

# **STERIL-AIRE<sup>®</sup>**

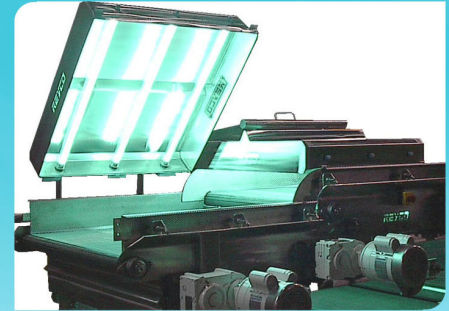
*World Leaders For  
Food Industry UVC*



# Food Processing Industry Solutions

## 1: Air Conditioning:

One of the biggest causes of pollution in food processing is the mold growing in the AC cooling coil and ducts. The mold spreads mycotoxins into the air and onto the food and packaging, reducing shelf-life and creating a contamination liability. With Steril-Aire installed, the air coming from the AC system will be 99% free of virus, bacteria and mold.

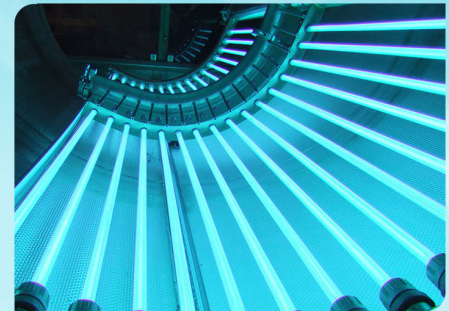


## 2: Staff Absenteeism & Productivity:

Case studies show when installed in the AC system, Steril-Aire reduces staff sickness, absenteeism and increases productivity.

## 3: Energy savings:

The AC system often uses between 40 to 60% of the energy of a building. Steril-Aire, installed at the coil, can save 10 to 20% of the AC energy.

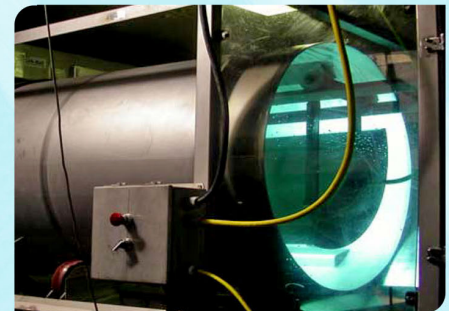


## 3: Food Processing Machines:

Where the machines need regular disinfection, the installation of Steril-Aire provides continuous surface elimination of bacteria and mold.

## 4: Conveyor Belts:

Steril-Aire can be installed so the belts are continuously kept free of bacteria and mold, eliminating the need for chemicals and downtime.

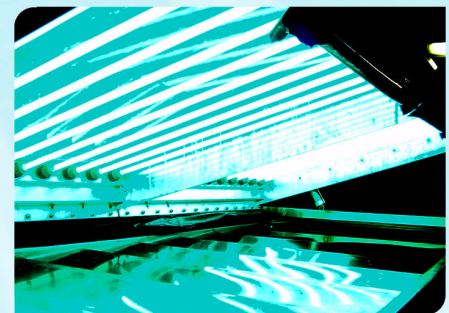


## 5: Food surfaces:

Steril-Aire's Emitters™ can be strategically placed to remove bacteria from the surfaces of most food products without altering the quality. UVC is FDA approved.

## 6: Food Packaging:

Steril-Aire UVC can also be used for the decontamination of packaging materials. If forced-air systems with fans are in use then the exterior pollution can affect the food quality. Both problems can be cured by installing Steril-Aire, increasing shelf-life and safety.



## 7: Walls and General Work Areas:

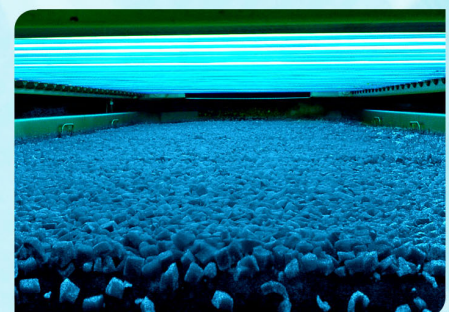
Ceiling and floor mounted Steril-Aire systems eliminate bacteria and mold from wall, floors and surfaces. They should be operated when no one is present on the factory floor.

