli***

*Escherichia coli*, usually abbreviated to *E. coli*, discovered by Theodor Escherich, a German pediatrician and bacteriologist, is one of the main species of bacteria that live in the lower intestines of mammals, known as gut flora. The number of individual *E. coli* bacteria in the feces that a human excretes in one day averages between 500 billion and 10 trillion. All the different kinds of fecal *coli* bacteria, and all the very similar bacteria that live in the ground are grouped together under the name coliform bacteria. *E. coli* can be the causative agent of several intestinal and extra-intestinal infections such as urinary tract infections, meningitis, peritonitis, mastitis, septicemia and gram-negative pneumonia.

Source: CDC: Center for Disease Control and Prevention

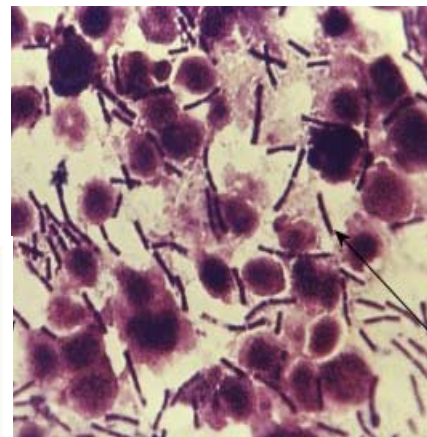
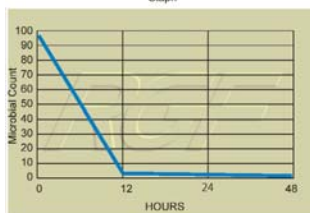
Tested by Kansas State University Inactivation Rate 99+%



### **Bacillus Globigii**

*Bacillus globigii* lives in soils around the world and can readily be found in samplings of wind-borne dust particles. It is also known as *Bacillus subtilis*, its more modern name. The National Institutes of Health's Centers for Disease Control lists BG as a "Class 1" organism, meaning it is harmless and non-pathogenic to humans. It can be purchased commercially and has been used for decades in biological studies. *B. globigii* has the ability to form a tough, protective endospore, allowing the organism to tolerate extreme environmental conditions, making it a perfect surrogate for testing systems and procedures against *Bacillus anthracis*. *B. globigii* is also often used as the Gram-positive equivalent of *Escherichia coli*, an extensively studied Gram-negative rod.

Information source: CDC (Center for Disease Control) and Los Alamos National Laboratory



Tested by Kansas State University Inactivation Rate 99+%

### **Staphylococcus Aureus**

*Staphylococcus aureus*, often referred to simply as "staph," is a bacteria commonly found on the skin and in the nose of people. Person-to-person transmission is the usual form of spread and occurs through contact with secretions from infected skin lesions, nasal discharge or spread via the hands. *S. aureus* is a spherical bacterium (coccus) which on microscopic examination appears in pairs, short chains, or bunched, grape-like clusters. These organisms are Gram-positive. Some strains are capable of producing a highly heat-stable protein toxin that causes illness in humans. Some isolates of *S. aureus* are classified as Methicillin-resistant *Staphylococcus aureus* (MRSA). These are a type of bacteria that are resistant 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.

Information source: CDC (Center for Disease Control) and FDA (Food and Drug Administration)



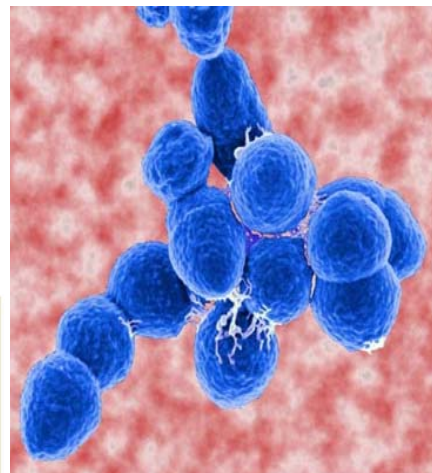
Tested by Kansas State University Inactivation Rate 99+%

### **Streptococcus Pneumoniae**

*S. pneumoniae* 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. Thus, carriers of *S. pneumoniae*, while generally healthy, are an important source of infection and disease for others. The most common types of infections caused by this bacteria include middle ear infections, pneumonia, blood stream infections (bacteremia), sinus infections, and meningitis. In the 1940s, penicillin antibiotics became available and were used effectively to treat pneumococcal infections. During the 1960s, however, the first pneumococcal bacteria that were not susceptible ("resistant") to penicillin were discovered in humans. Since then, penicillin resistant pneumococcal bacteria have been reported all over the world.

