

# GUIDANCE FOR FLUSHING WATER SYSTEMS

## Overview

This document is intended for both building and business operators who operate within buildings that have been affected by low or zero occupancy and have had reduced water flow during the COVID-19 pandemic. Water lines in these building should be flushed to ensure that potential microbial and chemical risks from stagnant water are minimized. For example, water that stays in lines for a long period of time can have higher amounts of leached chemicals or bacterial growth in the water.

Flushing procedures should be done in accordance with any site-specific protocols. Depending on the complexity of the system, it may be helpful to consult with a plumber or building system engineer to assist with flushing procedures. All components of the water system should be assessed including the water service delivery line, building reservoirs, internal plumbing lines, boilers, water softeners, humidifiers, dehumidifiers, ultrasonic mist machines and hot and cold water lines. Disease-causing organisms can be transmitted to workers and patrons through the aerosols generated at faucets, showers, toilets, humidifiers, decorative fountains and cooling towers. Ingesting the water or preparing food with stagnant water can also be risky.

## COVID-19 Risk Mitigation

<b>System Evaluation</b>	<ul style="list-style-type: none"><li>• Identify all zones in the business or building that have had low or no occupancy.</li><li>• Understand how water moves from the main supply through the water distribution and to the faucets. This will help determine which building sections need to be flushed.<ul style="list-style-type: none"><li>◦ Flush these lines before building tenants return to these areas.</li></ul></li><li>• Flushing times will depend on the size and length of piping, and the flow rate at the flush point.</li><li>• Any stagnant water supplying HVAC systems, humidifiers, decorative water fountains/features, water storage units such as boilers should be flushed. Review and follow any maintenance or manufacturer's procedures related to these systems.</li></ul>
<b>Preparing for Re-Entry</b>	<ul style="list-style-type: none"><li>• At least one complete flush of the water system's volume is needed to refresh the water supply.</li><li>• Flush buildings in a zone by zone fashion, working outwards from the zone nearest the building supply. Follow any site-specific maintenance procedures.</li><li>• Flush cold and hot water taps separately in each zone of the building or business where stagnant water may be present.</li><li>• Drain and flush the cold water system first, then drain and flush the hot water system. Finally, drain and flush the hot water tank and other peripheral equipment. In some cases, filters and filter media may need to be changed.</li><li>• Flush taps for at least 5 minutes and continue flushing until the water temperature is steady and the water is clear of sediment at each fixture.<ul style="list-style-type: none"><li>◦ Sediment and/or discolouring may be signs of potentially deteriorated water.</li><li>◦ If able to measure total chlorine levels, aim for a residual of 0.1 - 0.2 mg/L, after flushing.</li></ul></li><li>• Ensure that the plumbing and water system components are working properly.<ul style="list-style-type: none"><li>◦ As necessary, inspect mechanical and plumbing components such as cooling towers, boilers and pumps.</li><li>◦ Examine plumbing for leaks, depressurization and proper function.</li><li>◦ Ensure that backflow prevention devices are operating properly.</li><li>◦ Verify that hot water storage systems are operating above 50C</li></ul></li><li>• Flush all fixtures within the businesses of a building (faucets, fridge, plumbed-in coffee machines, toilets etc.) and run equipment such as dishwashers and ice machines.</li><li>• Remove and clean aerators on faucets, showers, mixing valves and other fixtures. These can trap contaminants and grow biofilm.</li><li>• Disinfect, flush or replace showerheads in facilities where vulnerable populations have access to the showers.</li></ul>

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	<ul style="list-style-type: none"><li>• After the hot water tank is recharged to 50C, test the temperature at points of use to ensure that scalding risks are eliminated, especially in facilities with vulnerable populations (i.e. children, elderly)</li><li>• Minimize aerosolization during flushing. For example, taps do not need to be fully opened.</li><li>• For buildings with continued limited occupancy, weekly supplemental flushing in those areas which remain vacant or partially occupied is recommended.</li></ul>
<b>Heating, Ventilation and Air Conditioning (HVAC) Systems</b>	<ul style="list-style-type: none"><li>• Cooling systems in buildings with low or zero occupancy or reduced water flow should continue to be operated and maintained.</li><li>• If the cooling towers have been turned off, or not well maintained, contact an industry professional to determine steps needed to physically clean and disinfect the system before returning to operation.</li><li>• Other components of the HVAC system, such as humidifiers which have not been in use should be drained, cleaned and flushed prior to re-occupancy.</li></ul>
<b>Decorative Water Fountains/Features</b>	<ul style="list-style-type: none"><li>• Decorative water fountains with water treatment systems that were shut-off and drained may be refilled.</li><li>• If the decorative water fountain does not have a treatment system, the fountain should be drained and cleaned before recommissioning. Prior to start-up of a fountain that has been drained:<ul style="list-style-type: none"><li>○ Clean all decorative water features, including water lines for spray features, ensuring they are free of visible slime or biofilm, and drain water used for cleaning to waste.</li><li>○ Follow any recommended manufacturer guidelines for cleaning.</li><li>○ Refill the water feature and chlorinate to a minimum total chlorine residual of 0.2 mg/L.</li></ul></li></ul>