## 8: Refrigeration:

Steril-Aire has the first sub-zero  $-30^{\circ}\text{C}$  UVC Emitter™ for use in refrigeration coils, ice machines and refrigerated food displays.

## 9: Ethylene Gas:

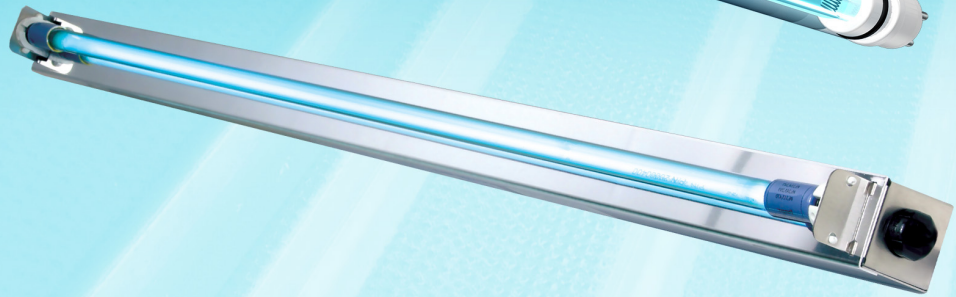
Steril-Aire removes the natural ethylene gas that is generated by fruit and vegetables. However, when the storage facility wants to accelerate the ripening process, they simply turn off the UVC Emitters.



# Steril-Aire UVC Solutions for Food Processing



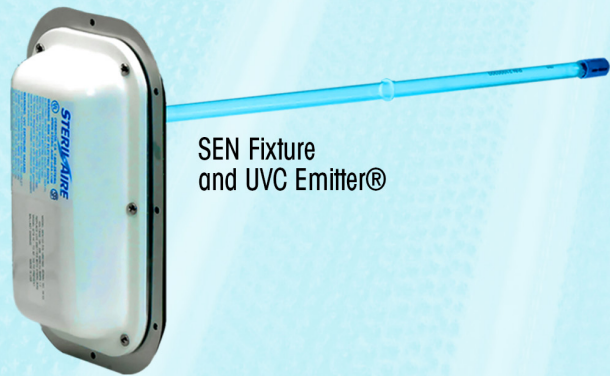
Sub-Zero -30°C  
UVC Emitter®



DE Fixture  
and UVC Emitter®



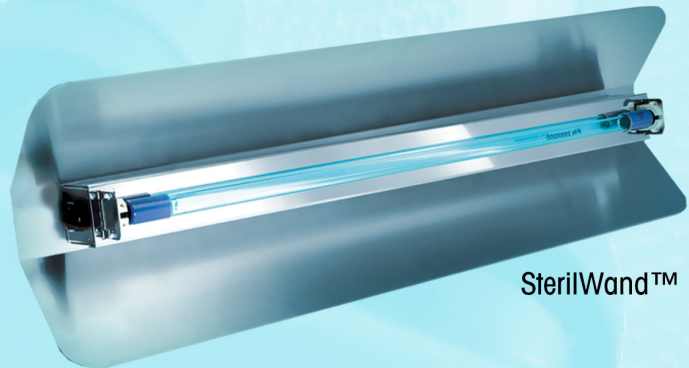
RIDS (prototype)  
Remedial In-room  
Decontamination  
System™



SEN Fixture  
and UVC Emitter®



SE Fixture  
and UVC Emitter®



SterilWand™

Emitter tubes are optionally available with shatter-proof sleeves.

# The Dangers of Food Contamination

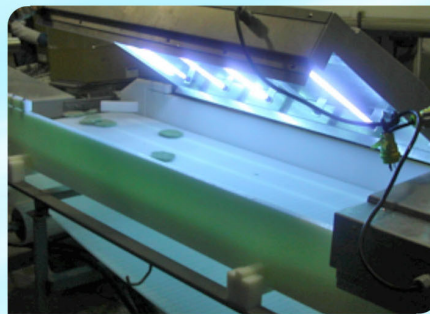
According to the Centers for Disease Control (CDC), food-borne illnesses cause about **300,000 hospitalizations and 5,000 deaths every year in the United States**. Common causes are outbreaks of bacteria such as salmonella and E. coli. It seems every time the public starts to regain trust in food handling safety, a new story breaks about another massive food recall. In the United States, **the economy hemorrhages about \$7 billion every year** due to these outbreaks [source: Washington Times]. The recall costs, which include getting food off shelves, handling lawsuits, revamping plants and repairing public relations, can be a colossal problem for companies. The resulting tainted reputation and lost sales, can be difficult to quantify.

