PUBLICATION

Shutdowns & Stagnant Water: Impact of Coronavirus on Building Owners

Authors: Adam W. Green
March 24, 2020

By Adam Green and Pat Guccione, Vice President of Special Projects for Chem-Aqua

As the novel coronavirus continues to spread, new information is being revealed faster than it can be internalized. Prioritizing health and safety, many business owners rapidly abated or completely shut down their business operations and facilities. Many college dormitories, hotels, shopping malls and other buildings across the country completely ceased facility operations while others are operating with low occupancy.

Under directives to immediately protect the public health, many business owners have not been afforded the time to consider the possible impact of abrupt shutdowns on their building water systems without properly laying the system up for non-use or altering operations to address low occupancy considerations. Under low occupancy or "no occupancy" conditions, domestic water entering a facility will be staying in the building water system much longer than normal as faucets, showers, hose bibs, ice machines, washers and other fixtures that create load or circulation in the system are not used at normal frequency. As the world correctly narrows its focus on eliminating the pandemic, there is growing concern that building water systems which have been allowed to stagnate may be compromised with severe corrosion, scale and biofilm allowing harmful bacteria to proliferate.

The World Health Organization (WHO) has long recognized that "[s]tagnation of the system or areas of stagnant water (e.g. dead legs) prevent proper chemical treatment of the system and allow legionellae and their hosts to proliferate." WORLD HEALTH ORG., LEGIONELLA AND THE PREVENTION OF LEGIONELLOSIS 29 (2007), p. 76. "Most engineered aquatic systems—especially those that are complex (e.g. those in health-care facilities and hotels)—have areas containing biofilms, even when the system is well maintained." WHO, 36. Biofilms are most likely to form in areas of a man-made water system where there is low water flow or where water is allowed to stagnate. Id.

Simply, water treatment chemicals can only treat those areas of the system where the water is flowing. Whether a treatment program is intended to promote system efficiency and longevity or to minimize risk of water borne pathogens such as *Legionella pneumophila*, linear water flow is critical. Stagnation can reduce or fully impede the impact of chemical water treatment causing increased incidence of scale, corrosion and biofilm. Stagnant conditions may likewise promote the proliferation of premise plumbing pathogens including *Legionella pneumophila*.

The WHO illustrated this phenomenon in its 2007 publication, "Legionella and the Prevention of Legionellosis," with an example from a large teaching hospital in the United Kingdom. There, legionellae were intermittently detected at one sentinel outlet, despite the fact there was a comprehensive control regime in place. The source was eventually tracked down to a ten-centimeter length of water-filled pipe where there was little or no flow (a "dead leg"). When this section of pipe was removed, subsequent sampling remained negative.

The sheer scale of the current shutdown amidst the COVID-19 pandemic is orders of magnitude greater. Whereas the WHO study involved stagnation in a ten-centimeter length of pipe, for many building owners, the

pandemic-inspired shutdown is a complete cessation of operations for the entire building water system. There is a profound concern about the nature and degree of system-wide damage and bacteria allowed to proliferate during prolonged periods of stagnation or low occupancy.

While the world remains hopeful that the pandemic will subside as soon as possible, there are notable concerns with bringing stagnant systems back into service after long periods of abatement or low use. *Legionella Pneumophila* famously first appeared in North America in 1976 as the result of long stagnant water lines in the Bellevue Stratford Hotel in Philadelphia being brought back into service without proper flushing/disinfecting. The end of the pandemic could mark a uniform restarting of building water systems after a prolonged period of stagnation without proper water treatment. It is the authors' concern that the defeat of the COVID-19 pandemic may be followed closely by a rash of issues arising from water borne pathogens and massive damage to building water systems.

Building owners and maintenance professionals would be well advised to address these risks. If the existing water risk mitigation plan addresses stagnant systems, it should be referred to for guidance. If not, or if the current situation is more drastic than contemplated in their plan, owners should enlist experts such as chemical water treaters to provide appropriate recommendations. Here are some actions to consider:

- Water treaters and their clients should proactively and openly communicate with each other and coordinate efforts to mitigate against potential impact from COVID-19.

- Owners would be well served to communicate with treaters about system status, any changes in operation and issues that may result therefrom.

- During periods of abatement and "shelter in place" Orders, water treaters may be increasingly reliant on owners to provide complete and accurate information about the building water system at issue. Regular communication with system owners is critical during this time as incomplete, inaccurate or incorrect information can reduce a water treatment program's effectiveness.

- It is advised that all parties accurately document these events as they occur. Whether recorded in a Field Service Report or other client communication, the fact that a service interruption, shutdown, lay-up or reduced load scenario has occurred should be recorded with a disclaimer that these events may interfere or impact the efficacy of the water treatment program.

These circumstances must be addressed on a case-by-case basis as each scenario may have unique challenges.

If you have further questions or need guidance, we are here to help. Adam Green is the chairman of the Baker Donelson's Water Technology & Water Treatment Group. He is available to answer your questions at agreen@bakerdonelson.com. Also, please visit the Coronavirus (COVID-19): What You Need to Know information page on our website.

Pat Guccione is Vice President of Special Projects for Chem-Aqua. He has over 40 years' experience in the water treatment industry. He is available to answer your questions at pat.guccione@nch.com