Information source: CDC (Centers for Disease Control)

Tested by Kansas State University Inactivation Rate 99+%

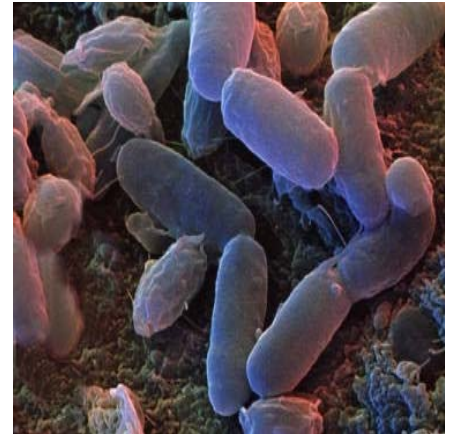
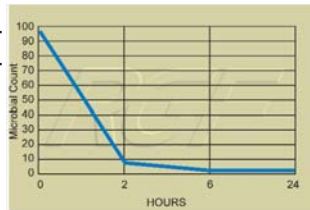


**Bacillus spp.**

*Bacillus cereus* is a Gram-positive, facultatively aerobic sporeformer whose cells are large rods and whose spores do not swell the sporangium. These and other characteristics, including biochemical features, are used to differentiate and confirm the presence of *B. cereus*, although these characteristics are shared with *B. cereus* var. *mycoides*, *B. thuringiensis* and *B. anthracis*. *B. cereus* food poisoning is the general description, although two recognized types of illness are caused by two distinct metabolites. All people are believed to be susceptible to *B. cereus* food poisoning.

Source: U.S. Food and Drug Administration

Tested by Kansas State University Inactivation Rate 99+%

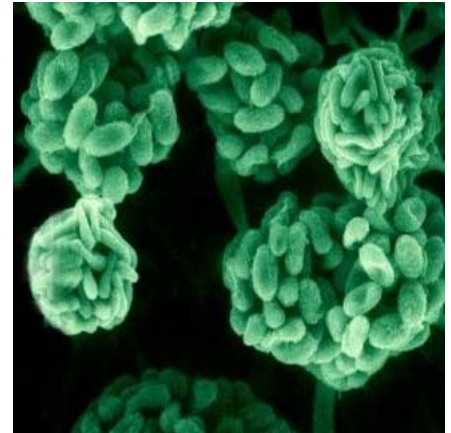
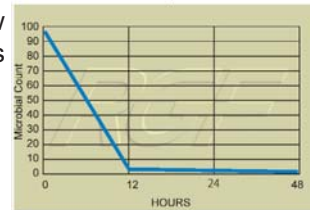


**Stachybotrys chartarum**

*Stachybotrys* is a greenish-black fungus found worldwide that colonizes particularly well in high-cellular material, such as straw, hay, paper, dust, lint, and cellulose-containing building materials such as fiber board and gypsum board that become chronically moist or water damage due to excessive humidity, water leaks, condensation or flooding. *Stachybotrys chartarum* grows and produces spores in the temperature range of 36-104F. It is also capable of producing several toxins however, researchers still know little about the temperature and moisture conditions under which these toxins are produced.

