



Recovering from COVID-19 Building Closures

Guidance Document

[aiha.org](https://www.aiha.org)

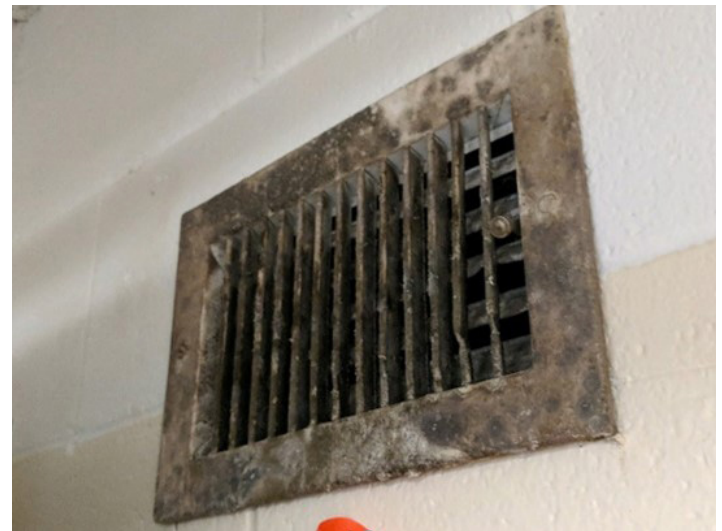
Developed by the AIHA® Indoor Environmental Quality Committee
Photos courtesy of David Krause, PhD, MSPH, CIH unless otherwise noted.

While the country comes to terms with the inevitable impact that SARS-CoV-2, the virus that causes COVID-19, will have on our lives and communities, public health authorities remain focused on breaking the chain of transmission. Managing the risk has resulted in widespread closures of businesses, schools, universities, resorts, and other facilities deemed “non-essential.” Practically speaking, this means closing buildings and ceasing operations. For building owners and operators, this poses a significant challenge to protect their assets and to ensure they are ready to reoccupy once the pandemic subsides.



When normalcy returns, buildings that were shut down with forethought and maintained during the closure period will be functional, safe, and ready to reopen. Buildings that were not closed properly, not maintained during the closure, and not effectively cleaned could pose a health hazard to their oc-

cupants and staff. Failed attempts to reopen could affect the health of building occupants, compromise the reputation of the facility, create a stigma as being a “sick building,” and waste limited resources. Building owners and operators must consider prevention now, **before fully closing buildings**, and throughout the closure period.



Maintaining indoor environmental conditions is of primary importance—specifically, controlling relative humidity. Building heating, ventilation, and air-conditioning (HVAC) systems are designed to operate under a heat load produced by people, computers, lights, and other activities. People working from home and other altered occupancy patterns reduce a building’s heat load, which can affect an HVAC system’s ability to control relative humidity levels, creating conditions for possible mold and moisture damage to occur. Operating building HVAC and mechanical systems to minimize and control relative humidity during partial and complete closures is critical in order to **avoid the growth of mold** in occupied spaces and HVAC systems. Neglecting to consider the impact of low to no occupancy as we enter the spring and summer months could delay reopening because of mold growth and the need to remediate.





Building water systems are critical and necessary to all building operations. Waterborne pathogens, particularly *Legionella* bacteria, have become a real threat to the general population, as reflected by a 650 percent increase over the past 15 years. Coincidentally, symptoms of Legionnaires' disease

are similar to those of COVID-19, both typified by fever, cough, and shortness of breath. Building-wide and neighborhood **disruptions in water service have caused many outbreaks of Legionnaires' disease** in the past.

Water that sits stagnant for an extended period of time in water mains, building plumbing lines, and water heaters loses residual chlorine disinfectant, which increases the risk of *Legionella* colonization. Building operators cannot assume that municipal water suppliers effectively disinfect and flush the lines, or address growth that occurs in the building's plumbing. The burden of care for managing waterborne pathogens has shifted to building owners and operators. The risk of an outbreak of Legionnaires' disease, after buildings that have been closed for as little as a week or two are reoccupied, is real. It falls upon the owners and operators to assess and manage the risk and implement preventative and remedial measures if needed.

Operating cooling towers during a building or campus shutdown poses another challenge in preventing Legionnaires' disease. Scaled back HVAC system demand and limited availability of maintenance staff



can allow conditions to degrade and *Legionella* bacteria to multiply. Vigilance and aggressive treatment and testing may be needed to avoid conditions that could lead to an outbreak of Legionnaires' disease.

Finally, prior to re-occupancy, and periodically thereafter, it may be necessary to **clean and disinfect interior occupied spaces, furnishings, and mechanical systems**, to reduce the risk of contracting COVID-19 (see current [CDC guidelines](#)). Resources, qualified contractors, and disinfectants needed to carry out the cleaning will likely be in high demand and low supply during this crisis. Selecting appropriate and effective disinfectants* before they are needed is one way to ensure the building is ready to reoccupy when the time arrives. Establishing contracts with vendors to perform disinfection, and vetting their methods and proposed chemical disinfectants, can be performed during the building closure to facilitate re-occupancy. Once a building is reoccupied, management should consider ongoing cleaning and disinfection activities.

These and other measures should be considered and enacted before any ordered closures or quarantines.

*<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>



Many industrial hygienists and infection control professionals have the expertise to review toxicity and efficacy of disinfectant chemicals, identify safe remediation practices, assess the risk of COVID-19, and develop management plans to control other building-related hazards such as *Legionella* and mold. They are available to assist and advise. The American Industrial Hygiene Association (AIHA) provides a [consultants listing](#) of industrial hygienists, Certified Industrial Hygienists (CIHs), and other occupational and environmental health and safety professionals

by state and specialty. The American Board of Industrial Hygiene also provides an [online list](#) of CIHs that can be searched by state. Look for professionals who have expertise in Legionnaires' disease prevention and outbreak response, as well as in remediation and disinfection efforts.

As your organization prepares for the COVID-19 shutdown, be sure to consider re-occupancy and focus on preparing the facilities and interim operations for the day we return to normalcy.

This guidance document has been prepared by the following volunteers as part of efforts by the Indoor Environmental Quality Committee of the American Industrial Hygiene Association.

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