

Chubb Environmental Advisory

Legionella and Mold: Construction and Renovation Risks at Healthcare Facilities

By Jack Frost, Steve Piatkowski and Frank Westfall



Construction and renovation projects pose special challenges for hospitals and other healthcare facilities. The responsibility for providing high quality, safe care must remain the top priority even during hospital renovation projects. Whether simply remodeling, reconfiguring space for a new piece of medical equipment or adding a wing, building projects at healthcare facilities need to be planned and managed to minimize the potential risks from a range of pollutants, including mold and legionella pneumophila, the bacteria that causes the potentially fatal Legionnaires' disease (hereinafter legionella).

The potential for spreading mold spores or water droplets containing legionella arises any time a contractor or employee opens up a wall or works on water, heating or cooling systems without taking the proper precautions. In addition to the risks of severe allergic or other adverse reactions to mold spores and legionella infection among patients, staff and visitors, healthcare facilities need to consider the potentially high costs of remediation, possible litigation and the damaging impact of high-profile negative publicity.

Healthcare facilities can mitigate these types of risks by carefully planning projects and making sure that all work complies with the applicable regulations and standards, including the new standard expected to be promulgated this year to combat the spread of legionella during renovation and construction.¹ While the process can be complex, healthcare facilities managers can take advantage of specialized expertise that has been developed to help plan, monitor and manage construction and renovation work to minimize the environmental risks. Proactive risk management often includes

healthcare-specific premises pollution insurance policies that offer coverage for mold and legionella exposure.

The Risks of Legionella and Mold

Legionella bacteria are found in natural water reservoirs as well as hot water tanks and spas, cooling towers and large plumbing and air conditioning systems.² While any large building may be at risk, hospitals are a particular concern because of their large water and cooling systems and the presence of ill patients who may be more susceptible to infection.³ Legionella, which also causes the milder influenza-like illness known as Pontiac fever, can be spread through point sources such as showerheads or through ventilation or air conditioning systems.⁴ People may contract Legionnaires' disease and Pontiac fever, both also known as Legionellosis, when they inhale water droplets or vapor containing the bacteria.⁵

Up to 18,000 people are hospitalized each year with Legionnaire's disease, which got its name from a 1976 outbreak sourced to an American Legion convention in Philadelphia, according to the Centers for Disease Control and Prevention.⁶ Many infections, however, are not diagnosed or reported as the symptoms can be similar to other forms of pneumonia.⁷

Mold can be found on building surfaces that have been exposed to moisture, and which provide a food source such as drywall paper or wallpaper.⁸ Mold grows best in damp conditions and spreads through spores.⁹ People sensitive to mold may experience symptoms such as nasal stuffiness, wheezing or eye and skin irritation.¹⁰ Those with serious allergies to mold may have severe reactions including fever and shortness of breath.¹¹

The New Standard

Due to the dangers posed by mold and legionella, healthcare facilities need to ensure that they take a proactive approach and assess the potential risks before starting any repair, renovation or construction projects. To combat mold, healthcare facilities managers should develop water intrusion management plans in case of a roof leak or water release by a sprinkler head, pipe or valve. Any water leak should be controlled immediately, and the affected building materials removed and discarded. Construction projects of any size in a healthcare facility may involve disturbing building material that may have been conducive to mold growth. Simply opening up a wall or ceiling can release mold spores that may be taken up by the ventilation system and impact patients in not just the surrounding area but throughout the facility.

Today, technology can help identify areas where mold might be present before work begins. For instance, new infrared cameras can find moisture behind walls and above ceilings, a key indication of existing or potential mold growth. That enables a project manager to decide where to perform visual inspections or perhaps cut pilot holes to identify areas that may have microbial growth before construction. Certified mold abatement contractors can be brought in to clean up any affected areas before the rest of the project proceeds.

