

COVID-19 & Commercial Drinking Water Quality Concerns

Addressing drinking water quality concerns following prolonged building closures

BY LAUREN DEL CIELLO

Commercial buildings across the U.S.—including schools, office buildings, hotels, resorts, restaurants, childcare facilities and more—have closed their doors for a prolonged period of time amid shelter-in-place orders due to the coronavirus, also known as COVID-19. As some states begin to ease shelter-in-place orders and reopen commercial facilities, water quality concerns are essential to consider and mitigate. Do you have a water management program in place?

What Are the Biggest Drinking Water Quality Threats?

The two biggest drinking water quality threats commercial building managers should consider as buildings begin to reopen following prolonged closures are disinfectant residuals and corrosion of metals, according to Erica Walker, director of policy and programs for 120Water.

“Disinfectant residuals can be depleted as stagnant water sits in plumbing,” Walker said.

“This produces more favorable conditions for the growth of organisms and bacteria like legionella, which can lead to a pneumonia like illness called Legionnaires’ disease.”

Legionnaires’ disease is a type of pneumonia caused by legionella bacteria, which spreads through mist and can be contracted from water systems at commercial buildings under certain circumstances. Symptoms include coughing, shortness of breath and high fever. The disease primarily impacts older or immunocompromised individuals, according to the U.S. Centers for Disease Control and Prevention (CDC). Water maintenance plays a significant role in preventing the spread of the bacteria and disease. Particularly, warm water and longer stagnation periods can contribute to the growth of the bacteria.

An additional concern associated with disinfectant residuals is a buildup of byproducts. Longer stagnation periods provide a longer contact time for disinfectants to interact with organic matter in the water.

This can lead to the buildup of disinfectant byproducts, which is a probable carcinogen, according to Walker.

The second water quality concern building managers should consider when reopening buildings following prolonged closures due to COVID-19 concerns is the potential corrosion of metals. Ordinarily, water utilities work to ensure that corrosion control chemicals continuously flow through most drinking water pipes in regular use to protect lead pipes and lead drinking water fixtures from eroding. However, in prolonged periods of building closure, many pipes and fixtures may be at a heightened risk due to a lack of exposure to these chemicals. That risk is compounded by the fact that many drinking water fixtures in use are composed of up to 8% lead, a standard that was only recently lowered in 2014. “Corrosion is a bit like a tea bag,” is a simple metaphor Walker often uses to unpack the risk of lead corrosion for those who may not be familiar with the threat.

“As lead sits with the aging water, it is just more likely to come into solution,” Walker explained, “Like tea leaves sitting in water.”

What Guidelines Exist for Reopening Buildings?

So, how can building managers mitigate these water quality threats and how can water treatment professionals work in partnership with them to ensure safe drinking water as commercial buildings across the country begin to reopen? While there are currently few national or industry guidelines in place for buildings reopening after extended shutdowns, there are a number of resources and tools available to help buildings effectively reopen and protect their drinking water systems.

Andrew Whelton, associate professor of civil, environmental and ecological engineering at Purdue University, is part of a team funded by the U.S. National Science Foundation under a rapid response effort to help create guidances for safely restoring water to medical, residential and commercial buildings following extended shutdowns. Whelton and his peers are working to provide educational support to building managers, water utilities, plumbing associations and community members regarding this topic, as well as developing flushing plans for primary schools and office buildings. He does not, however, anticipate this pandemic will increase the development of emergency response plans for reopening buildings.

“Building owners generally do not have emergency response plans,” Whelton said. “The majority of building owners—excluding healthcare facilities which generally understand their building water systems—the majority of building owners do not think about their building’s water systems safety when they leave it for a weekend or come back after a week. State and federal agencies generally do not consider building reopening as a core public health mission, but they should.”

Despite this lack of awareness, Whelton does anticipate the vast quantity of commercial building systems now facing a need for a comprehensive water management plan may trigger a national discussion on these drinking water quality concerns that may have been previously lacking. He also points to the many partners in the water industry his team has

collaborated with throughout this process, including the American Society of Plumbing Engineers (ASPE) and IAPMO, among others, as key catalysts in these conversations.

“These individuals and these organizations who lead in the plumbing and public health sectors are key to helping make the next giant leap in public safety in responding to this pandemic,” Whelton stressed.

Additionally, water utilities can play an important role in ensuring building owners are aware of the potential risks associated with water stagnation. Point-of-use (POU) and point-of-entry (POE) providers can also partner with building owners both in prevention measures and as final barrier solutions in the event of increased contaminant risks.

Checking In

As COVID-19 concerns and shelter-in-place orders forced water quality professionals to shift their business practices and create innovative ways to connect, WQP launched Checking In: A Video Series With WQP. The series checks in with industry leaders and shares lessons on how the water industry is stepping up amid the pandemic. Stay tuned for more episodes by subscribing to WQP’s Video Alerts at bit.ly/wqp-enews.

Walker pointed to system flushing as a key element of water quality risk mitigation following periods of building closure but stressed that information surrounding flushing best practices is continuously evolving and it is important to be aware of new research on the topic. As far as preparing for the future, building managers and water professionals can take steps to prepare their systems to be more resilient in the face of potential future closures. Walker recommended that, moving forward, all facilities establish a water management plan, including a flushing plan; complete an inventory of plumbing materials; and conduct baseline lead and copper testing.

“I think with those three things: a water management plan, an inventory of plumbing materials, and a sense of where lead concentrations or sources might be in the building, and a flushing plan if something like this happens, you can sort of layer all that information together,” Walker said.

The CDC does have guidance for building water systems following a prolonged shutdown. They recommend eight steps to take before a business or building reopens. The eight steps are listed below and more information can be found via the CDC’s coronavirus building water systems guidance page:

1. Develop a water management program.
2. Ensure your water heater is properly maintained and the temperature is correctly set.
3. Flush your water system.
4. Clean all decorative water features.
5. Ensure hot tubs/spas are safe for use.
6. Ensure cooling towers are clean and well-maintained.
7. Ensure safety equipment is clean and well-maintained.
8. Maintain your water system.

Additional resources for re-opening building water systems following prolonged shutdowns can be found at the Purdue University Center for Plumbing Safety, NSF International and the American Water Works Association.

While the future—from this summer even into 2021—may remain unclear, the need for pre-emptive measures to ensure clean and safe drinking water quality remains absolutely vital. Water continues to be an essential resource and water treatment professionals stand as unsung heroes consistently working to protect this precious resource. Communication surrounding these issues is so important as we adapt to a new normal, now, more than ever.

“Water is a foundation of livable communities,” Whelton said. “And when disasters strike, it’s important to understand how those systems could be affected, take action to prevent the impact and then make certain that they can be brought back to safe use rapidly.” **CW**

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