## Partial Solutions:

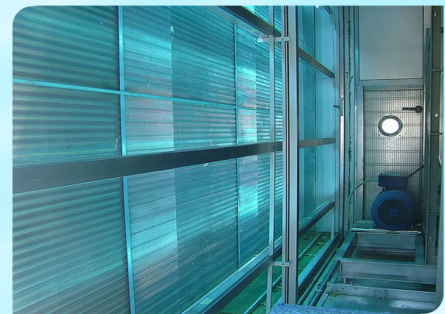
- Steril-Aire in AHUs
- Steril-Aire used prior to packaging to remove mold and bacteria from food surfaces.
- Steril-Aire used for decontamination of surfaces of food preparation equipment.
- Steril-Aire in Storage Refrigeration.
- Steril-Aire in Refrigerator Cabinet Displays.



Mold inside refrigerator display



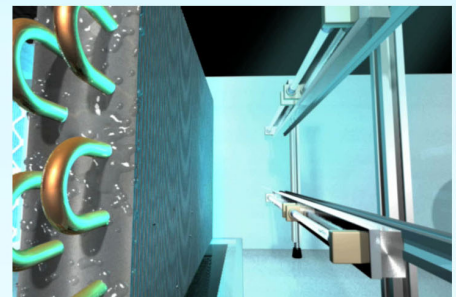
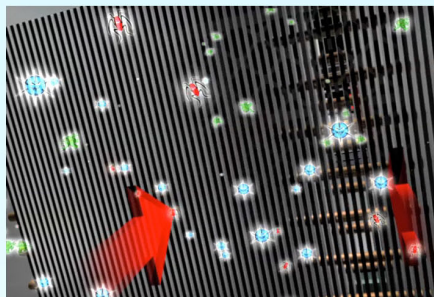
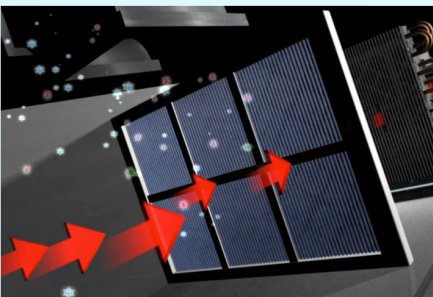
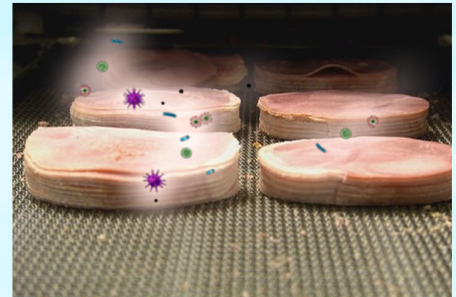
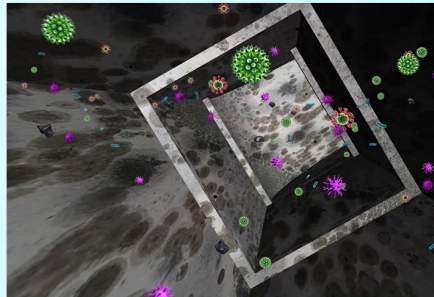
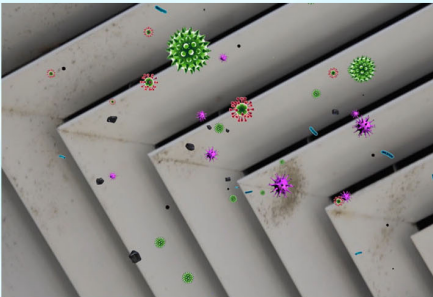
Meat surface decontamination with Steril-Aire



Coil Cleaned by Steril-Aire

## IAQ and Hidden Problems

Mold and Bacteria enter and grow in the AC system and are circulated throughout the supply ducts and land on food. Installing Steril-Aire's UVC emitters destroys the contaminants in the cooling coil, preventing them from circulating in the airflow of the AC system.

