

Recommendations for Non-Residential Commercial Buildings

Stagnant water or reduced water use over an extended period can lead to various water quality problems. The water chemistry changes during stagnant periods and this can result in loss of disinfectant chlorine residuals, increased bacterial growth, elevated levels of harmful disinfection byproducts, and the disruption of scale and biofilm that attaches to the interior of pipes. During unoccupied periods and closures, plumbing and mechanical systems might not receive routine maintenance to preserve water quality. This water can become unsafe to use for residential or commercial purposes. Water stagnant in corroding iron pipes may also develop undesirable color.

To protect the health and safety of the occupants, Town of Ocean City recommends that building owners or managers take proactive steps to inspect and maintain building water quality prior to reopening.

Town of Ocean City has created these recommendations to assist customers on restoring building water quality after any closures or periods of low use. The intent of these recommendations is to help restore water quality due to possible stagnation and does not address water quality issues in buildings that existed prior to stagnation. These recommendations are based on guidelines from the U.S. Environmental Protection Agency (EPA), Centers for Disease Control and Prevention (CDC), and American Water Works Association (AWWA). Every building is different and may require unique methods to restore water quality.

Property owners are responsible for maintaining the quality of water in building plumbing systems and internal water quality. Consult a State of Maryland licensed plumber, licensed engineer, or personnel that specializes in building water management for assistance with carrying out these recommendations.

Recommendations for Homes or Small Buildings

Before Flushing:

- First, notify everyone in the building not to use or consume water until flushing is complete. We recommend that flushing be performed with proper ventilation and personal protective equipment to avoid potential infection with Legionnaires' disease.
- Remove and clean all aerators (leave aerators off during flushing); clean all faucets and showerheads; discard any accumulated ice.
- Water treatment systems, such as whole-house water treatment, point-of-use filters, or water softeners, may need additional maintenance. Building owners must determine if it is feasible to temporarily disconnect or bypass these devices because

most of these treatment devices remove chlorine. Flushing is more effective when chlorine is present in the water.

- Take steps to prevent backflow or the siphoning of contaminants into plumbing (e.g., close valves separating irrigation systems from home plumbing, disconnect hoses attached to faucets).
- Take steps to prevent flooding or damage; make sure drains are open and clear.

Flushing Instructions:

- Begin flushing by opening a cold-water fixture without an aerator or flow restrictions, such as a hose bib or tub spout. Flush for 10 minutes.
- Next, complete a sequential flush with cold water. Open faucets one by one, starting with the one closest to the point of entry to the house or building. Start from the lowest level and move up to the highest floor. Typical durations in existing protocols range from 10 to 30 minutes for each outlet (duration varies based on pipe volume and flowrate). Close faucets in reverse order.
- Complete a sequential flush with hot water. Open faucets one by one, starting with the one closest to the point of entry to the house or building. Start from the lowest level and move up to the highest floor. Typical durations in existing protocols range from 10 to 30 minutes for each outlet (duration varies based on pipe volume and flowrate). Add additional time for tank water heaters; it can require roughly 45 minutes to fully flush a typical 40-gallon hot water tank. Close all faucets.
- Additional precautions may be warranted if there are still concerns about water quality. If you experience water quality problems even after flushing, such as discolored water or taste and odor, please call Town of Ocean City plumbing inspector (410)289-8713 or email the plumbing inspection dept. jevans@oceancitymd.gov.

Recommendations for Non-Residential Commercial Buildings

Water distribution systems within commercial buildings can vary in size and range from simple to complex. A complex water distribution system may require more substantial efforts to restore water quality. The following are some example attributes within more complex water distribution systems:

- Fire protection/sprinkler system
- More than one hot water heating system
- Hot water recirculation
- Connections that require backflow preventers
- Connections to mechanical systems; cooling towers, heating water, humidifiers
- Connected equipment; commercial kitchens, industrial processes, laboratories, healthcare, ice machines
- Water treatment and filters
- Domestic water booster pumps
- Emergency showers/eyewashes
- Age of system, age of building, previous renovations
- Multi-use buildings

Property owners are responsible for maintaining the quality of water within building plumbing systems. Consult a State of MD licensed plumber, licensed engineer, or personnel that specializes in building water management for assistance with carrying out these recommendations.

Before Flushing:

- Notify everyone in the building not to use or consume water until flushing is complete. We recommend that initial flushing be performed by a person that specializes in building management with proper ventilation and personal protective equipment to avoid potential infection with Legionnaires' disease.
- Survey water system for the following,
 - Location of incoming water service
 - Water treatment systems
 - Water heating systems and recirculation
 - Water storage systems
 - Backflow preventers and connected equipment
 - Distribution zones
- Sketch a plan or create a diagram of building water systems, components and zones
- Take steps to prevent flooding or damage; make sure drains are open and clear
- Maintain any water treatment systems, such as whole-house water treatment or point-of-use filter, or water softeners. The building manager must determine whether it is feasible or safe to bypass these devices during flushing, as some of them are placed in service for a reason. If it is not feasible to bypass, they should be carefully inspected, cleaned, or flushed separately.
- Check all mechanical equipment, such as boilers, cooling systems, backflow preventers, and sprinkler systems, to ensure there are no opportunities to reintroduce stagnant water.

Initial Flushing Instructions:

- Flushing should proceed zone by zone, starting from the point of entry and progressively moving toward the farthest point. This is called unidirectional flushing.
- Begin flushing the zone(s) closest to the water supply point of entry, repeating the process in all zones and moving progressively outward from the water supply point of entry.
- Next, repeat the flushing process with hot water. Run water until the water temperature remains stable for a few minutes.
- Replace all point-of-use filters, including the filter in refrigerators and ice machines.
- Check all backflow prevention devices for test tags and up-to-date testing.
- At the end of initial flushing and until water quality is fully restored, Town of Ocean City recommends testing the water for chlorine residual and coliform bacteria. The residual-free chlorine level must be no less than 0.1 mg/L and total coliforms must be absent.

Ongoing Flushing and Maintenance

- For small and large buildings with onsite underground water conveyance, we recommend that customers repeat the flushing process until water quality is fully restored.
- Depending on the size of the onsite water conveyance system and the length of the vacancy, additional treatment measures may be necessary. This includes disinfecting the entire water system with highly chlorinated water, and subsequently flushing to remove high levels of chlorine and testing for coliforms to ensure the system is free of bacterial contamination.

*****Credit for these guidelines goes to the Washington Suburban Sanitation Commission*****