



The Worlds Most Popular Destratification  
& Airflow Circulation Fan Manufacturer

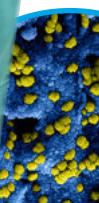
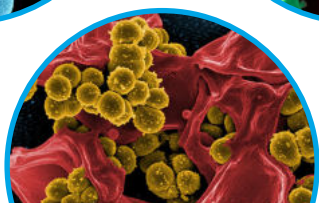
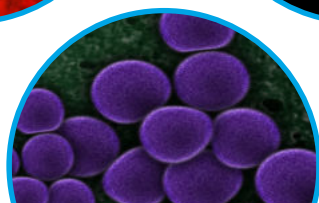
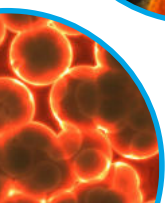
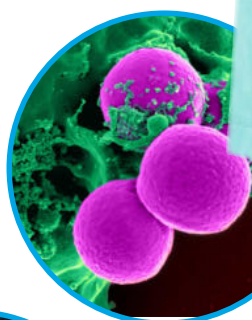
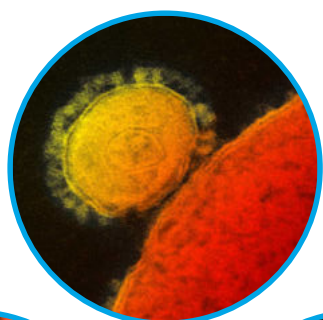
Web: [www.airius.co.uk](http://www.airius.co.uk)

Tel: +44 (0) 1202 554200

# PUREAIR SERIES: AIR & SURFACE PURIFICATION

PUREAIR  
series

Supporting Test  
Data Brochure



# TRUST IN AIRIUS

**Formed in 2004, we have revolutionised the air purification and energy reduction industry.**



**Airius has helped thousands of businesses,** from SMEs to major blue chip companies make real improvements in air quality, as well as a significant reduction in energy usage.

## Table of Contents

03. What Is The Airius PureAir?  
Clean your air & eliminate odours
04. The PHI Cell  
Photohydroionization technology
05. Hydroperoxides  
Breakthrough Technology
06. Independent Test Results  
Microbial reductions
07. Testing Summaries  
COVID19, MRSA, H1N1 (Swine Flu), H5N1 (Bird Flu)
08. Testing Summaries  
SARS, Norwalk Virus, Clostridium Difficile (C-Diff), Tuberculosis
09. Testing Summaries  
Legionella, Pseudomonas Sp, Bacillus Spp, Stachybotrys Chartarum
10. Testing Summaries  
Escherichia Coli, Streptococcus Pneumoniae, Listeria, Candida Albicans
11. Testing Summaries  
Streptococcus Sp, Bacillus Globigii, Staphylococcus Aureus, Mold/Yeast
12. Testing Summaries  
Odours, Smoke, Formaldehyde
13. Testing Summaries  
Coverage Area, Sneeze Test, Chemical Odours (VOC's) Ozone (EMF)
14. Testing Summaries  
Food Safety, Ice Machine Test, Electrical
15. Airius Destratification Systems  
Reduce HVAC Costs By up to 50% & Improve Comfort



# What is the Airius PureAir?

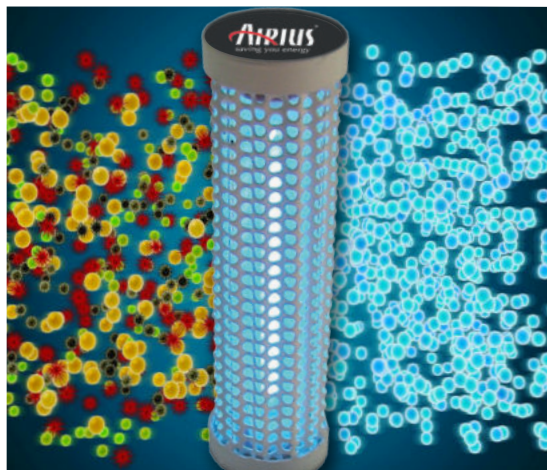
**T**he Airius PureAir Series is an air purification and airflow circulation fan system, incorporating the latest in PHI (Photohydroionization) Cell technology from RGF Environmental, one of the worlds leading specialists in air, water and food purification, to efficiently and effectively neutralise up to 99%+ of all harmful germs, bacteria, viruses, mould and other contaminants in any internal environment.

The PHI Cell emits 'Ionised Hydroperoxides', a naturally occurring cleaning agent, which are circulated throughout spaces via the fan. As the fans continue to circulate internal atmosphere, the PHI circulates its neutralising Ionised Hydroperoxides, providing 24/7 continuous Air Purification.

The PureAir also provides all the features and benefits of the world's most popular destratification and airflow circulation fan, balancing temperatures, improving comfort, reducing heating and cooling costs and reducing carbon emissions.



## How does it work?



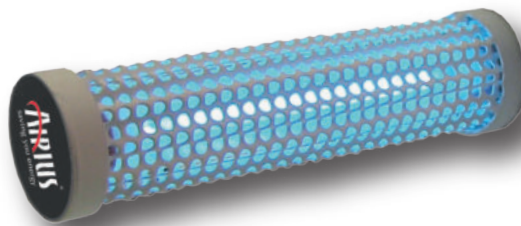
The Airius PureAir Series incorporates a patented PHI (Photohydroionization) Cell within the fan unit, which projects a broad spectrum HE/UV light on to a quad metallic catalyst target in a moist atmosphere. This process causes a unique oxidation reaction that produces friendly oxidisers called 'Ionised Hydroperoxides'.

Hydroperoxides are known as 'Mother Nature's Cleaning Agent' and are what make the air smell clean after a Thunderstorm.

# The PHI Cell

University & Independent lab tests on RGF Environmental PHI (Photohydroionization) Advanced Oxidation Technology

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



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

4

In addition, PHI 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. PHI products are not medical devices and no medical claims are made.