Source: Health and Industry

Tested by Kansas State University Inactivation Rate 99+%

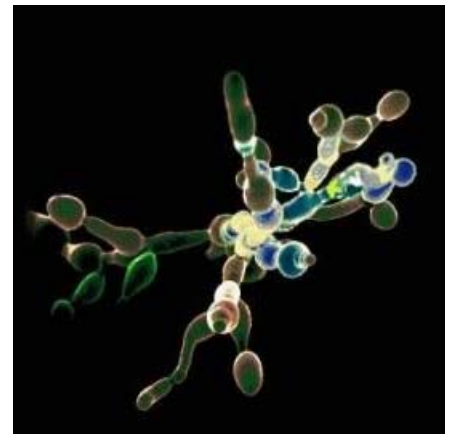


**Candida albicans**

*Candida albicans* is a diploid sexual fungus (a form of yeast), and a causal agent of opportunistic oral and vaginal infections in humans. Systemic fungal infections have emerged as important causes of morbidity and mortality in immunocompromised patients (e.g., AIDS, cancer chemotherapy, organ or bone marrow transplantation). In addition, hospital-related infections in patients not previously considered at risk (e.g. patients on an intensive care unit) have become a cause of major health concern.

Source: CDC: Center for Disease Control and Prevention

Tested by Kansas State University Inactivation Rate 99+%

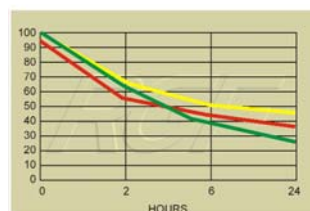


**Odors**

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)

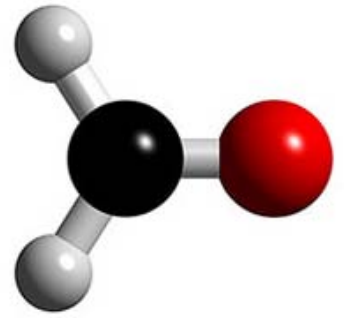
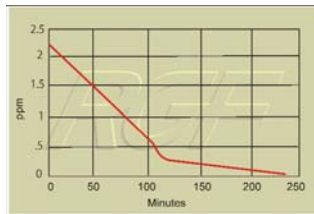
- Reduction %
- Yellow Cleaning chemicals 55+%
- Green Pet odors 72%
- Red Perfume odors 63+%



### Formaldehyde

The purpose of this test was to evaluate the effect the RGF AOT unit has on formaldehyde.

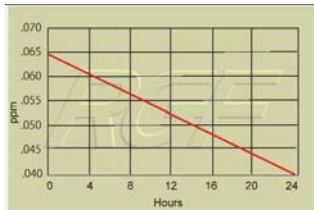
Tests were conducted in test chamber by Kansas State University



### Formaldehyde

The purpose of this test was to evaluate the effect the RGF AOT unit has on formaldehyde in a home.

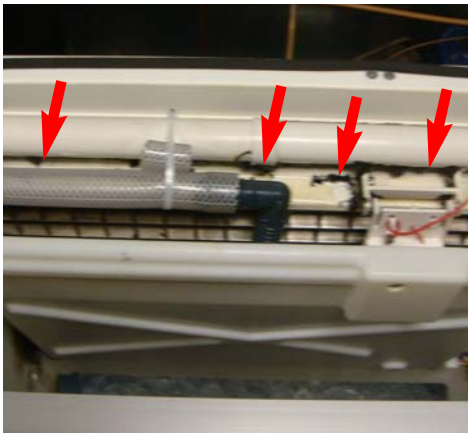
Tests were conducted in actual mobile homes for FEMA.



### Subway Corp. Ice Machine Test

The purpose of this test was to evaluate the effect the RGF AOT unit has on ice machines used in Subway Sandwich stores

Tests were conducted in actual store.



Before testing and cleaning visible microbial growth.



Clean Ice Machine start of testing at Subway Corp.



3 months later using RGF Ice Units no visible microbial growth.

**Chemical odors (VOCs)**

The purpose of this test was to evaluate the effect the RGF's AOT unit has on chemical odors.

