

A clinically validated technology that destroys HAI-causing microorganisms amplifying in air conditioning coils.

Solution: Steril-Aire Ultraviolet Germicidal Irradiation (UVGI) for healthcare facilities.



STERIL-AIRE[®]

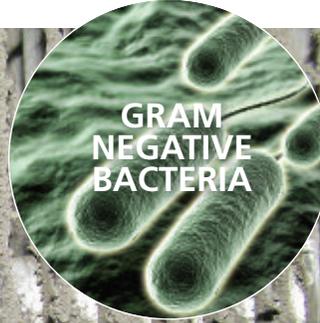
Bacteria and mold attributed to hospital acquired infections (HAIs) are thriving here.

CULTURED FROM HOSPITAL AIR CONDITIONERS

Candida sp.
Aspergillus sp
Aspergillus niger
Aspergillus wentii
Penicillium sp.
Fusarium sp.
Cladosporium sp.
Alternaria sp.
Epicococcum sp.
Epicococcum nigrum
Cryptococcus sp.
Aureobasidium sp.
Aureobasidium pullulans
Basidiomycetes sp.
Acremonium sp.
Rhodotorula sp.
Chaetomium sp.
Stachybotrys sp.
Stachybotrys chartarum
Ulocladium
Verticillium



FUNGI



GRAM
NEGATIVE
BACTERIA

Pseudomonas sp.
Pseudomonas aeruginosa
Stenotrophomonas sp.
Acinetobacter sp.
Klebsiella sp.
Serratia sp.
Enterobacter sp.
Enterobacter cloacae
Escherichia coli
Comamonas sp.



GRAM
POSITIVE
BACTERIA

Enterococcus sp.
Staphylococcus aureus
Coagulase-negative staphylococci (CoNS)
Micrococcus sp.
Streptococcus sp.
Corynebacterium sp.
Bacillus sp.

Air passing through dirty air conditioning components (above) can spread contamination throughout a facility.

The hospital HVAC unit is an amplifier, reservoir and disseminator of microorganisms commonly attributed to HAIs, such as the above lists of bacteria and mold cultured from hospital air conditioners. These microorganisms contribute to the growth of a biofilm (as shown above) that adheres to HVAC coils and drain pans.

Air quality studies show that these problematic microorganisms are circulated and are present in the air for inhalation by patients, increasing HAI risk.^{1, 2, 3}

The solution: address the underlying cause

Air filtration and regular cleaning alone are insufficient. The solution is to address the underlying cause of contamination at the source. Steril-Aire Ultraviolet Germicidal Irradiation systems installed in hospital air conditioners have been proven to be an effective inactivation method for mold and bacteria, reducing environmental reservoirs of microorganisms.



“UVGI reduced HVAC microbial contamination by 5 logs (99.999%). We’ve had zero VAP infections for 27 months.”

As reported through personal communication with Chief of Neonatology at Washington, DC, hospital. For details, visit steril-aire.com/healthcare.



STERIL-AIRE

Steril-Aire UVGI delivers quantifiable and predictable outcomes, with three sustainable advantages for hospitals.

1 Destroys HAI-causing microorganisms

20 years of data indicate that installations of Steril-Aire UVGI (Ultraviolet Germicidal Irradiation) systems produce sustainable and predictable outcomes. Surface inactivation of microorganisms by greater than 5 log is typically achieved.

2 Energy savings, increased capacity

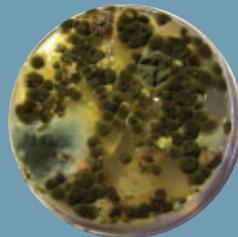
In addition to harboring microorganisms, biofilm growth makes air conditioning units less efficient, increasing energy use. Coils that are continuously cleaned with Steril-Aire UVGI keep operating at optimum capacity for the life of the equipment. One facility saved \$500,000 in the first year on a \$250,000 investment.

3 Reduced maintenance costs

Manual cleaning of air conditioning coils and components is labor intensive. As soon as it's removed, the biofilm begins growing again at a rapid rate. Continuous cleaning by Steril-Aire UVGI not only reduces maintenance costs but completely eliminates the need for chemical cleaning. Our UVGI solutions are designed to irradiate the surfaces where biofilm grows.