To reduce the dangers associated with legionella, healthcare facilities managers should make sure that projects conform to the standard expected to be promulgated by the American Society of Heating, Refrigerating and Air-Conditioning Engineers this year. ASHRAE Standard 188 includes requirements for identifying potential risks, evaluating potable and utility water systems, assessing infection controls and patient populations and designing programs to isolate ventilation systems and water systems during renovation or construction.¹² The standard calls for comprehensive hazard control plans that include equipment maintenance as well

as planned responses to disruptions in water service, which have been associated with outbreaks of Legionnaires' disease.¹³ The standard includes procedures for the start-up and shutdown of new water systems, system maintenance and calls for the monitoring and treatment of sources such as ice machines, water filters and showerheads, hoses, humidifiers and water heaters. Plans should include procedures for emergency disinfection, whether thermal or chemical.

Of course, problems do arise on projects and unplanned construction activities are often necessary to address those problems. If something does go wrong, contingency planning can enable a project to continue without impacting the facility's operations or the patients. In the event of a problem, a comprehensive contingency emergency plan to address specific issues (a burst pipe, wall damage that releases mold and/or mold-impacted debris, etc.) will ensure that control measures can be implemented quickly and the appropriate remediation steps taken. Precautions may include actions such as bringing in temporary cooling towers and temporary reservoirs during construction to control the potential for the spread of legionella. Redundant power systems may be required during construction to ensure that any containment measures installed for dust control during construction are not disrupted by power outages or natural catastrophes such as hurricanes, tornadoes and earthquakes. All of this planning comes at a cost, but it is often well worth it to deal with unexpected problems. In addition, having contingency plans in place is part of a proactive risk management program.

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Risk Management Solutions/ Recommendations

When contemplating construction or renovation projects, healthcare facility managers should inquire about the training programs and specialized expertise that are available today to help reduce the risks posed by legionella and mold. Site-specific training programs can address issues such as a facility's infection control procedures, personnel and patient protection and procedures for working around water systems that can be sources of legionella. Additionally, environmental consultants and Certified Industrial Hygienists (CIHs) can provide guidance and planning assistance in managing projects in even the most sensitive areas of healthcare facilities. These specialized experts provide services that include pre-planning, on-site monitoring and testing, air quality sampling, HVAC system evaluations, construction management and remediation management and disposal of mold prior to renovation or demolition. In addition, CIHs can provide advice on infection control measures that should be taken before and during renovations and most offer site audits during construction to monitor contractor compliance with the previously established project-specific infection control procedures and engineering controls.

Because claims dealing with mold or legionella may not be covered under standard general liability and property insurance policies, healthcare facilities should consider pollution policies developed specifically for the industry that offer this coverage. Such policies can provide coverage for the remediation costs of on-premises pollution conditions, and third-party liability coverage for on-premises pollution as well as liabilities stemming from waste disposal and transportation. Policies often provide first-party coverage for emergency response, business interruption, catastrophe management and decontamination - including the costs of relocation and lodging patients during a shutdown. Because incidents at healthcare facilities are very often highlighted in the media, catastrophe

management coverage can help by providing expert public relations advice and services to protect a facility's long-term reputation.

Renovation and construction projects are often a regular part of operations for healthcare facilities as they strive to keep pace with technology and evolving community needs. These projects, however, require special care because of the risks posed by mold, legionella and other pollutants. To mitigate those risks, healthcare facilities should take a comprehensive, proactive approach to maintenance and planning for construction projects. Just as a surgeon prepares for a surgical procedure, healthcare facilities managers should also prepare and identify any potential risk issues before work starts. While the process can be challenging, specialized expertise is available today to help with training, planning and subsequently managing projects to minimize the risk. In addition to taking robust measures to mitigate risks, hospitals and healthcare facilities should consider a healthcare-specific premises pollution insurance product that provides coverage for a wide variety of risks, as well as highly valuable assistance in managing a potential crisis should one occur. These steps can help a healthcare facility keep its infrastructure up to date while protecting patients, staff, their reputation and bottom line.

About the Authors:

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Endnotes:

1. Public Review Draft, ASHRAE Standard. Proposed New Standard 188, prevention of Legionellosis Associated with Building Water Systems. Standard available at www.ashrae.org
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13. Public Review Draft, ASHRAE Standard. p. 9

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