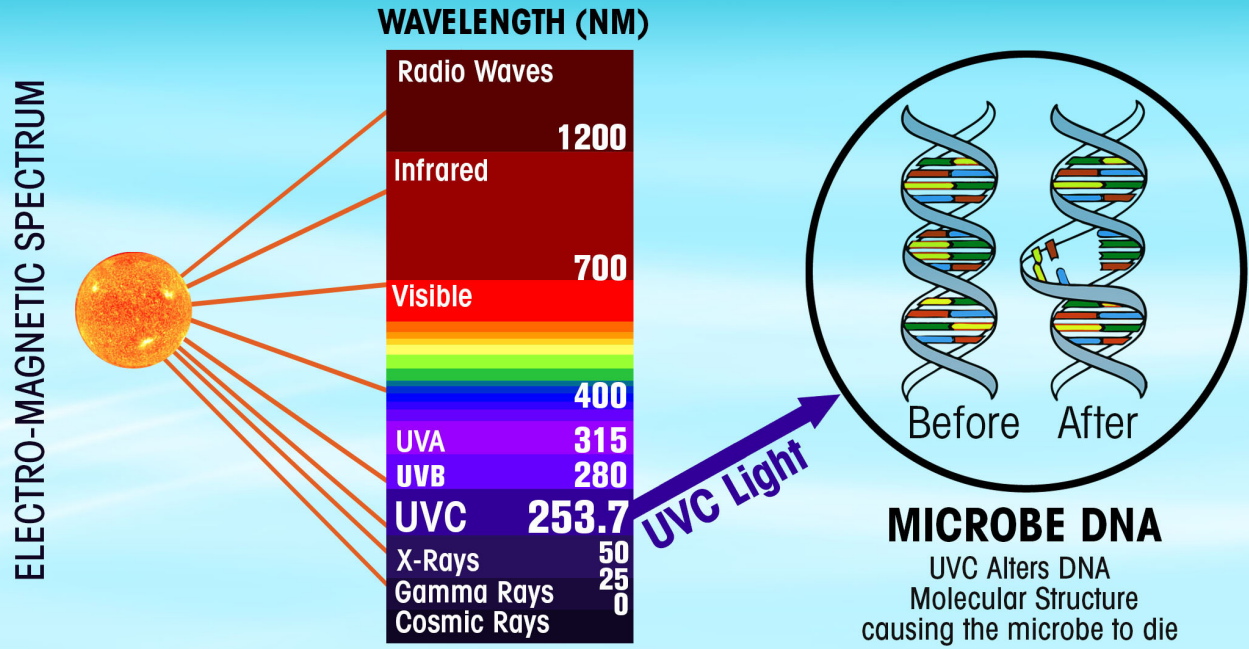


In air-conditioned buildings, sickness and related absenteeism are caused by two untreated sources of pollution, that easily pass through normal AC filters:

- 1: Bacteria and viruses that enter the building with the air and with people (and circulated in the AC system).
- 2: Mycotoxins and microorganisms that come from the mold/fungi growing on and in the AC coil and ducts.

By positioning the correct number of Steril-Aire UVC Emitters at the coil, these pollutants are destroyed. The result is air up to 99% free of pathogens.