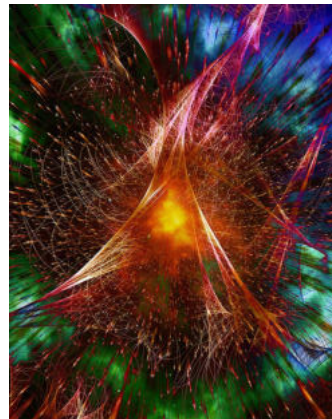
## Tests Summary

- 4-log reduction (99%+) surface bacteria / virus reduction
- 99% reductions of E. coli, Listeria, Staph, SARS and MRSA
- 99% odour reduction
- 99% food surface microbial reduction
- 98% mould reduction
- 97% airborne bacteria / virus reduction
- 99% reduction of Staph (MRSA) and approved for use in Hospitals internationally
- 80%+ reduction of gases, vapours and VOCs
- 99% of microbes in sneeze killed within 3 feet
- 20% reduction in absenteeism reported by major city schools
- Tested & approved for SARS protection by the Chinese Government
- Military approved for mould protection in field hospitals
- Approved by the USDA, FSIS and FDA for use in food processing plants
- Fox News indoor air series featured PHI & concluded substantial mould & bacteria reductions
- PHI technology has also been featured on Fox, ABC, CBS & in Popular Science Magazine

# Hydroperoxides

PHI advanced oxidation technology and the use of Hydroperoxides for purification fall into the category of breakthrough technology.

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



Hydroperoxides are very effective 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 odours). The amount of hydroperoxides required to accomplish this in a conditioned space is well below levels already in our outside air.

There is no known case of hydroperoxides ever creating a health risk and considering humans have been exposed to hydroperoxides in nature since the beginning of time, it is a reasonable assumption that hydroperoxides do not constitute a health risk.

## Tested & Certified

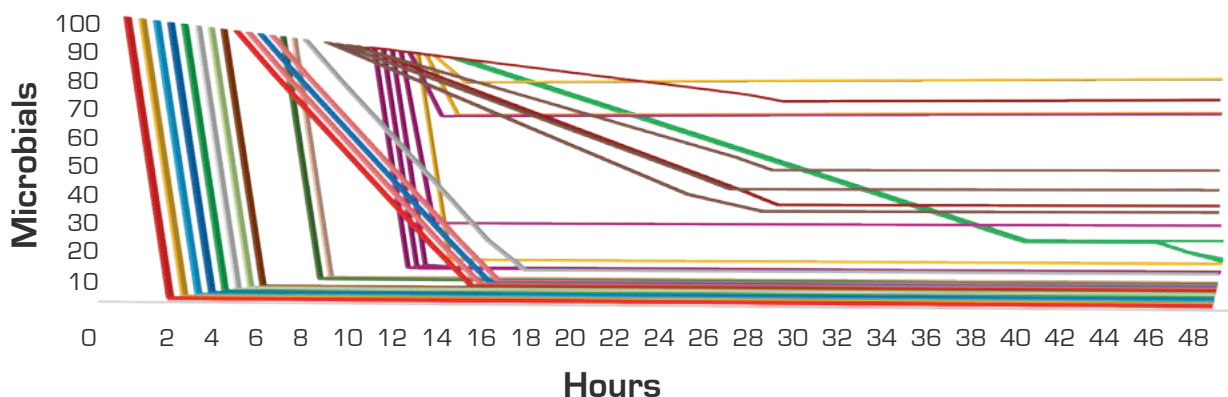


The Laboratories, Universities and Organisations above are but a few of the certifying bodies to have tested RGF PHI Technology.

These, in addition to all the Testing Organisations named in the table opposite, have had their results reviewed and verified by the United States Government.

# PHI Independent Test Results

## Microbial Reduction over 24-48 hours



6

	Reduction	Time Period	Tested By
COVID19 (SARS-CoV-2)	99%+	24 Hours	Innovative Bioanalysis Laboratories
MRSA	99%+	24 Hours	Kansas State University
SWINE & BIRD FLU	99%+	24 Hours	Kansas State University
SARS	99%+	24 Hours	NEI-Chinese Government
NORWALK VIRUS	99%+	24 Hours	Midwest Research Institute
CLOSTRIDIUM DIFFICILE	99%+	24 Hours	Kansas State University
TUBERCULOSIS	99%+	24 Hours	Kansas State University
LEGIONELLA	99%+	24 Hours	Kansas State University
PSEUDOMONAS SP.	99%+	24 Hours	Kansas State University
BACILLUS SPP.	99%+	24 Hours	Kansas State University
STACHYBOTRYS CHARTARUM	99%+	48 Hours	Kansas State University
E. COLI	99%+	48 Hours	Kansas State University
STREPTOCOCCUS PNEUMONIAE	99%+	48 Hours	Kansas State University
LISTERIA	99%+	48 Hours	Kansas State University, Steris Labs, KAG, Eco Labs
CANDIDA ALBICANS	99%+	48 Hours	Kansas State University
STREPTOCOCCUS SP.	96%+	48 Hours	Kansas State University
BACILLUS GLOBIGII	99%+	48 Hours	Kansas State University
STAPHYLOCOCCUS AUREUS	99%+	48 Hours	Kansas State University
MOULD	-	-	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
Bacteria	99%+	48 Hours	
Mould	97-98%+	48 Hours	
Yeast	90%+	48 Hours	
ODOURS			
Pet Odours	72%+	24 Hours	C&W Engineering
Perfume Odours	63%+	24 Hours	
Cleaning Chemicals	55%+	24 Hours	
OZONE /			
SMOKE			
Odour	70%+	24 Hours	C&W Engineering
Particulates	25%+	24 Hours	
VOCs			
D-limonene	98%+	24 Hours	NELAP Accredited Independent Lab
Toluene	29%+	24 Hours	
Methyl Ethyl Ketone	13%+	24 Hours	
CHEMICAL COMPOUNDS			
Methyl Mercaptan	100%	24 Hours	NELAP Accredited Independent Lab
Butyl Acetate	100%	24 Hours	
Methyl Metharcylene	100%	24 Hours	
Hydrogen Sulfide	80%+	24 Hours	
Carbon Disulfide	30%+	24 Hours	
OZONE / EMF	-	-	FSIS, UL, ETL, TUV, CSA, ISSES, Disney

## CORONAVIRUS

In independent tests RGF PHI Cell technology was shown to have a 99.9% inactivation rate on surface and 99.5% inactivation rate on aerosol forms of the SARS-CoV-2 (COVID19) virus.

