



MONTHLY SAFETY BRIEF: LEGIONELLA

Certain Hygieneering staff members get involved with *Legionella* evaluations. These projects typically involve collecting a water sample from a building reservoir, such as a cooling tower. We compare our results to guidelines set by OSHA. This month's safety brief provides all staff with background information of this bacteria for general environmental knowledge as well as safety information for project work.

Legionella Basics

Legionella is a type of bacterium found naturally in freshwater environments, like lakes and streams. It can become a health concern when it grows and spreads in human-made building water systems such as:

- Showerheads and sink faucets
- Cooling towers (structures that contain water and a fan as part of centralized air-cooling systems for building or industrial processes)
- Hot tubs that aren't drained after each use
- Decorative fountains and water features
- Hot water tanks and heaters
- Large plumbing systems

People who get sick after being exposed to *Legionella* can develop two different illnesses: Legionnaires' disease and Pontiac fever. Legionnaires' disease is a severe form of pneumonia — lung inflammation usually caused by infection. Pontiac Fever is a milder form of Legionnaires' disease.

How Legionella Spreads

After *Legionella* grows and multiplies in a building water system, water containing *Legionella* then must spread in droplets small enough for people to breathe in. People can get Legionnaires' disease or Pontiac fever when they breathe in small droplets of water in the air that contain the bacteria. Less commonly, people can get sick by aspiration of drinking water containing *Legionella*. This happens when water accidentally goes into the lungs while drinking. *Legionella* bacteria is commonly found in water. The bacteria multiply where temperatures are between 68 – 113 °F and nutrients are available. The bacteria are dormant below 68 °F and do not survive above 140 °F.

Who is at risk?

Most healthy people exposed to *Legionella* do not get sick. People at increased risk of getting sick are:

- People 50 years or older
- Current or former smokers
- People with a chronic lung disease (like chronic obstructive pulmonary disease or emphysema)
- People with weak immune systems or who take drugs that weaken the immune system (like after a transplant operation or chemotherapy)
- People with cancer
- People with underlying illnesses such as diabetes, kidney failure, or liver failure

Managing Legionella

Managing Legionella and preventing worker exposures and Legionellosis cases depend on implementing an effective water management program. These programs focus on describing water systems and their



components, identifying areas where *Legionella* could grow, deciding where control measures are needed and how to monitor them, planning response actions when control measures fail, and monitoring and documenting water management activities.

OSHA Guidelines

OSHA provides the following guidelines to assess the effectiveness of water system maintenance and to interpret sampling results. They are intended to apply only to water systems being used by healthy individuals and are not necessarily protective for people who are immuno-compromised.

Table 1. Colony Forming Units (CFU) of LDB per milliliter			
Action	Cooling tower/Evaporative Condenser	Potable water	Humidifiers and Misters
1	100	10	1
2	1,000	100	10

The levels requiring action vary for the source of exposure, based on the assumption that some routes of exposure result in a greater dose to the lung. For this reason, humidifiers and similar devices (such as misters and evaporative condensers) produce aerosol mists and therefore, need to be controlled to lower levels than cooling towers and domestic water supplies to minimize the risk of inhalation. Levels of LDB equal to or greater than the values in the table constitute a need for action, as described below:

Action 1

- Cleaning followed by biocide treatment of the system, if appropriate.

Action 2

- Cleaning and or biocide treatment.
- Take immediate steps to prevent employee exposure.

**Remember that these numbers are only suggested guidelines, and the goal is zero detectable LDB in a water source.

[Adapted from George K. Morris and Brian G. Shelton, PathCon™ Technical Bulletin 1.5, p-2, *Legionella* Bacteria in Environmental Samples: Hazard Analysis and Suggested Remedial Actions, June 1998, Pathogen Control Associates, 270 Scientific Dr., Suite 3, Norcross, GA 30092]



LEGIONELLA QUIZ

1. Where can *Legionella* be found?
 - a. Streams
 - b. Ponds
 - c. Lakes
 - d. All the above

2. What temperature of water does *Legionella* grow the best in?
 - a. 30 °F
 - b. 40 °F
 - c. 75 °F
 - d. 120 °F

3. What diseases are associated with *Legionella*?
 - a. Hay Fever
 - b. Pontiac Fever
 - c. Legionnaires' Disease
 - d. b & c only

4. A water management program is a method of protecting against legionella.
 True
 False

5. A result of 1200 cfu of *Legionella* bacteria per milliliter in a cooling tower of a hospital would not require immediate action.
 True
 False

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SCORE: PASS / FAIL

Employee Signature



Supervisor Signature

Date