BEFORE-AND-AFTER
LABORATORY CULTURES FROM HOSPITAL HVAC UNITS SHOW ANTIMICROBIAL IMPACT OF STERIL-AIRE UVGI.



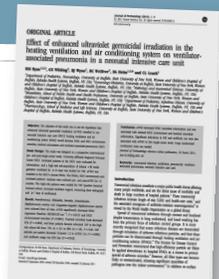
BEFORE



AFTER

Many clinicians and Infection preventionists are surprised to learn that hospital air conditioners are reservoirs of HAI-causing microorganisms. Where's the proof? How widespread is this? How do I know Steril-Aire works? We take an evidence-based approach, which includes analysis of cultures taken from air conditioning surfaces before and after installation. This qualitative and quantitative analysis validates our efficacy. Visit steril-aire.com/healthcare for study details.

Visit www.steril-aire.com/healthcare to read the evidence.
"Microbes in HVAC have been eradicated, with reductions in HAIs and \$850,000 in annual clinical savings," says Chief of Neonatology at Women and Children's Hospital of Buffalo.
Read Buffalo Children's Hospital clinical study online at www.steril-aire.com/healthcare



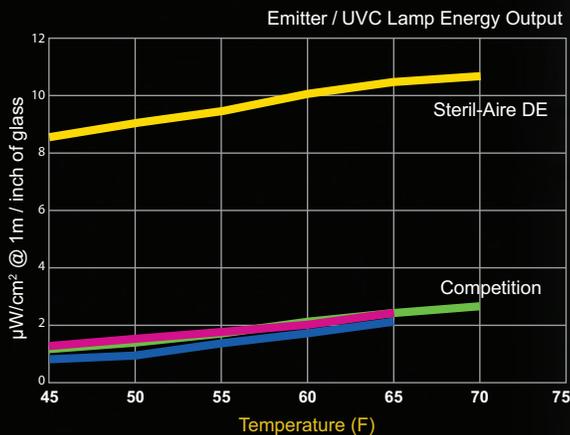
4 reasons Steril-Aire is the best UVGI solution

1. Higher output means sustained antimicrobial action A minimum 99.9% inactivation of microorganisms requires a specific dose of UVGI energy. Steril-Aire UVGI emitters are proven to sustain higher intensities over a longer period of time as compared to competitive products.

2. Systems engineered to irradiate the entire coil Steril-Aire solutions are engineered to penetrate every corner and recess where microorganisms breed. We optimize performance by providing an appropriate level of UVGI energy to satisfy the necessary level of microbial inactivation.

3. Independent testing proves performance superiority Independent testing has proven that our emitters deliver up to 7 times more energy than competitor products and last 4 times longer in the cool and damp HVAC environment.

4. Patented technology is often copied, never duplicated Steril-Aire invented UVC for HVAC® technology more than 20 years ago and has continued to upgrade performance standards. Imitators have never been able to equal the original, which includes superior construction and engineering support.



References

1. Jones AM, Govan JR, Doherty CJ, Dodd ME, Islaska BJ, Stanbridge TN et al, Identification of airborne dissemination of epidemic multiresistant strains of *Pseudomonas aeruginosa* at CF centre during a cross infection outbreak. *Thorax* 2003; 58: 525–527.
2. Kumari DN, Haji TC, Keer V, Hawkey PM, Duncanson V, Flower E. 1998. Ventilation grilles as a potential source of methicillin-resistant *Staphylococcus aureus* causing an outbreak in an orthopaedic ward at a district general hospital. *J Hosp Infect*, 39: 127–133.
3. Katherine Roberts, Caroline F Smith, Anna M Snelling, Kevin G Kerr, Kathleen R Banfield, P Andrew Sleight and Clive B Beggs, Aerial Dissemination of *Clostridium difficile* spores. *BMC Infectious Diseases* 2008, 8:7 doi:10.1186/1471-2334-8-7

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