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PERSPECTIVES

Reopening Buildings After a Shutdown: Biological Considerations Indirectly Linked to COVID-19

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INTRODUCTION

Due to safety measures such as mask wearing/facial protection, social distancing, limited gatherings, and reduced travel, the workplace experience is different today than a few months ago. Social guidelines and business operations may not be the only changes we encounter though as society returns to the physical work environment. Periods of low building occupancy can present health and safety issues, including mold and bacteria growth, as well as structural degradation.

In this article we examine biological considerations to be aware of when reopening buildings, especially factories, commercial office spaces, and schools.

WHAT TO CONSIDER BEFORE REOPENING

Have spring or summer storms impacted the buildings envelope?

A visual assessment of the facade, roofing, ceilings, walls, and windows of a building is appropriate to determine whether any storm damage could have allowed for moisture infiltration, leading to mold and/or structural degradation. It is important to inspect the exterior for damage from fallen trees, heavy wind, and hail. Additionally, the interior should be inspected for signs of damage including water staining, broken glass, and delaminated substrates.

Has the building's heating, ventilation, and air conditioning (HVAC) system continued to run its regular schedule, or was it turned off or set to "low" prior to shutdown or reduced occupancy?

If a building's air flow and climate control were limited during shutdown or reduced occupancy period, it would be unsurprising to discover the presence of mold growth. These types—often referred to as "cottage syndrome"—are created by dew point condensation and the absorption of water vapor from the air which is the result of a lack of air movement. These fast-growing species can grow from lower air humidities' and/or surfaces' moisture content, often producing a common and familiar musty odor. These species of mold are commonly found in closets, corners, or exterior walls that are covered by furniture.

Due to the possibility of mold and bacterial growth, it is important to determine whether HVAC systems require duct cleanings or filter changes prior to reopening and reestablishing normal occupancy. Some telltale indicators of risk may include condensation within ducts or on coils, and especially standing water in condensate pans. Persistent condensation can often lead to mold growth, while pooling water can result in bacterial growth. Taking appropriate measures to inspect and clean HVAC systems may greatly reduce the chance of spreading a hazard through the system and putting returning occupants at risk.

While vacant, has the building water system been circulated or treated?

Stagnant water and "dead ends" within water supply lines can result in biofilms and bacterial growth such as Legionella (the cause of Legionnaires' disease). Assessment of the water system or hyperchlorination would be appropriate; however, it should be noted that stubborn biofilms often require multiple treatments.

CONCLUSION

Reduced occupancy and/or shutdown of a building or facility can have significant consequences including building degradation and biological growth, both of which can potentially lead to adverse health effects for returning occupants. As part of your return-to-office plan for COVID-19, or when reopening a building after any prolonged shutdown or reduced use, be sure to first inspect for these potential hazards and, if necessary, follow through with proper inspection, cleaning, and other appropriate measures before reopening.

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