Testing commenced in March carried out in a 36m<sup>3</sup> (1,280ft<sup>3</sup>) testing chamber using the SARS-CoV-2 virus, not a surrogate or similar virus. Results show the virus is killed on contact with the PHI's cleaning agents, effectively neutralising the virus within the chamber within a matter of minutes.

It is important to note that no medical claims are made.

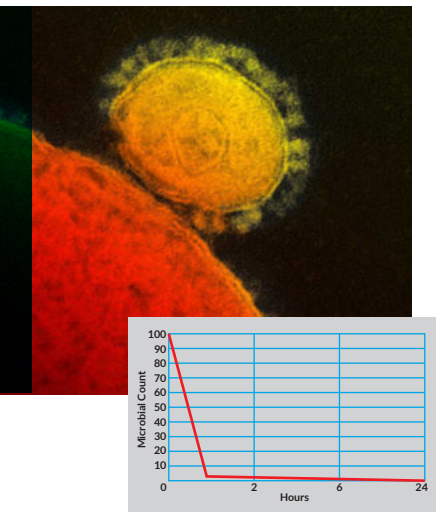
**Disclaimer:** All the tests above were performed on the RGF Environmental Reme Halo PHI Advanced Oxidation system with Advanced Oxidation Plasma of less than .02 ppm. They were conducted by independent accredited labs and university studies. They were funded and conducted by major RGF Environmental clients to assure third party credibility. PHI products are not medical devices and no medical claims are made.

## COVID19 (SARS-CoV-2)

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

In independent tests RGF PHI Cell technology was shown to have a 99% inactivation rate on surface and 99.5% inactivation rate on aerosol forms of the SARS-CoV-2 (COVID19) virus. Testing commenced in March carried out in a 36m<sup>3</sup> (1,280ft<sup>3</sup>) testing chamber using the SARS-CoV-2 virus, not a surrogate or similar virus. Results show the virus is killed on contact with the PHI's cleaning agents, effectively neutralising the virus within the chamber within a matter of minutes.

**TESTED BY:** Innovative Bioanalysis Laboratories  
**INACTIVATION RATE:** 99%+

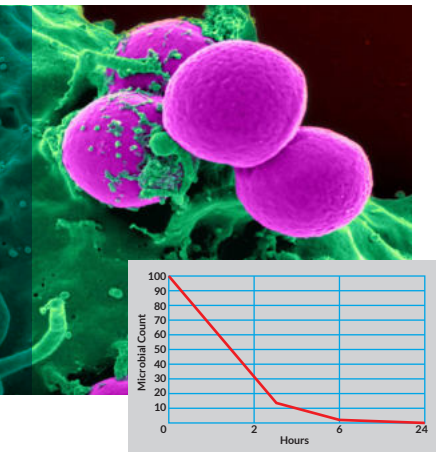


## MRSA

Methicillin-resistant Staphylococcus aureus (MRSA) is an infection caused by Staphylococcus (staph) bacteria. This type of bacteria is resistant to many different antibiotics. These bacteria naturally live in the nose and on the skin and generally don't cause any harm. However, when they begin to multiply uncontrollably, infection can occur.

MRSA infections typically occur when there's a cut or break in your skin. MRSA is very contagious and can be spread through direct contact with a person who has the infection. It can also be contracted by coming into contact with an object or surface that's been touched by a person with MRSA. Though a MRSA infection can be serious, it may be treated effectively with certain antibiotics.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

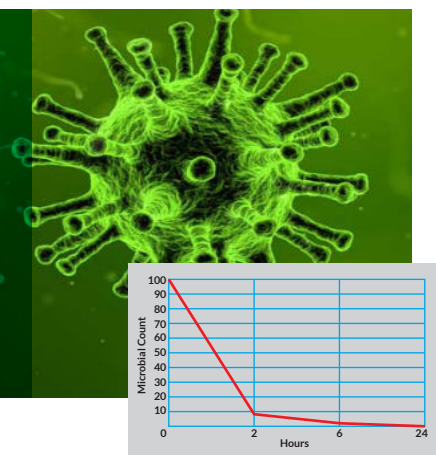


## H1N1 (Swine Flu)

Swine flu, also known as the H1N1 virus, is a strain of an influenza virus that causes symptoms similar to the regular flu. It originated in pigs but is spread primarily from person to person. Swine flu made headlines in 2009 when it was first discovered in humans and became a pandemic. Pandemics are contagious diseases affecting people throughout the world or on multiple continents at the same time.

The World Health Organization (WHO) Trusted Source declared the H1N1 pandemic over in August 2010. Since then, the H1N1 virus has been known as a regular human flu virus. It continues to spread during flu season like other strains of the flu. The flu shot usually includes a vaccination against a type of H1N1 virus.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+



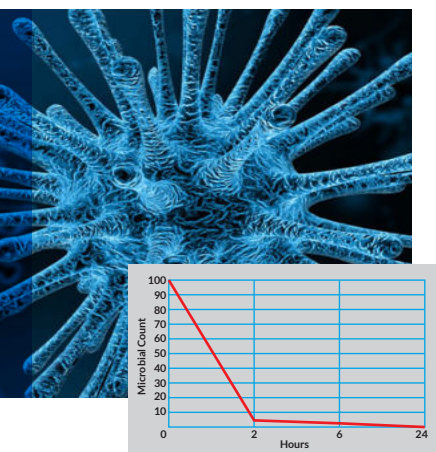
## H5N1 (Bird Flu - Avian Influenza)

Bird flu, also called avian influenza, is a viral infection that can infect not only birds, but also humans and other animals. Most forms of the virus are restricted to birds.

