

What happened in my building water system while the building was out of use?

- The building water system begins at the meter where water enters the building and includes all plumbing, storage and fixtures to each distal tap.
- When the water was not used, the disinfectant in the water dissipated. Without the disinfectant, microorganisms grew on pipes, fixtures and tanks. Some of these may cause disease if they are consumed or inhaled as droplets (particularly while showering).
- The protective scale on pipes could have destabilized. Without the protective scale, toxic metals like lead can dissolve or shear off as particles and end up in water used for drinking or food preparation.
- Potentially harmful substances such as disinfection byproducts (DBPs) built up.
- Mechanical equipment such as cooling towers, boilers and pumps may not have received any routine maintenance. Backflow preventers may have missed annual test cycles.

How do I prepare the building for re-occupancy?

- A. The best immediate action is to flush the entire building, including all water-using appliances like ice machines and dishwashers. Flushing clears out the low quality water that accumulated during low use and replaces it with high quality water from the municipal supply. The fresh water will help mitigate the problems (loss of protective scale and biofilm growth) that emerged while the water was stagnant. If staff are available to flush, start now. Starting flushing now means less deterioration of water quality in the building and a sooner recovery to normal conditions.
- B. Inspect mechanical equipment such as cooling towers, boilers, pumps, backflow preventers, etc., and determine if there are any issues regarding their function.
- C. Other actions you could take are:
 - a. Clean showerheads, faucets and other fixtures that can produce aerosols that people could inhale,
 - b. Develop a water safety plan, a long-term plan for keeping water quality high and protecting building occupants and visitors, and
 - c. Collect water samples for analysis at a qualified laboratory (only recommended for buildings with specific at-risk populations like children in childcare and elderly people).
- D. Disinfecting buildings water systems with concentrated chlorine should be considered when there is a strong reason to believe the building is contaminated with pathogens like *Legionella pneumophila*, the bacterium that causes Legionnaires' disease, and/or the people who use the building are particularly susceptible to infections like Legionnaires' disease. Disinfectants (chlorine) are dangerous to handle and can cause serious damage to plumbing system components if used improperly. In most cases, flushing buildings with water that has normal amounts of chlorine (the chlorine already in the building water supply) is sufficient for cleaning the water system.

Other suggestions for large buildings several days prior to returning:

- A. If applicable, ensure booster/lift pumps are properly primed prior to operation (for some multistory buildings).
- B. Empty and refill water heater tanks, in accordance with manufacturer instructions, to get rid of any accumulated debris from sacrificial anode rods and ensure stagnant water is replaced with fresh water.
- C. Fill lines to remove air pockets using potable water from the public supply system.
 - a. This can be achieved by opening faucets or taps at the furthest parts of the complex or the upper floors of multistory buildings.
 - b. Flushing toilets throughout the system will help pull larger amounts of water through the pipes.
 - c. Open both hot and cold taps to assure the water that has circulated through the water heating system and that is in any holding tanks is also refreshed.
- D. Flush until water runs clear to remove debris and any stagnant water (color and odor).
- E. At furthest point of system, check for color and odor.
 - a. Flush both hot and cold lines until there is no observed debris, color or odor.
- F. For multilevel buildings, check on upper floors and at the outside of the buildings for observable debris, color or odor.
- G. Once there is no observable debris, color or odor at representative taps throughout the system, turn the water off and let the system remain overnight if possible.
- H. The next day, repeat the flushing procedure throughout the building or complex. Observe the level of discoloration, debris or odor that flushes from the taps. If there is a noticeable level of debris, color or odor, repeat the process
- I. Once the water consistently runs clear and has no observable debris, color or odor as stated in step C, consider contacting your local utility to collect bacteriological samples at representative points to assure the water is safe to drink.
 - a. Samples should be taken from upper floors in multistory buildings, in each building and/or at the furthest points of the distribution pipes.