

ISSUE BRIEF

GUIDANCE ON LEGIONELLA / LEGIONNAIRES' DISEASE

WHAT IS LEGIONELLA?

- First identified in 1976 at an American Legion Conference; 29 people died.
- Legionella is a bacterium that thrives in slow moving or stagnant water.
- Non-contagious; must be breathed in by humans for contamination to take place
- Waterborne, often found in mist.
 - Must be aerosolized so that it can be breathed in via small, contaminated water droplets.
- Legionnaires' Disease is a life-threatening type of bacterial pneumonia contracted when breathing in mist contaminated with Legionella.
 - Worst effects experienced by people with compromised immune systems, elderly, asthmatics, smokers.
- Approximately 10% of Legionnaires' Disease cases prove fatal. Roughly 400-2,000 deaths each year may result from Legionnaires'.
- Estimates suggest that 8,000-18,000 people are hospitalized by legionella every year.

WATER DISINFECTION BY TEMPERATURE

Above 158°F	• Disinfection Range
151°F	• Legionellae die within 2 minutes
140°F	• Legionellae die within 32 minutes • Risk of scalding
Above 122°F	• Legionellae can survive but do not multiply
68°F - 122°F	• Legionellae growth range • Ideal growth range is 95°F - 115°F
Below 68°F	• Legionellae can survive, but are dormant • Ideal for cold water storage, piping, fountains, etc.

COMMERCIAL PROPERTY RISKS

- Legionella can be found where water is heated, stored, or transferred:
 - Hot water heaters
 - Cooling towers
 - Showers, hot tubs
 - Pipes, valves, fittings
 - Eye wash stations
 - Water fountains
 - Decorative fountains

NOTABLE OUTBREAK AND RESULTS

- 13 people died due to Legionnaires' in NYC during the summer of 2015.
 - Traced to a cooling tower in the Bronx, NY.
 - In response, NYC adopted Local Law 77 requiring the following for all cooling towers:
 - Inspection
 - Cleaning/disinfection
 - Testing
 - Documented management and maintenance plans

EXAMPLE MANAGEMENT AND MAINTENANCE PLAN FOR BUILDING OWNERS AND MANAGERS

- Establish a team to be responsible for ongoing testing and mitigation.
- Determine water system goals.
- Develop a description of water systems, flow diagrams.
- Conduct risk assessment of the water systems control measures.
- Create a testing plan with set locations and frequency.
- Confirm the program is being implemented as designed.
- Document and communicate results.



TESTING AND REGULATIONS

- GSA (General Services Administration)'s target is 0 CFU/mL (colony forming units/mL).
- If you decide to test, be prepared for a positive result and ready to react.
- Methods of Testing:
 - Conduct annually or bi-annually as part of an Indoor Air Quality (IAQ) program.
 - Perform random sampling from various stages of circulating hot water systems.



CORRECTIVE ACTIONS

- Flush out your systems.
- Increase the temperature of your water to 140 degrees F and maintain a minimum of 120 degrees F at your faucets (may need to bypass the timers and the cold-water mixing valve).
- Chemically shock the system once or maintain a long-term control system.
- Examples of systems:
 - Instantaneous hot water heaters.
 - Copper silver ionization, on-line chlorination, chlorin dioxide, chloramine treatment.
 - Point of use filters that attach to faucets (may not fit on your sink faucets and require regular maintenance).

ASHRAE 188-2021, LEGIONELLOSIS: RISK MANAGEMENT FOR BUILDING WATER SYSTEMS

- Establishes minimum legionellosis risk management requirements for building water systems.
- Describes environmental conditions that promote the growth of Legionella.
- Includes suggestions, recommendations, and references to additional guidelines.
- Replaces the 2018 version's permissive language with enforceable language.

Resources

- CDC: [Preventing Occupational Exposure to Legionella](#)
- OSHA: [Legionellosis \(Legionnaires' Disease and Pontiac Fever\) - Overview | Occupational Safety and Health Administration](#)
- EPA: [Legionella | US EPA](#)
- AIHA: [Recognition, Evaluation, and Control of Legionella in Building... | AIHA](#)
- WHO: [Legionellosis](#)
- BOMA/NY; Tom Layden, CodeGreen; A Pinchin Company Webinar: [Legionella Risks in Commercial Office Domestic Water Systems Presented by Tom Layden from CodeGreen](#)