H5N1 is the most common form of bird flu. It's deadly to birds and can easily affect humans and other animals that come in contact with a carrier. According to the World Health Organization Trusted Source, H5N1 was first discovered in humans in 1997 and has killed nearly 60 percent Trusted Source of those infected.

Currently, the virus isn't known to spread via human-to-human contact. Still, some experts worry that H5N1 may pose a risk of becoming a pandemic threat to humans.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

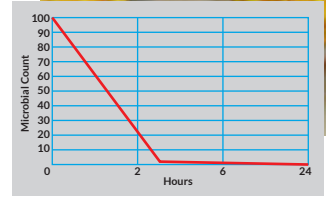


# SARS

Severe acute respiratory syndrome (SARS) is a viral respiratory disease of zoonotic origin caused by severe acute respiratory syndrome coronavirus (SARS-CoV or SARS-CoV-1), the first-identified strain of the SARS coronavirus species severe acute respiratory syndrome-related coronavirus (SARSr-CoV).

The syndrome caused the 2002–2004 SARS outbreak. In late 2017, Chinese scientists traced the virus to cave-dwelling horseshoe bats in Yunnan. SARS can spread when an infected person sneezes, coughs, or comes into face-to-face contact with someone else. You can also contract SARS by touching a surface contaminated with respiratory droplets from an infected person and then touching your eyes, mouth, or nose.

**TESTED BY:** NEI-Chineses Government  
**INACTIVATION RATE:** 99%+

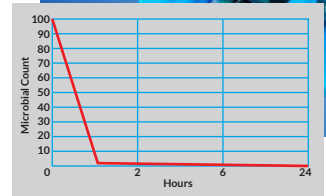
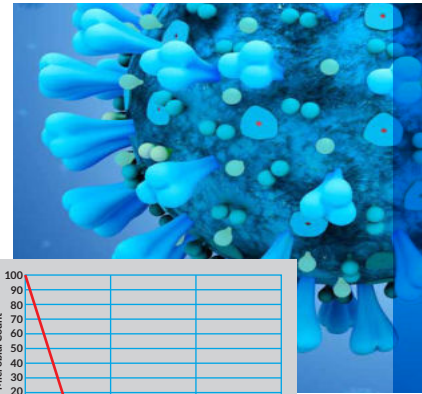


# Norwalk Virus

Norwalk virus is a common cause of vomiting and diarrheal illness each winter and has often been referred to as "stomach flu" or "Winter Vomiting Disease". Norwalk virus infections have been linked to outbreaks of vomiting and/or diarrhea in institutions such as child-care centres and long term care facilities as well as on cruise ships, camps, schools and households.

The Norovirus group were first identified as the cause of a primary school outbreak of vomiting/diarrhea in Norwalk, Ohio during the early 1970's. The group consists of related viruses that share similar symptoms and epidemiology. This virus group causes viral gastroenteritis predominately during the winter in temperate climates.

**TESTED BY:** Midwest Research Institute  
**INACTIVATION RATE:** 99%+

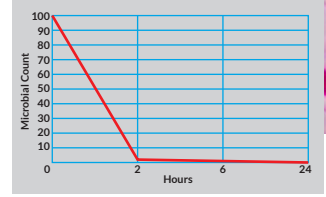
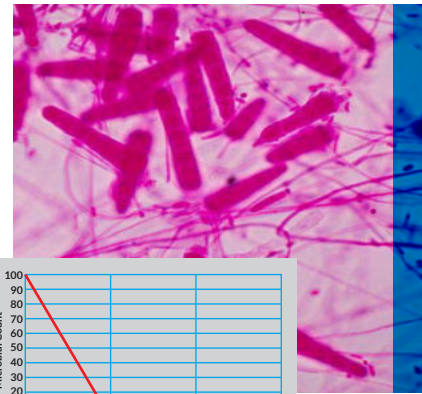


# Clostridium Difficile (C-Diff)

Clostridium difficile, also known as C. difficile or C. diff, is bacteria that can infect the bowel and cause diarrhoea. Many hospitals have been waiting for more information on C-Diff bacteria as it may be as big a problem or bigger than MRSA. The infection most commonly affects people who have recently been treated with antibiotics. It can spread easily to others. Illness from C. difficile most commonly affects older adults in hospitals or in long-term care facilities.

However, studies show increasing rates of C. difficile infection among people traditionally not considered to be at high risk, such as young and healthy individuals who haven't used antibiotics and who haven't been in a health care facility.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

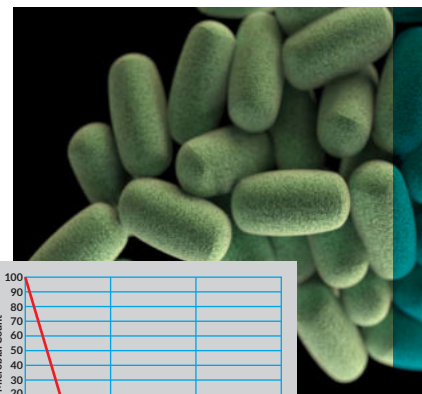


# Tuberculosis

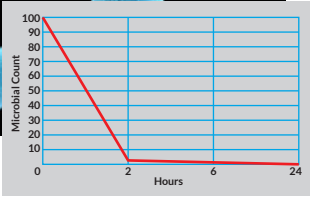
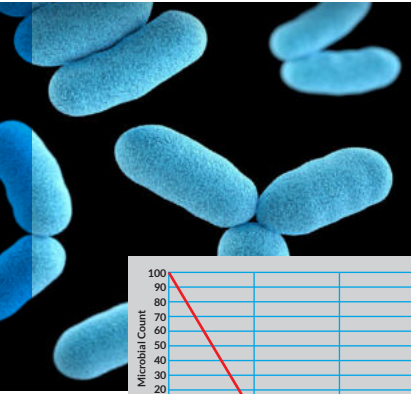
Tuberculosis (TB) is caused by a bacterium called Mycobacterium tuberculosis. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain. Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and TB disease. If not treated properly, TB disease can be fatal.