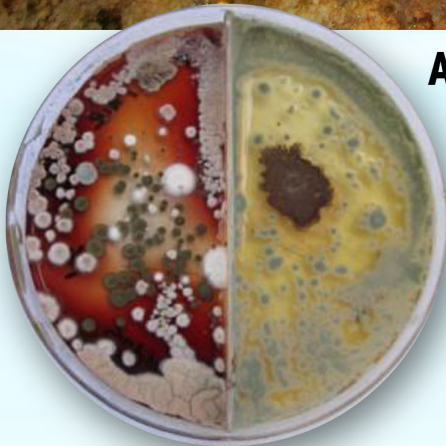
# The Science of Steril-Aire UVC



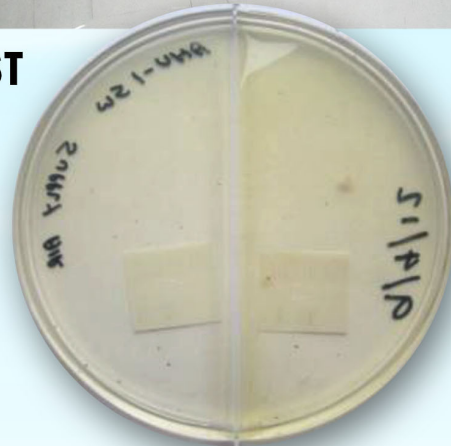
## Air-Conditioning Cooling Coil



### AIR BIO-TEST



**Before Steril-Aire**

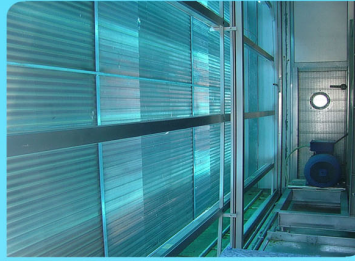


**After Steril-Aire**

# Steril-Aire UVC Products

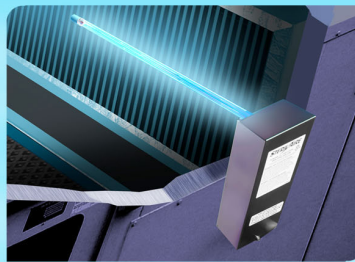
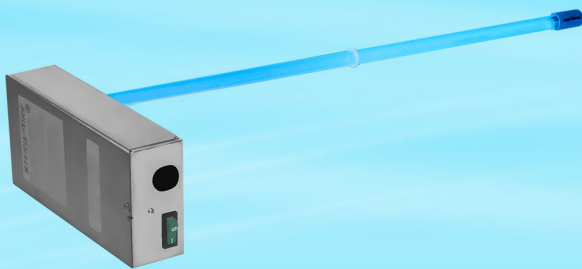
Full catalogue at [www.steril-aire.com](http://www.steril-aire.com)

## DE SERIES UVC EMITTER<sup>®</sup>



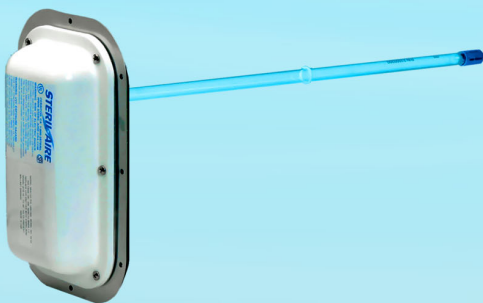
- For use in medium to large AHUs.
- Double-ended Emitters are mounted internally and fitted end-to-end to fit any size coil.
- Available in: 18, 24, 30, 36, 42, 62 inch lengths (46, 61, 76, 91, 107, 157 cm).
- Universal power-supply. 110 to 277V - 50/60 Hz

## SE SERIES UVC EMITTER<sup>®</sup>



- For fan-coils, heat-pumps, unit ventilators, packaged AHUs, terminal units, and ducts.
- Mounted on exterior of AHU. Tube Installed through a one inch (2.54 cm) hole drilled through the AHU casing.
- Available in 12, 16, 20, 24, 30, 42 inch lengths (30, 41, 51, 61, 91, 107 cm).
- Universal power-supply: 110 to 277V- 50/60 Hz
- Also available as an internally mounted kit with 12 to 61 inch (30 to 155 cm) SE Emitter tubes.

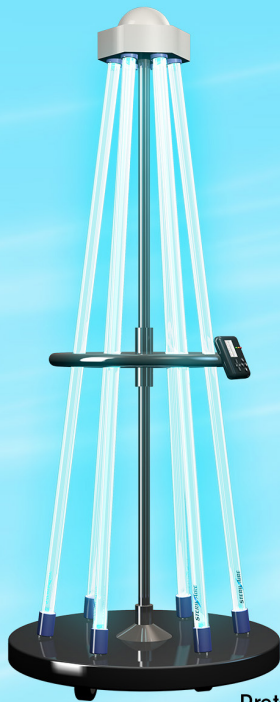
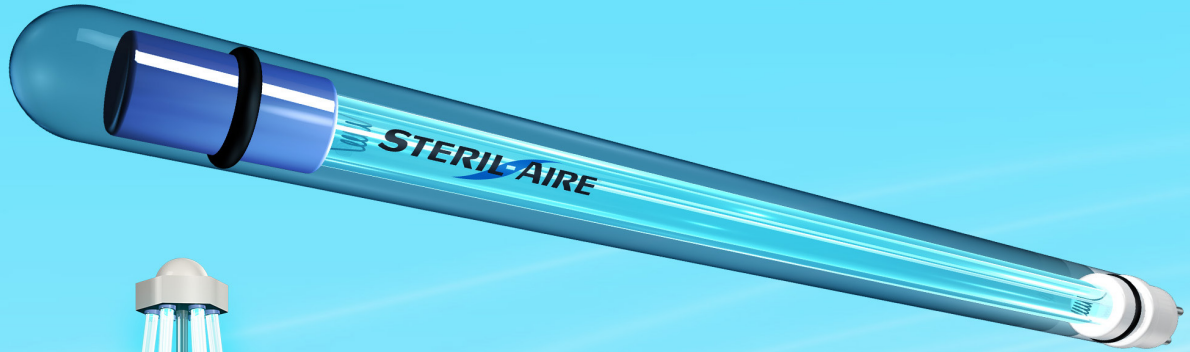
## SEN SERIES UVC EMITTER<sup>®</sup>