Tests were conducted by GC/MS

Tested by NELAP Accredited Independent Lab

**Reduction %**

- Toluene 29%
- D-limonene 98%
- Methyl Ethyl Ketone 13%



**Mold/Yeast**

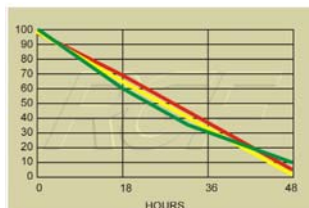
The purpose of this test was to evaluate the effect the RGF AOT unit has on mold/yeast bacteria (TPC). This test was performed utilizing a standard 2000 sq. ft. home and 3000 sq. ft. simulated home.

Tested by California Microbiology Center  
Independent Accredited Lab - IBR

Kansas State University  
University of Florida  
United States Air Force  
R&D Labs  
C&W Engineering  
University of Cincinnati  
Kane Regional Hospital

**Reduction %**

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



**Chemical Compounds**

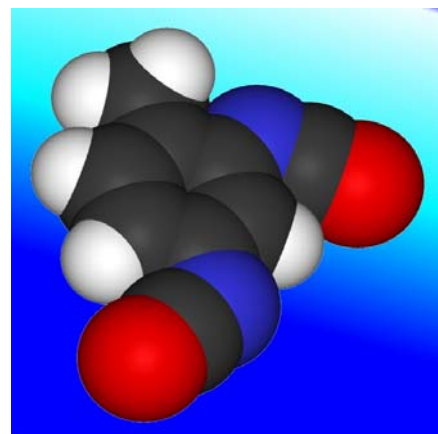
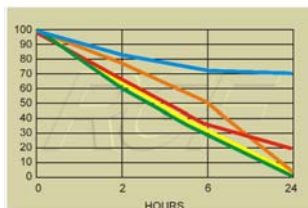
Gas Chromatograph/Mass Spectrometer test performed by Nelap Accredited Lab on airborne chemical compound reduction using RGF's AOT.

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

Tested by GC/MS Nelap Accredited Independent Lab

**Reduction %**

- Hydrogen Sulfide 80%
- Methyl mercaptan 100%
- Carbon Disulfide 30%
- Butyl Acetate 100%
- Methyl Metharcyline 100%

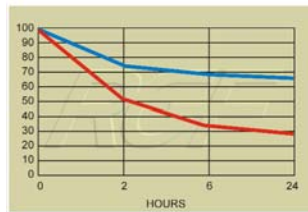


### Smoke (Odors and Particulates)

The purpose of this test was to evaluate to what effect the RGF's AOT unit has on cigarette smoke odors and particulate. 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. Particulate was tested with a laser particle counter.

Tested by C&W Engineering (Independent PE Firm)

Reduction %  
Smoke odors 70%  
Smoke particulate 25%

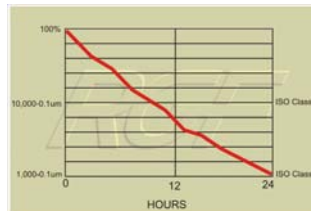


### Particulate (REME only)

The REME Cell is also effective in reducing particle counts in the controlled chamber. Particle counts are reduced to ISO Class 4 levels (10,000 - 0.1um) after 12 hours of exposure to the REME Cell. After 24 hours of treatment, ISO Class 3 levels (1,000 - 0.1um) were achieved. These are better than HEPA results.

Tested By Kansas State University  
Performance Analytical Labs

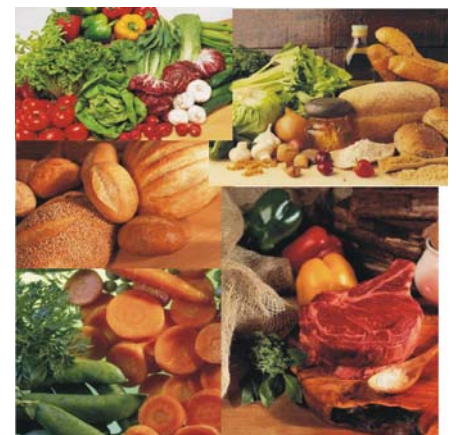
Reduction  
12 hours ISO Class 4 (10,000 - 0.1um)  
24 hours ISO Class 3 (1,000 - 0.1um)



### Food Safety

RGF's AOP Devices were approved by the USDA and FDA in 2001 for use in food processing facilities worldwide. Since the approval RGF has had AOP equipment in every aspect of food processing; meat, poultry, fish, grain, fruit, vegetables, processed meats, ready to eat and restaurants.