About 10% of latent infections progress to active disease which, if left untreated, kills more than 50% of those affected. The classic symptoms of active TB are a chronic cough with blood-containing mucus, fever, night sweats, and weight loss. Infection of other organs can cause a wide range of symptoms.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+





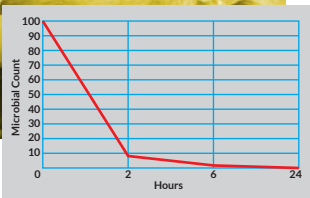
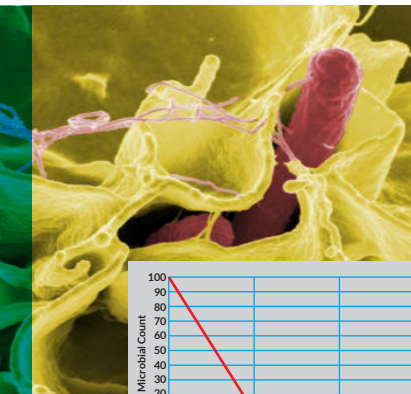


## Legionella

Legionella is a thin, aerobic, pleomorphic, flagellated, non-spore-forming, Gram-negative bacterium of the genus Legionella. Legionella Pneumophila is the primary human pathogenic bacterium in this group and is the causative agent of Legionnaires' disease, also known as legionellosis.

Legionella bacteria thrive in warm water. People become infected with Legionella by breathing in contaminated droplets of water in the air. Outbreaks have been linked to water systems in hospital buildings and to whirlpool spas in hotels and cruise ships. In general, people do not spread Legionnaires' disease and Pontiac fever to other people. However, this may be possible under rare circumstances.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

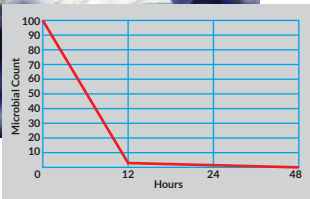
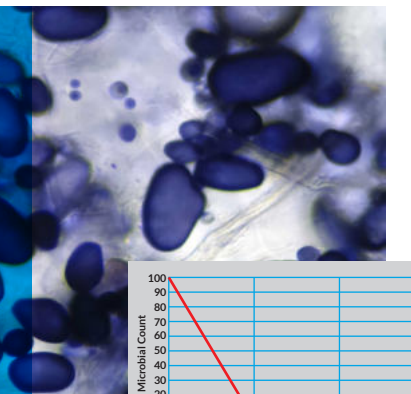


## Pseudomonas Sp.

Pseudomonas bacteria are found widely in our environment, such as in soil, water, and plants. They usually do not cause infections in healthy people. If an infection does occur in a healthy person, it is generally mild. More severe infections occur in people who are already hospitalized with another illness or condition, or people who have a weak immune system.

Pseudomonades are fairly common pathogens involved in infections acquired in a hospital setting. Infections can occur in any part of the body and symptoms depend on which part of the body is infected. Antibiotics are used to treat the infections, but Pseudomonas infections can be fatal in people who are already ill.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

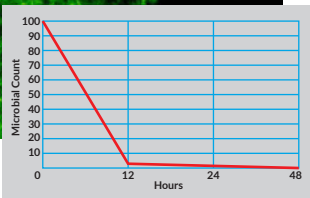
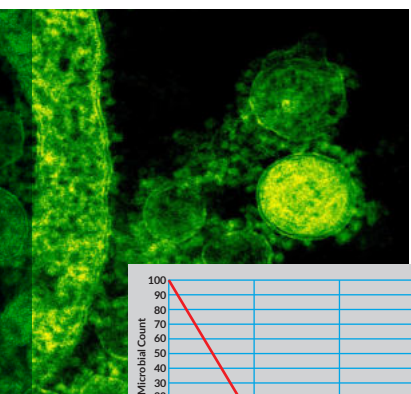


## Bacillus Spp.

Bacillus spp are gram positive, aerobic spore forming rods whose cells are large rods and do not swell the sporangium. Except for few species the large majority have no pathogenic potential and have never been associated with disease in man or animals.

These and other characteristics, including biochemical features, are used to differentiate and confirm the presence of Bacillus Cereus, although these characteristics are shared with Bacillus Cereus var. mycoides, Bacillus Thuringiensis and Bacillus Anthracis. Bacillus 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 Bacillus Cereus food poisoning.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+



## Stachybotrys Chartarum

Stachybotrys chartarum also known as black mold or toxic black mold, is a slow-growing greenish black mold. It is sometimes found in soil and grain, but is most often detected in cellulose-rich building materials from damp or water-damaged buildings. Stachybotrys chartarum may produce several toxic chemicals called mycotoxins. These chemicals can be found in spores and small fungus fragments released into the air.

There is a potential for people to develop symptoms such as coughing, wheezing, runny nose, irritated eyes or throat, particularly if the person has developed an allergy to this fungus and Stachybotrys chartarum has been blamed for pulmonary hemosiderosis (bleeding in the lungs) in a small number of infants.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

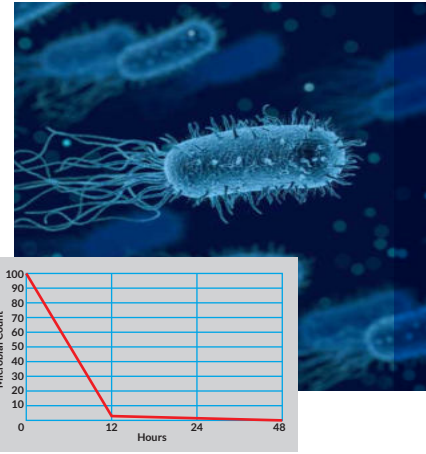
# Escherichia Coli

E. coli is a type of bacteria that normally live in the intestines of people and animals. Symptoms of intestinal infection include diarrhea, abdominal pain, and fever.

More severe cases can lead to bloody diarrhea, dehydration, or even kidney failure. People with weakened immune systems, pregnant women, young children, and older adults are at increased risk for developing these complications.

