

Ensuring Water Quality in Building Premise Plumbing

ACTIONS FOR WATER UTILITIES DURING AND AFTER COVID-19

Due to the COVID-19 pandemic, many buildings are experiencing periods of little to no water usage due to shutdowns or a reduction in activity. Water quality problems can arise as water sits in building plumbing systems. Examples of these problems include:

- Warming of cold water and cooling of hot water to temperatures that provide ideal growth conditions for bacteria, including opportunistic pathogens such as *Legionella* that can pose a health threat.
- Sediment build-up in pipes, leading to mechanical issues and bacterial growth.
- Loss of disinfectant residual and formation of disinfection byproducts.
- Increased lead and copper levels due to stagnant water increasing corrosion of pipes and fittings.
- Growth of bacteria in water treatment equipment such as softeners and filters, plumbing fixtures, and hot water heaters that have not been in use regularly.

Actions for Water Utilities

Purdue University conducted a study to help public health officials, building owners, and water utilities better understand building water quality due to low or no occupancy in buildings. The recommendations below are adapted from Purdue's [Frequently Asked Questions - Building Water Safety in Response to COVID-19](https://engineering.purdue.edu/PlumbingSafety/covid19/faq-building-water-safety) (<https://engineering.purdue.edu/PlumbingSafety/covid19/faq-building-water-safety>).

Recommended Short-Term Actions

- Communicate with owners and managers of large buildings about how reduced activity during COVID-19 may impact water quality in their buildings and how they can maintain water quality in their plumbing. We recommend water utilities notify large building owners that it is important for them to share their flushing schedules with other large users in the immediate area to avoid a low pressure incident and/or high water demand, which could lead to increased treatment chemical needs at the water treatment plant or pump house.
 - Provide building owners guidance on how to adequately flush their plumbing systems. See [Flushing Plans](https://engineering.purdue.edu/PlumbingSafety/resources/flushing-plans) (<https://engineering.purdue.edu/PlumbingSafety/resources/flushing-plans>).
- Consider flushing water mains that serve commercial districts or schools where buildings currently have low occupancy or are not being used, and notify those building

owners prior to water main flushing with a recommendation to flush all internal plumbing before water use.

- Consider analyzing distribution system disinfectant residual data to identify portions of the system that are underused to help target flushing. Temporarily expanding or altering monitoring locations may better inform actions.
- Advise owners of buildings that have been vacant that they may want to consider disinfection before people come back into the building if contamination is suspected (for example, known cases of Legionnaire's disease in the building, depressurization of the water pipes, or positive coliform sample results).
- Ask building owners to report low or no water pressure to you immediately.
- Ask health care facilities required to have a Building Water Management Plan to make sure their plan is updated to reflect low water-use in their building(s). More information about this requirement can be found at [Requirement to Reduce Legionella Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires' Disease](https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/QSO17-30-HospitalCAH-NH-REVISED-.pdf) (<https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/QSO17-30-HospitalCAH-NH-REVISED-.pdf>).

Recommended Longer-Term Actions

- Prioritize restoring water service to buildings serving vulnerable populations such as early childhood education facilities, clinics, and long-term care facilities.
- Consider continuing on a regular basis to flush water mains that serve commercial districts where buildings currently have low occupancy or are not being used. Before flushing water mains, notify local building owners, so they can prepare to flush all internal plumbing before water use.
- Offer premise plumbing testing of chlorine residuals to large building owners or guidance on how they can measure chlorine residuals. It's important that this testing occur after building flushing, but before occupant use. Building flushing should increase chlorine residuals.
- Consider analyzing distribution system disinfectant residual data to identify portions of the system that are underused to help target flushing. Temporarily expanding or altering monitoring locations may better inform actions.
- Work with building owners to coordinate the reopening and flushing of buildings to avoid low pressure and depressurization in the distribution system.
- Advise schools that they should follow MDH guidance for lead and copper sampling. See [Reducing Lead in Drinking Water](https://www.health.state.mn.us/communities/environment/water/docs/pbschoolguide.pdf) (<https://www.health.state.mn.us/communities/environment/water/docs/pbschoolguide.pdf>).
- Ask building owners to report low or no water pressure to you immediately.

More Resources

- If you have questions, contact your MDH District Engineer: [Community Public Water Supply: Districts \(https://www.health.state.mn.us/communities/environment/water/docs/comstaffmap.pdf\)](https://www.health.state.mn.us/communities/environment/water/docs/comstaffmap.pdf)
- For more information on the Purdue University Center for Plumbing Safety Building Water Safety Study: [Restoring Water to Medical, Residential, and Commercial Buildings, Shutdowns, Unsafe Water \(https://engineering.purdue.edu/PlumbingSafety/covid19/index.html\)](https://engineering.purdue.edu/PlumbingSafety/covid19/index.html)
- For more guidance on flushing various sizes of building water systems, as well as other concerns for systems reopening after little to no water use:
 - [CDC Guidance for Building Water Systems: Ensure the safety of your building water system and devices after a prolonged shutdown \(https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html\)](https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html)
 - [Building Water Quality and Coronavirus \(https://esprinstitute.org/wp-content/uploads/2020/04/FINAL_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf\)](https://esprinstitute.org/wp-content/uploads/2020/04/FINAL_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf)
 - [Coronavirus: Shutoffs and Return to Service Guidance \(https://www.awwa.org/Resources-Tools/Resource-Topics/Coronavirus#10681543-shutoffs-and-return-to-service-guidance\)](https://www.awwa.org/Resources-Tools/Resource-Topics/Coronavirus#10681543-shutoffs-and-return-to-service-guidance)
- For guidance on communicating with customers: MDH [Drinking Water Risk Communication Toolkit \(https://www.health.state.mn.us/communities/environment/water/toolkit/index.html\)](https://www.health.state.mn.us/communities/environment/water/toolkit/index.html)

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