



# MAINTAINING A SAFE AND HEALTHY ENVIRONMENT IN HEALTHCARE FACILITIES

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WHITE PAPER

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# Introduction

Indoor air quality (IAQ) is a critical factor in maintaining a safe and healthy environment in healthcare facilities. Poor IAQ can contribute to the spread of infectious diseases, worsen respiratory illnesses, and lead to other health problems for patients and staff. HVAC systems play a crucial role in maintaining IAQ, but they also consume a significant amount of energy. This white paper discusses how healthcare facilities can improve IAQ and save energy by implementing sustainable HVAC maintenance practices. It explores the benefits of regularly cleaning coils, using sustainable products, identifying and remediating bacterial presence, and controlling particulate dispersion during construction activities.

This paper also outlines critical components of fire life safety services. Safety extends to the maintenance of passive fire systems including firestopping, and fire dampers within the HVAC system. Fire life safety services are essential to protect vulnerable populations and provide time for evacuation in the event of a fire or other emergency.



# Critical Services

Regular maintenance and cleaning of HVAC systems are crucial for ensuring optimal performance and preventing the buildup of dirt and debris. In healthcare facilities, where air quality is paramount, sustainable maintenance practices are especially important. Removing particulate from exhaust and return systems are often able to reduce the load of a system as it maintains its air exchanges and pressure rooms. Using environmentally friendly and non-erosive products can contribute to the overall sustainability of equipment on site. Professionals adept at using proper chemicals and procedures can ensure no harmful risks or cross-contamination during maintenance, giving you the flexibility to perform services in occupied spaces. Additionally, HVAC systems can harbor harmful bacteria that can contribute to the spread of infectious diseases. Identifying and remedying bacterial presence is critical for maintaining a clean and hygienic space.

## **Cleaning Coils Regularly**

HVAC systems rely on coils to regulate temperature and humidity levels. Over time, these coils can accumulate dirt and debris, which can hinder their performance and increase energy consumption. Regularly cleaning coils can improve HVAC efficiency, reduce energy consumption, and extend the life of air handlers. Additionally, scheduling regular maintenance can help prevent the buildup of dirt and debris and ensure that the HVAC system operates at optimal efficiency.

## **Using Sustainable Products**

Hospitals can also implement sustainable HVAC maintenance practices by using environmentally friendly and non-toxic products. For example, using low volatile organic compounds (VOC) products can reduce the emission of harmful pollutants into the air. Choosing sustainable products can also contribute to the overall sustainability of the healthcare facility, helping it achieve green certification and reducing its environmental impact.



## Critical Services (Cont.)

### Identifying and Remediating Bacterial Presence

HVAC systems can also harbor harmful bacteria that can contribute to the spread of infectious diseases. Identifying and remedying bacterial presence in HVAC systems is critical for maintaining a safe and healthy environment in healthcare facilities. Regular maintenance and cleaning can help prevent bacterial growth, but if contamination is suspected, healthcare facilities should work with a qualified contractor to identify and remediate the problem promptly in a manner that an industrial hygienist would stand by.

### Controlling Particulate Dispersion During Construction Activities

Construction activities, such as demolition, drilling, cutting, and sanding, can generate a significant amount of harmful particulate matter, which can disperse throughout a building's HVAC system and affect IAQ. These particulates can pose a health risk to both patients and staff, particularly those with respiratory issues or compromised immune systems.

To mitigate these risks, facility directors and prime contractors should work with subcontractors specialized in infection control to implement appropriate measures. One such measure is the Infection Control Risk Assessment (ICRA), which involves assessing potential risks associated with construction activities and implementing measures to control those risks.

Physical barriers and negative pressure are two important measures that can be taken to control particulate dispersion during construction activities. Physical barriers are designed to prevent the spread of particulate matter by separating the construction site from the rest of the building. Negative pressure, on the other hand, is used to create an inward flow of air from the construction site, preventing particulates from escaping into the surrounding areas. Both of these rely on an intelligent design, with high quality set up to endure construction activities.

When implementing these measures, it is important to ensure that the materials used are wipeable and that the negative air machine filters are regularly maintained. Exhaust strategies should also be employed to remove particulates from the construction site and to prevent them from being circulated throughout the building.

## Critical Services (Cont.)

In addition to these measures, it may be necessary to use phasing, controlled breaches, and interstitial containment to further reduce the risks associated with construction activities. A specialist in infection control can provide guidance on these details and help ensure that all measures are properly implemented and enforced.