Most intestinal infections are caused by contaminated food or water. Proper food preparation and good hygiene can greatly decrease your chances of developing an intestinal infection. Most cases of intestinal E. coli infection can be treated at home.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

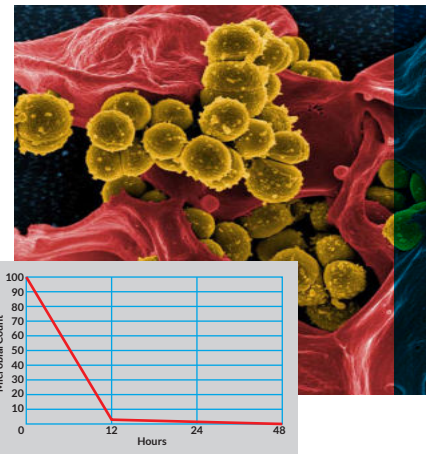


# Streptococcus Pneumoniae

Streptococcus pneumoniae (pneumococcus) is an exclusively human pathogen which causes pneumococcal disease and is spread to others when they cough or sneeze. Pneumococcus bacteria can cause infections in many parts of the body, including lungs (pneumonia), ears (otitis), sinuses (sinusitis), blood (bacteremia), brain and spinal cord tissue (meningitis).

Symptoms of pneumococcal infection depend on the part of the body affected and can include fever, cough, shortness of breath, chest pain, stiff neck, confusion, increased sensitivity to light, joint pain, chills, ear pain, sleeplessness, and irritability. In severe cases, pneumococcal disease can cause hearing loss, brain damage, and death.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

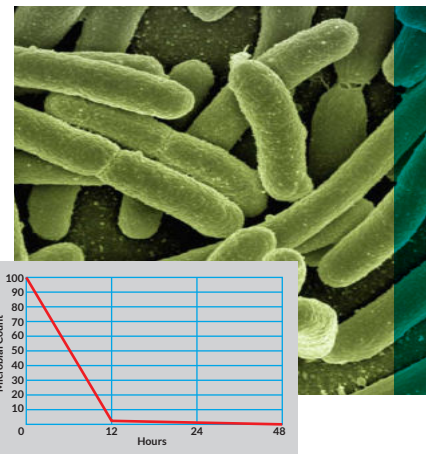


# Listeria

Listeriosis is a serious infection caused by the germ Listeria monocytogenes. People usually become ill with listeriosis after eating contaminated food. The disease primarily affects pregnant women, newborns, older adults and people with weakened immune systems.

Listeriosis is usually a mild illness for pregnant women, but it causes severe disease in the fetus or newborn baby. Some people with Listeria infections, most commonly adults 65 years and older and people with weakened immune systems, develop severe infections of the bloodstream (causing sepsis) or brain (causing meningitis or encephalitis). Listeria infections can sometimes affect other parts of the body, including bones, joints, and sites in the chest and abdomen.

**TESTED BY:** Kansas State University / Steris Labs / KAG / Eco Labs  
**INACTIVATION RATE:** 99%+

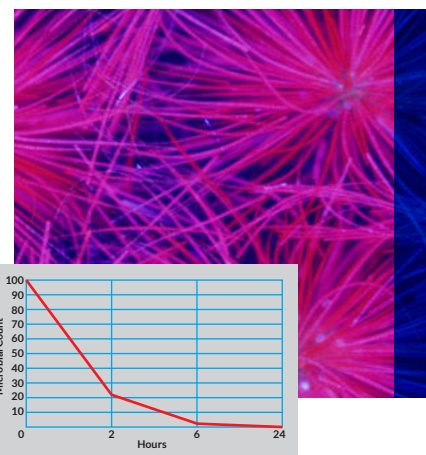


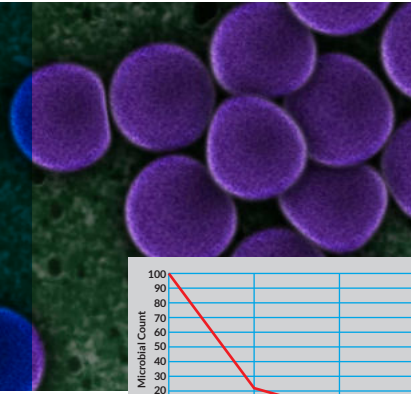
# Candida Albicans

Candida albicans is part of the natural microflora of microorganisms that commonly live in or on our bodies. It can be found in the GI tract, the mouth, and the vagina. Most of the time it causes no issues, but it's possible for overgrowths and infections to happen. Candida species are the most common cause of fungal urinary tract infections (UTIs), occurring in the lower urinary tract or in some cases it can ascend up to the kidneys.

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). Hospital-related infections in patients not previously considered at risk (e.g. ICU patients) have become a cause of major health concern.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+



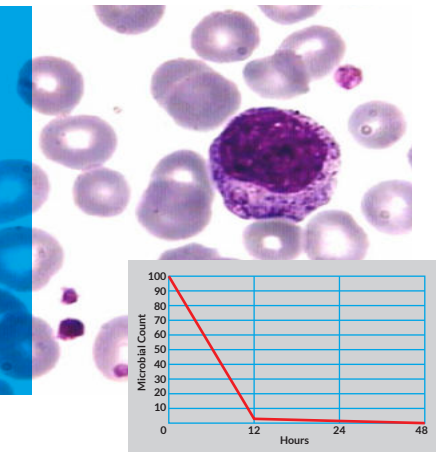


## Streptococcus Sp.

Group A streptococcal (strep) infections are caused by group A streptococcus, a bacterium responsible for a variety of health problems. These infections range from a 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. Strep throat, along with minor skin infection, is the most common form of the disease. Health experts estimate more than 10 million mild infections (throat and skin) occur every year.

In addition to strep throat and superficial skin infections, group A strep bacteria can cause infections in tissues (group of cells joined together to perform the same function) at specific body sites, including lungs, bones, spinal cord, and abdomen.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 96%+

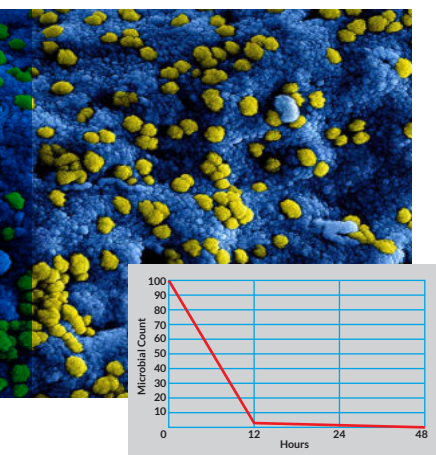


## Bacillus Globigii

Bacillus Globigii also known as Bacillus Subtilis, its more modern name. The National Institutes of Health's Centers for Disease Control lists Bacillus Globigii 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.

