

# Guidance for Building Water Systems

Ensure the safety of your building water system and devices after a prolonged shutdown

Stagnant, or standing water can cause conditions that increase the risk for growth and spread of *Legionella* and other biofilm-associated bacteria. When water is stagnant, hot water temperatures can decrease to the *Legionella* growth range (77–108°F, 25–42°C). Stagnant water can also lead to low or undetectable levels of disinfectant, such as chlorine. Ensure that your water system is safe to use after a prolonged shutdown to minimize the risk of Legionnaires' disease and other diseases associated with water.

8 Steps to take before your business or building reopens

1. Develop a comprehensive water management program (WMP) for your water system and all devices that use water. Guidance to help with this process is available from CDC and others.
  1. Water Management Program Toolkit:  
This toolkit is designed to help people understand which buildings and devices need a *Legionella* water management program to reduce the risk of Legionnaires' disease, what makes a good program, and how to develop it.  
<https://www.cdc.gov/legionella/wmp/toolkit/index.html>
  2. Preventing Legionnaires' Disease: A Training on *Legionella* Water Management Programs (PreventLD Training)  
Take this training from CDC and partners on creating a water management program to reduce risk of Legionnaires' disease. PreventLD Training aligns with industry standards on managing risk of *Legionella* bacteria.  
<https://www.cdc.gov/nceh/ehs/elearn/prevent-LD-training.html>
  3. Hotel Guidance:  
Considerations for Hotel Owners and Managers: How to Prevent Legionnaires' Disease  
<https://www.cdc.gov/legionella/wmp/hotel-owners-managers.html>
  4. Operating Public Hot Tubs for pool staff and owners  
<https://www.cdc.gov/healthywater/swimming/aquatics-professionals/operating-public-hot-tubs.html>
  5. From Plumbing to Patients  
Water management programs in healthcare facilities are an important way to help protect vulnerable patient populations as well as staff and visitors.  
<https://www.cdc.gov/hai/prevent/environment/water.html>
  6. Preventing Occupational Exposure to *Legionella*  
<https://www.cdc.gov/niosh/docs/wp-solutions/2019-131/default.html>
2. Ensure your water heater is properly maintained and the temperature is correctly set
  1. Determine if your manufacturer recommends draining the water heater after a prolonged period of disuse. Ensure that all maintenance activities are carried out according to the manufacturer's instructions or by professionals.
  2. Make sure that your water heater is set to at least 120°F
  3. Higher temperatures can further reduce the risk of *Legionella* growth, but ensure that you take measures to prevent scalding if your water heater is set to >130°F
3. Flush your water system
  1. Flush hot and cold water through all points of use (e.g., showers, sink faucets)

1. Flushing may need to occur in segments (e.g., floors or individual rooms) due to facility size and water pressure. The purpose of building flushing is to replace all water inside building piping with fresh water.
2. Flush until the hot water reaches its maximum temperature
4. Clean all decorative water features, such as fountains.
  1. Be sure to follow any recommended manufacturer guidelines for cleaning
  2. Ensure that decorative water features are free of visible slime or biofilm
  3. After the water feature has been re-filled, measure disinfectant levels to ensure that the water is safe for use
5. Ensure hot tubs/spas are safe for use
  1. Check for existing guidelines from your local or state regulatory agency before use
  2. Ensure that hot tubs/spas are free of visible slime or biofilm before filling with water
  3. Perform a hot tub/spa disinfection procedure before use
    1. CDC Guidance (start at Step 4): <https://www.cdc.gov/legionella/downloads/hot-tub-disinfection.pdf> pdf icon
6. Ensure cooling towers are clean and well-maintained
  1. Ensure that cooling towers are maintained (including start-up and shut-down procedures) per manufactures guidelines and industry best practices
  2. Ensure that the tower and basin are free of visible slime or biofilm before use
    1. If the tower appears well-maintained, perform an online disinfection procedure
      - Guidance on disinfection procedures from the Cooling Technology Institute: <http://www.cti.org/downloads/WTP-148.pdf> pdf icon external icon
7. Ensure safety equipment including fire sprinkler systems, eye wash stations, and safety showers are clean and well-maintained
  1. Regularly flush, clean, and disinfect these systems according to manufacturers' specifications.
8. Maintain your water system
  1. Consider contacting your local water utility to learn about any recent disruptions in the water supply. This could include working with the local water utility to ensure that standard checkpoints near the building or at the meter to the building have recently been checked or request that disinfectant residual entering the building meets expected standards.
  2. After your water system has returned to normal, ensure that the risk of *Legionella* growth is minimized by regularly checking water quality parameters such as temperature, pH, and disinfectant levels.
  3. Follow your water management program, document activities, and promptly intervene when problems arise.

## Additional Resources

- [CDC Model Aquatic Health Code](#)
- [CDC Healthcare Water System Repair and Recovery Following a Boil Water Advisory or Disruption of Water Supply](#)
- [ASHRAE Standard 188: Legionellosis Risk Management For Building Water Systems](#) external icon
- [ASHRAE Guideline 12: Minimizing the Risk of Legionellosis Associated with Building Water Systems](#) external icon
- [Cooling Technology Institute Legionellosis Guideline 2008 \(WTP -148\)](#) pdf icon external icon
- [Cooling Technology Institute Legionellosis Guideline 2019 \(GLD 159\)](#) external icon