### Fire Life Safety

Fire life safety services are critical in hospitals and medical offices because they help to protect patients, staff, and visitors from the risks associated with fire and other emergencies. Healthcare facilities have unique challenges when it comes to fire safety, as they house vulnerable populations who may not be able to evacuate quickly or easily. In addition, they often have complex systems and equipment that can pose fire hazards, such as oxygen systems, electrical equipment, and cooking facilities.

Passive firestopping systems are a significant component of building safety in healthcare facilities. In the event of a fire, firestopping helps prevent the spread of flames, smoke, and toxic gases through the openings in the building's structure.

Fire dampers are another critical component of building safety in healthcare facilities. These devices help prevent the spread of fire and smoke through HVAC ducts. Regular maintenance and testing of fire dampers are critical to ensuring that they function correctly in the event of a fire. Healthcare facilities can work with qualified contractors to install, maintain, and test fire dampers to ensure the safety of patients and staff.

Medical centers can work with qualified contractors to maintain barriers with modern documentation and technical expertise to prepare for any inspections and prevent the spread of fire and smoke.



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### Did You Know?

► According to the National Fire Protection Association (NFPA), an estimated **5,700 structure fires** occur in healthcare facilities each year in the United States.

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# 5 Core Reasons to Maintain Fire Life Safety



## Protecting Patients and Staff

Healthcare facilities are responsible for the safety of their patients and staff. Fire life safety services can help to prevent fires from occurring, detect fires early, and ensure that occupants are alerted and evacuated in a timely and safe manner.



## Property Protection

Medical centers house valuable equipment, supplies, and patient records. Fire life safety services can help to protect these assets from fire damage, which can be costly to repair or replace.



## Liability Reduction

Hospitals can be held liable for any injuries or damages resulting from fires. Fire life safety services can help to reduce the risk of fires and minimize the liability associated with them.



## Compliance with Regulations

Healthcare facilities are subject to numerous regulations and standards related to fire life safety, such as NFPA 101 Life Safety Code, JCAHO, and CMS regulations. Compliance with these regulations is essential to avoid penalties and maintain accreditation.



## Continuity of Operations

Fires can severely disrupt patient care, leading to the evacuation of patients and the suspension of services. Fire life safety services can help to ensure that healthcare facilities can continue to provide care even in the event of a fire or other emergency.

# Choosing a Trusted Partner

Partnering with a certified and licensed contractor is crucial for maintaining a safe and healthy environment in healthcare facilities. These contractors specialize in infection control, fire life safety services, and sustainable HVAC maintenance practices, and can help healthcare facilities implement critical measures to ensure the highest standards of patient care.




One of the primary benefits of working with qualified contractors is cost savings. Regular maintenance and cleaning of HVAC systems can improve their efficiency, reduce energy consumption, and extend their life. This can lead to significant cost savings over time. Using sustainable products can also contribute to the overall sustainability of the healthcare facility and help it achieve green certification, further reducing operating costs.

Partnering with a contractor specialized in infection control is also essential during construction activities. By implementing appropriate ICRA measures to control those risks, contractors can help prevent costly legal claims and reduce the overall cost of the construction project. They are also trained to identify and remedy bacterial presence in HVAC systems, preventing the spread of infectious disease and reducing the risk of legal claims.

The National Fire Protection Association (NFPA), reports that healthcare facility fires result in an average of \$50.4 million in property damage each year in the U.S. Qualified contractors can help medical centers identify potential fire hazards and implement firestopping measures to prevent the spread of fire and smoke in the building. Regular maintenance and testing of fire dampers are also critical to ensuring that they function correctly in the event of a fire.

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## Facts and Figures

- ▶ The EPA estimates that healthcare facilities can  **reduce energy costs by up to 30%** by implementing energy efficient HVAC systems and improving IAQ. This can result in significant cost savings over time.
  - ▶ In a study conducted by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers  **57% of surveyed healthcare facilities** reported having IAQ problems.
  - ▶ The Centers for Disease Control and Prevention (CDC) estimates that  **healthcare-associated infections (HAIs) affect 1 in 25 hospital patients** in the United States, resulting in about 75,000 deaths each year.
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## Conclusion

Improving IAQ is critical for maintaining a safe and healthy environment in healthcare facilities. Sustainable HVAC maintenance practices can help hospitals achieve this goal while reducing their energy consumption and environmental impact. Regularly cleaning coils, using sustainable products, identifying and remediating bacterial presence, and controlling particulate dispersion during construction activities are all critical components of sustainable HVAC maintenance in a healthcare setting. Additionally, working with subcontractors specialized in infection control and implementing ICRA measures, and fire life safety services, medical centers can continue to provide the highest quality patient care. By implementing these simple practices, healthcare facilities can improve and maintain a safe and healthy environment for their patients, staff and visitors.





## Contact Us

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