Bacillus 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. Bacillus Globigii is also often used as the Gram-positive equivalent of Escherichia Coli, an extensively studied Gram-negative rod.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+

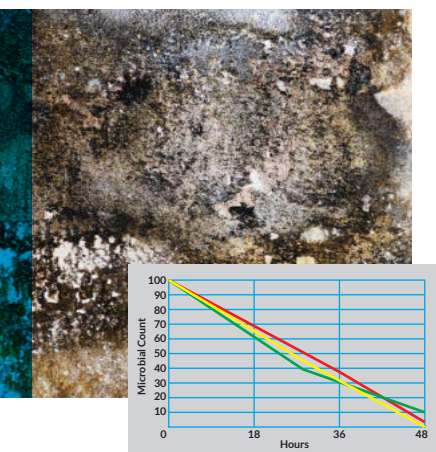


## Staphylococcus Aureus

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. 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.

Staph infections, including MRSA, occur most frequently among persons in hospitals and healthcare facilities who have weakened immune systems.

**TESTED BY:** Kansas State University  
**INACTIVATION RATE:** 99%+



## Mold/Yeast

The objective of this test was to evaluate the effectiveness the PHI unit has on mold/yeast bacteria (TPC). This test was performed using a standard 2000ft<sup>2</sup> home and 3000ft<sup>2</sup> 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

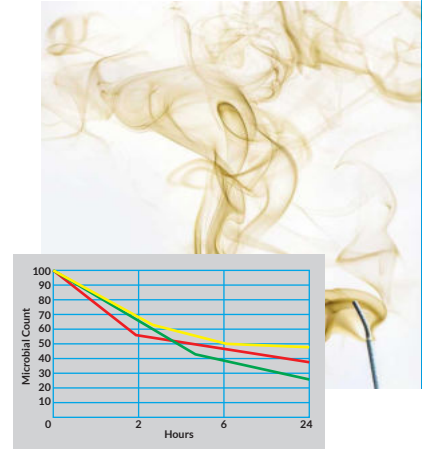
**REDUCTION:**  
■ Bacteria 99%  
■ Mold 97- 98%  
■ Yeast 90%+

# Odours

The objective of this test was to evaluate the effectiveness of the PHI unit on reducing chemicals, pet and perfume odours. The test was carried out using two 500ft<sup>3</sup> testing chambers and a panel of 10 people to evaluate the performance.

The qualitative assessments of the 10 person panel were then used as a means to determine the odour reduction.

**TESTED BY:** C&W Engineering (Independent PE Firm)  
**REDUCTION:** ■ Cleaning chemicals 55%+  
■ Pet odours 72%  
■ Perfume odours 63%+



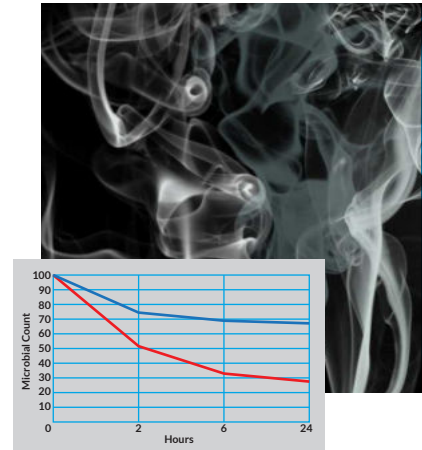
# Smoke (Odours and Particulates)

The objective of this test was to evaluate the effectiveness of the PHI unit on cigarette smoke odours and particulate.

This test was carried out using two 500ft<sup>3</sup> test chambers and a 10 person odour panel.

The qualitative assessments of the 10 person panel were then used as a means to determine the odour reduction. Particulate was tested with a laser particle counter.

**TESTED BY:** C&W Engineering (Independent PE Firm)  
**REDUCTION:** ■ Smoke odours 70%  
■ Smoke particulate 25%



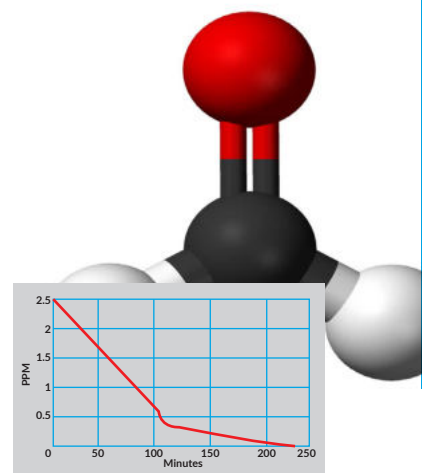
# Formaldehyde

Formaldehyde is commonly used as an industrial fungicide, germicide, and disinfectant, and as a preservative in mortuaries and medical laboratories.

Formaldehyde also occurs naturally in the environment. It is produced in small amounts by most living organisms as part of normal metabolic processes.

The purpose of this test was to evaluate the effect the PHI has on formaldehyde.