Tested and approved for use in plants by USDA, FDA and FSIS.  
Tested for safe reduction of airborne and surface bacteria, mold, virus and yeast in food processing plants.





**Electrical**

All RGF AOP devices have been thoroughly tested for electrical safety in house, by consultants and certified independent agencies. Results were excellent.

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

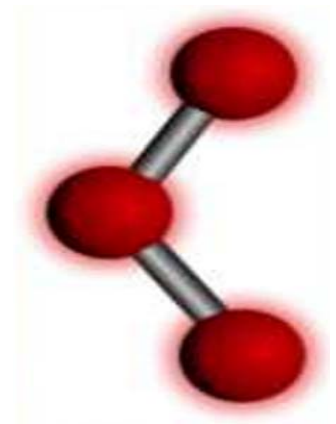


**Ozone / EMF**

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

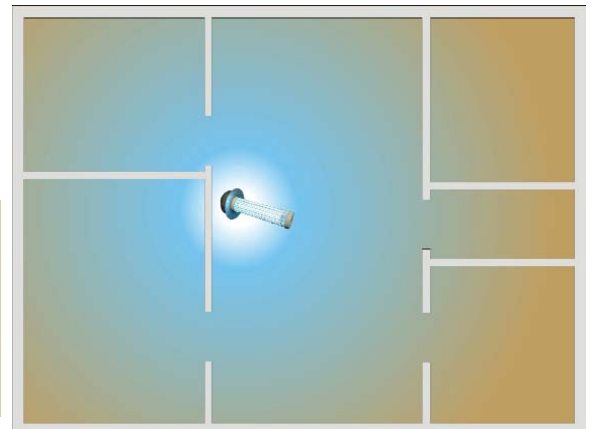
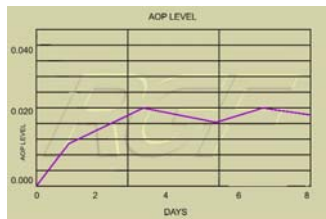
Tested by: FSIS Federal Safety Inspection Services  
UL, ETL, TUV, CSA  
ISSES / Disney

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



**Effective Coverage (Area Test)**

A 3000 sq.ft. simulated house was constructed inside a windowless warehouse. The simulated house was constructed of virgin poly and was completely emptied and then sanitized. A PHI cell was placed in the center of the mock home to determine the effective area of coverage for a single cell. Results were obtained showing AOP levels of .01-.02 ppm in each room (results will vary with virus, bacteria, organic, VOC, and odor loading). It is highly unlikely a cell will ever be used in a completely empty, sanitized, and organic (load) free room. This test was to demonstrate theoretical coverage. In practice, one cell will effectively cover 2,000 square feet of an average home.



Tested by: RGF Labs, verified by independent P.E.

## Sneeze Test - REME

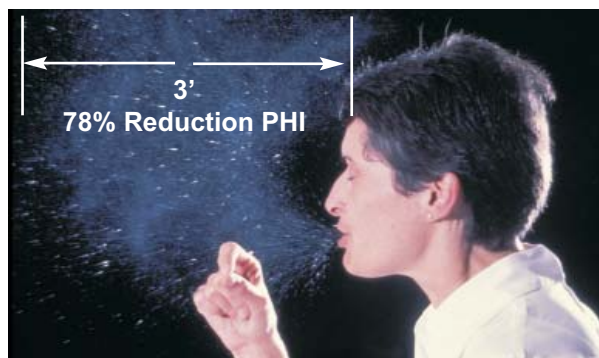
A testing protocol concept was used which included a "Sneeze Simulation Machine" and "Sneeze" chamber. A sneeze can travel at up to 100 mph, so we had to consider lung capacity, sneeze pressure, and liquid volume to properly simulate a human sneeze. This was accomplished and the test proceeded with outstanding results. An average of 99% reduction of microbials was achieved with REME in a double blind test, at 3 feet from the sneeze source. This is clearly not a medically supervised test or protocol. However, from a practical point, it was definitely providing some kill at the source and will provide some level of protection.