- For exteriors including roof-top units, AHUs, heat-pumps, fan-coils, terminal units, and ducts.
- NEMA 4 rated.
- Mounted on exterior of AHU. Tube Installed through a 2.54 cm hole, drilled through the AHU casing.
- Available in 12, 16, 20, 24, 30, 42 inch lengths (30, 41, 51, 61, 91, 107 cm lengths).
- Universal power-supply: 110 to 277V- 50/60 Hz
- Also available as an internally mounted kit with 12 to 61 inch (30 to 155 cm) SE Emitter tubes.

# SUB-ZERO -30°C EMITTER<sup>®</sup> KIT FOR REFRIGERATION

- The first Ozone free UVC Emitter to efficiently operate at sub-zero temperatures.
- Emitter tubes are optionally available with shatter-proof sleeves.
- Available in: 12, 16, 20, 24, 30, 36, 42 inch lengths (30, 41, 51, 61, 76, 91, 107 cm).
- Custom lengths available.

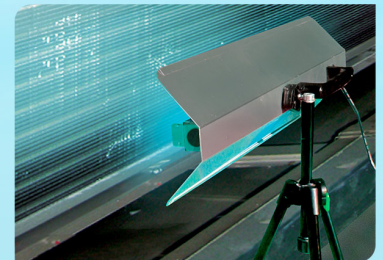
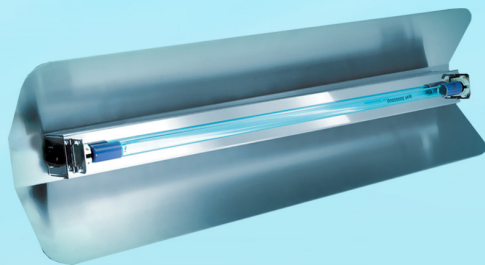


Prototype

## RIDS (REMEDIAL IN-ROOM DECONTAMINATION SYSTEM)

- Designed for commercial surface mold and bacteria remediation.
- System produces no ozone or other secondary contaminants

## STERIL-WAND<sup>®</sup> HANDHELD UNIT



- For surface decontamination in food processing, kitchens, tabletops, conveyor belts and restrooms.
- For mold remediation on walls, floors, ceilings.
- Hand-held devices to be passed very slowly over surface or placed on tripod.
- Safety shield prevents direct exposure to UVC Energy.
- Operator's skin must be covered.

# How Steril-Aire Works

Air-conditioning risks come from two main sources; 1: The biofilm (mold) that grows inside the AC system sending out mold, bacteria and their by-products, mycotoxins, into the air. 2: The bacteria that enter into the building via ducts, doors and windows, and the viruses and bacteria (coughs and sneezes) that enter with the people, all of which are distributed by the AC system. This leads surface pollution and contamination of food and to cold and flu outbreaks, sickness, absenteeism and a drop in productivity.

Case studies confirm that high output Steril-Aire Emitters remove the biofilm from the AC coil and microbes from the air-stream making the air exiting the AC registers up to 99% free of virus, bacteria and mold, and thereby reducing food contamination and associated liability risks as well as reducing sickness and absenteeism.

Air-conditioning uses as much as 40 to 60% of the total building's energy, and contributes proportionally to the carbon footprint. The chiller and pumps normally consume 70% of the AC energy. The biofilm on the coil restricts airflow and reduces the heat transfer capability of the coil, resulting in warmer and humid air. This causes the maintenance department to lower the chiller set point, causing the chiller to work more and use more energy.

The heat conductivity of aluminum used in coiling coils is approximately 200 W/m.K while that of biofilm is approximately 0.2 W/m.K. Most coils are only cleaned once or twice a year and, due to the physical structure of the coil, the inside of the coil is seldom cleaned. Even after the coil is cleaned the biofilm starts re-growing immediately. Steril-Aire typically reduces the AC energy cost by 10 to 20%.

Case Studies ([www.steril-aire.com](http://www.steril-aire.com))

## Selected Users of Steril-Aire