**TESTED BY:** Kansas State University in a Test Chamber  
**REDUCTION RATE:** Levels less than 0.05 ppm in 4 hours



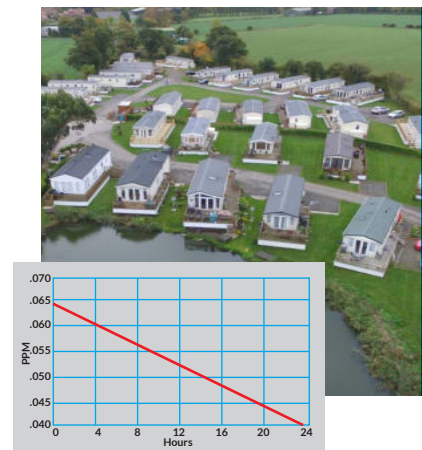
# Formaldehyde in Homes

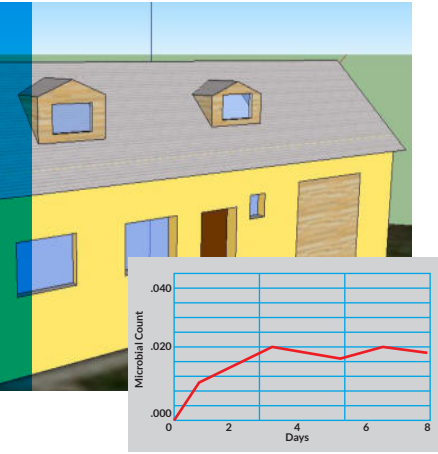
Formaldehyde is a colorless, flammable, strong-smelling chemical that is used in building materials and to produce many household products.

It is used in pressed-wood products, such as particleboard, plywood, and fiberboard; glues and adhesives; permanent-press fabrics; paper product coatings; and certain insulation materials.

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

**TESTED BY:** FEMA in Actual Mobile Homes  
**REDUCTION RATE:** Levels less than 0.04 ppm in 24 hours





## Effective Coverage (Area Test)

A 3000ft<sup>2</sup> 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 (Advanced Oxidization Process) levels of .01-.02 ppm in each room (results will vary with virus, bacteria, organic, VOC and odour 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 2,000ft<sup>2</sup> of an average home.

**TESTED BY:** RGF Labs, verified by independent P.E.



## Sneeze Test

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 all had to be considered to properly simulate a human sneeze.

An average of 99% 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 definitively providing kill at the source and will provide some level of protection.

**TESTED BY:** Simulated Sneeze Lab Test at three feet in a 250ft<sup>3</sup> Bio Test Chamber. An independent PE double blind study.  
**INACTIVATION RATE:** 99%+ Microbe Inactivation within 3ft

13



## Chemical Odours (VOCs)

The purpose of this test was to evaluate the effect the PHI unit has on chemical odours.

**TESTED BY:** GC/MS NELAP Accredited Independent Lab  
**REDUCTION:** D-limonene 98%  
 Toluene 29%  
 Methyl Ethyl Ketone 13%



## Ozone / EMF

PHI 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 fluorescent lights, motors, computers, copy machines, refrigerators, blenders, electronic air filters, air conditioners, electric fans, microwave ovens etc.*

## Food Safety

PHI Advanced Oxidation Technology has been approved by the USDA and FDA in 2001 for use in food processing facilities worldwide. Since the approval PHI AOT equipment has been incorporated in every aspect of food processing; meat, poultry, fish, grain, fruit, vegetables, processed meats, ready to eat and restaurants.

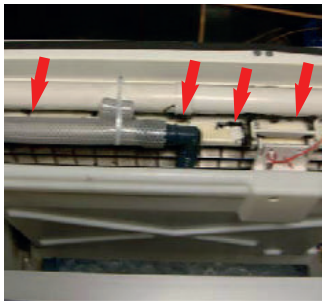
Tested and approved for safe reduction of airborne and surface bacteria, mould, virus and yeast in food processing plants.

**TESTED BY:** USDA, FDA and FSIS.



## Subway Corp. Ice Machine Test

The purpose of this test was to evaluate the effect the PHI 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 ice units no visible microbial growth.

14

## Electrical

All PHI 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



# Airius Destratification

## Save up to 50% on your heating & cooling costs with Airius Destratification

**Airius destratification fans are installed** at ceiling height, sending air down to the floor in a slow-moving column. When this air reaches the floor it radiates 360° outwards across the floor until it hits a vertical surface and then rises.

This moves the air at the same speed throughout the whole interior of a building, balancing temperatures to within 0°C - 2°C.

This increases control, improves comfort, reduces CO2 and saves up to 50% on your HVAC costs.

**RECOMMENDED  
BY THE CARBON  
TRUST**

### Main Benefits

- Reduces heating costs by 30% - 50%
- Reduces cooling costs by 20% - 40%
- Reduces CO2 emissions by 20% - 50%
- Rapid ROI - usually between 12 -24 months
- Dramatically improves internal environments
- 5 year warranty
- Eligible for carbon reducing grants / loans
- Increases lighting lifespan
- Minimal maintenance required
- Minimal running costs (from £6/pa)
- Recycles heat from machinery, lighting, solar gain etc.
- Reduces condensation
- Reduces wear on existing HVAC equipment
- Simple to install with no ducting required
- Simple, inexpensive and efficient ESOS / CRC solution
- Small, versatile, unobtrusive units
- Stand alone or BMS integrated
- Works alongside all types of HVAC systems

15





### **Airius Europe, Middle East & Asia**

Airius Europe Ltd  
Holwell Farm, Cranborne  
Dorset  
BH21 5QP, UK  
Tel - +44 (0) 1202 554200  
Fax - +44 (0) 1202 554396  
Email - [info@airius.co.uk](mailto:info@airius.co.uk)  
Web - [www.airius.co.uk](http://www.airius.co.uk)

### **Airius Americas**

811 South Sherman Street  
Longmont  
Colorado  
80501 USA  
Tel - (00) 1 888 247 7327  
Email - [Info@airiusfans.com](mailto:Info@airiusfans.com)  
Web - [www.airiusfans.com](http://www.airiusfans.com)

### **Airius Oceania & S.E. Asia**

P.O. Box 1812  
Byron Bay  
NSW  
2481 AUSTRALIA  
Tel - +61 (2) 6608 2736  
Email - [info@airius.com.au](mailto:info@airius.com.au)  
Web - [www.airius.com.au](http://www.airius.com.au)

USA and foreign Patents granted to AIRIUS LLC, USA, further patents pending. AIRIUS & AIRIUS SYSTEMS is the copyright property of AIRIUS LLC, USA. All material issued by, or emanating from, Airius Europe Ltd is the Copyright property of Airius Europe Ltd, UK.