Tested by: Kansas State University, inactivation 99%



## Sneeze Test - RGF PHI

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 we had to consider lung capacity, sneeze pressure, and liquid volume to properly simulate a human sneeze. This was accomplished and the test proceeded with outstanding results. An average of 78% reduction of microbials was achieved with PHI in a double blind test, at 3 feet from the sneeze source. This is clearly not a medically supervised test or protocol. However, from a practical point, it was definitely providing some kill at the source and will provide some level of protection.



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

## 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 microbials. 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.

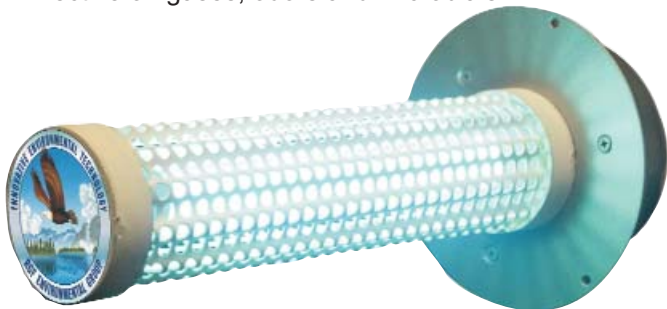
There is no known case of hydroperoxides ever creating a health risk. Considering we have been exposed to hydroperoxides in nature since the day man stepped on the planet, it is a reasonable assumption that hydroperoxides do not constitute a health risk. Over the past 20 plus years RGF has more than 1 million Advanced Oxidation products successfully used worldwide.

## Summary of university & independent lab tests

- 4-log reduction (99.99%) surface bacteria / virus reduction
- Over 80% VOC reduction
- 99% of microbes in human sneeze killed at 3 feet
- 97% airborne bacterial reduction
- 99% reductions of Ecoli, Listeria, Strep and Bird Flu
- 85% odor reduction
- 97% airborne mold reduction
- US Military approved for mold protection in field hospitals
- Hospital approvals Infectious Diseases - U.S. and International 99% reduction of Staph (MRSA)
- 99% food surface microbial reduction
- Major US city school reports 20% reduction in absenteeism
- Tested and approved by the Chinese Government for protection against the SARS Virus
- Approved by the USDA, FSIS and FDA for use in food processing plants
- Fox News three-part indoor air series featured RGF and concluded substantial mold and bacteria reductions
- RGF's technology has been featured on Fox, ABC, CBS and in Popular Science Magazine

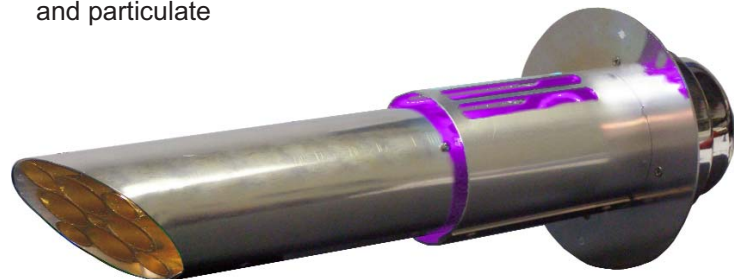
### RGF Guardian Air PHI Cell

An RGF Advanced Oxidation Technology  
Effective on gases, odors and microbials



### RGF Guardian Air REME Cell

An RGF Advanced Oxidation Technology  
Effective on gases, odors, microbials  
and particulate



### Disclaimer:

All the above tests were performed on RGF Advanced Oxidation products with Advanced Oxidation Plasma of less than .02 ppm. 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.