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Water Management Programs Are Key to Managing *Legionella* Growth and Spread

National Center for Environmental Health
Centers for Disease Control and Prevention

Editor's Note: The National Environmental Health Association (NEHA) strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, NEHA features this column on environmental health services from the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In these columns, authors from CDC's Water, Food, and Environmental Health Services Branch, as well as guest authors, will share insights and information about environmental health programs, trends, issues, and resources. The conclusions in these columns are those of the author(s) and do not necessarily represent the official position of CDC.

Elaine Curtiss is a public health analyst. Janie Hils is a fellow with the Oak Ridge Institute for Science and Education (ORISE). CDR Jasen Kunz is an environmental health subject matter expert for Legionnaires' disease. All work at the National Center for Environmental Health and the Water, Food, and Environmental Health Services Branch within CDC.

In summer 2021, several U.S. public health jurisdictions reported increases in Legionnaires' disease cases above their respective 5-year baseline averages (Michigan Department of Health & Human Services, 2021). While the Centers for Disease Control and Prevention (CDC) does not know to what extent building water systems might have contributed to these increases, periods of reduced building occupancy or building closure and low water usage can create hazards for occupants. Reopening schools, workplaces, and businesses—and more people traveling and staying in hotels—can elevate the risk of exposure to *Legionella* bacteria if appropriate steps are not taken. Environmen-

tal health professionals have an important role in reminding building owners, building operators, and cooling tower operators of ways to safely reopen buildings to prevent the growth of *Legionella*.

Water management programs help people identify hazardous conditions and take steps to minimize the growth and spread of *Legionella* and other waterborne pathogens in building water systems. Developing and maintaining a water management program is a multistep process that requires continuous review. Such programs are now an industry standard for many buildings in the U.S.

CDC recently released a plain language summary on findings from a review of CDC-

led Legionnaires' disease outbreak investigations from 2015–2019 (www.cdc.gov/nceh/ehs/activities/water-mgt-gaps-ld-outbreaks.html). The analysis found that the most common (4 in 10) deficiency in water management programs was that a building lacked one altogether (Clopper et al., 2021). CDC investigations show, however, that almost all (9 in 10) Legionnaires' disease outbreaks were caused by problems preventable with more effective water management (Garrison et al., 2016).

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#VitalSigns

VitalSigns^{cdc}
www.cdc.gov/vitalsigns/legionnaires

CDC's toolkit—Developing a Water Management Program to Reduce *Legionella* Growth and Spread in Buildings (www.cdc.gov/legionella/wmp/toolkit/index.html)—is designed to help people understand

- which buildings and devices need a *Legionella* water management program to reduce the risk for Legionnaires' disease,
- the key elements of a water management program, and
- how to develop it.

Remind Building Owners and Operators of the Risk From Stagnant or Standing Water in a Plumbing System



Ensuring that the building water system is safe to use after a prolonged shutdown can minimize the risk of Legionnaires' disease and other diseases associated with water.

Stagnant or standing water in a plumbing system can increase the risk for growth and spread of *Legionella* and other biofilm-associated bacteria. When water is stagnant, the hot water temperatures in buildings can fall into the favorable range for *Legionella* growth (77–113 °F [25–42 °C]). Stagnant water can also lead to low or undetectable levels of disinfectant, such as chlorine. Ensuring that the water system is safe to use after a prolonged shutdown can minimize the risk of Legionnaires' disease and other diseases associated with water.

CDC recommends steps to minimize risk when reopening buildings, such as flushing water systems. Resources for creating a water management program, special considerations for hotels and hot tubs, and much more are available at www.cdc.gov/nceh/ehs/water/legionella/building-water-system.html.

Remind Cooling Tower Operators of the Importance of Following Best Practice Operation and Maintenance Guidance

Safe operation and regular cooling tower maintenance help protect building operators, staff, visitors, and the adjacent community from exposure to *Legionella*. The frequency of these activities depends on the cooling load, the environmental conditions present in the area where the cooling tower is located, and the design of the cooling tower. A water management program can help cooling tower operators establish, track, and improve operation and maintenance activities.

CDC has information to help evaluate hazardous conditions associated with all types of cooling towers and evaporative condensers, implement *Legionella* control measures for cooling towers per ASHRAE Guideline 12-2020, and more at www.cdc.gov/legionella/wmp/control-toolkit/cooling-towers.html.

Explore More Tools for Preventing Growth and Spread of *Legionella* and Responding to Outbreaks of Legionnaires' Disease

The Toolkit for Controlling *Legionella* in Common Sources of Exposure (www.cdc.gov/legionella/wmp/control-toolkit/index.html) provides public health professionals and building owners and operators with concise, actionable information on controlling *Legionella* in commonly implicated sources of Legionnaires' disease outbreaks.

This toolkit can:

- Help its users evaluate hazardous conditions in systems that are commonly associated with *Legionella*.
- Guide implementation of *Legionella* control measures per ASHRAE Guideline 12-2020.
- Complement existing resources for water management programs, including the Water Management Program Toolkit.
- Support public health professionals when conducting environmental assessments during investigations.



Take the Preventing Legionnaires' Disease training from the Centers for Disease Control and Prevention and partners on creating a water management program to reduce the risk for Legionnaires' disease.

A *Legionella* water management program consists of:

- Establishing a water management program team.
- Describing the building water system using words and diagrams.
- Identifying areas where *Legionella* could grow and spread.
- Deciding where control measures should be applied and how to monitor them.
- Establishing ways to intervene when control limits are not met.
- Making sure the program is running as designed and is effective.
- Documenting and communicating all the activities.

The Preventing Legionnaires' Disease: A Training on *Legionella* Water Management Programs (PreventLD Training, www.cdc.gov/nceh/ehs/elearn/prevent-LD-training.html) addresses the 7 steps of a *Legionella* water management program. These steps, outlined in CDC's Water Management Program Toolkit, operationalize ASHRAE Standard 188 for minimizing the risk of Legionnaires' disease.

Environmental health practitioners have essential expertise for responding to and preventing outbreaks of Legionnaires' disease. CDC has additional tools and information for environmental health professionals to better understand how to control and manage the growth of *Legionella* in a variety of settings at www.cdc.gov/nceh/ehs/activities/legionella.html. 🚗

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