

What Schools Need To Know About Testing for *Legionella*

October 2016

Legionnaires' disease outbreaks have often been reported in the news. This has led some school officials to order testing of school buildings for *Legionella* bacteria. This fact sheet explains why stand-alone testing should not be the first response to concerns about Legionnaires' disease, and why it often leads to unnecessary confusion and fear.



What is *Legionella* and Legionnaires' Disease?

Legionella is a bacterium that is naturally found in water bodies such as lakes, rivers, streams and wet soils. It is also commonly found in building plumbing systems, cooling towers, decorative fountains, spas, and misters. There are over 150 different species of *Legionella*. Only a few species are known to cause human disease. Of those, the vast majority of disease is caused by a species called *Legionella pneumophila*.

Legionnaires' Disease is a type of bacterial pneumonia caused by *Legionella pneumophila*, and occasionally by other species of *Legionella*.



Illness in susceptible people can occur from breathing in tiny water droplets contaminated

with *Legionella* bacteria. People who become ill are usually in the increased risk category as described below. People cannot develop Legionnaires' disease from person-to-person contact. Less than 5% of people exposed to the bacteria will go on to develop Legionnaires' disease.

Who is at risk for developing Legionnaires' Disease?

People at increased risk for developing Legionnaire's disease are over age 50, current or former smokers, those with chronic lung disease like emphysema or COPD, those with weakened immune systems from conditions like cancer, diabetes, or kidney failure, or transplant patients taking drugs to prevent rejection of the transplanted organ. Some of these people are not strong enough to fight the infection and die from it.

Increased Risk For Legionnaires' Disease

- People over age 50
- Current or former smokers
- Those with chronic lung disease (like chronic obstructive pulmonary disease or emphysema)
- People with a weakened immune system from diseases like cancer, diabetes, or kidney failure
- People who take drugs that suppress (weaken) the immune system (like after a transplant operation or chemotherapy)
- **Healthy children rarely develop Legionnaires' Disease**

Note that healthy children are **NOT** at any increased risk for developing Legionnaires' disease.



What does it take to cause disease?

Legionella bacteria are naturally found in the environment. It is very common to find these bacteria in building plumbing systems. However, finding *Legionella* in building plumbing does not automatically mean that people will get sick. In order for disease to occur, three conditions must be in place:

1. The concentration of *Legionella* bacteria needs to be elevated in building water systems or cooling towers.
2. The live bacteria must become aerosolized (made airborne) in very small water droplets.
3. People who are at increased risk must breathe in these small water droplets (for example, in a mist) containing *Legionella* bacteria.

Doesn't it make sense to test school buildings for *Legionella* bacteria?

In a word, **NO**. Stand-alone testing of building water systems will not tell you if building occupants are at risk for developing Legionnaires' disease. Why not? Since *Legionella* can be found naturally in building water, if you test, you will likely find it. However, if there are no opportunities for the bacteria to become airborne, and no people at increased risk for developing Legionnaires' disease by breathing in the contaminated mists, there is little chance of disease.

What should school facilities operators be doing?

All building operators should know what type of equipment is in their buildings. They should have routine maintenance programs

and periodic inspections. If chlorinated water is supplied to the building by a public water supplier, it is important to ensure that chlorine residuals *inside of the building* are maintained all the way to the extremities.



Routine maintenance of plumbing systems should at least include periodic

assessment of:

1. Measurement of chlorine residuals in the building (if the water provided by the public water supplier is chlorinated)
2. Measurement of physical parameters like water temperature, pH, flow rates
3. Maintenance of appropriate levels of anti-scaling agents and rust inhibitors
4. Making sure appropriate back flow preventers are in place
5. Checking for low flow and dead legs that result in stagnation

Additionally, school facilities operators should:

- ◆ Consult with the local water provider before adding any chemical treatment. Adding permanent treatment to the building's water system will require the compliance with additional state and Federal regulations (Safe Drinking Water Act).

- ◆ If you have unused sinks and showers, it is prudent to turn them on and let them run for at least 6 minutes (3 minutes for cold taps plus 3 minutes for hot taps). Do this at least twice per week to keep water flowing through the pipes to prevent stagnation.
- ◆ If your school has cooling towers, they must be kept clean and free of debris that can lead to the formation of biofilms. Holding tanks must be kept at proper temperatures, and chemical treatment for rust, scale, and biocides must be appropriately maintained.
- ◆ Ask the contractor hired to maintain your cooling towers if they have instituted a *Legionella* control plan as part of the overall maintenance plan. See below for *Legionella* testing information as part of this plan. The contractor should provide you with periodic reports that include any testing that they perform as part of their maintenance program.



Boiler



Cooling Towers

When does testing for *Legionella* bacteria make sense?

Testing the water for *Legionella* bacteria should only be performed as part of an overall maintenance program for building plumbing systems and cooling towers, because the results give building operators feedback about how well their controls are working.

Elevated results indicate that some changes may be needed. **Again, results will not provide information about the risk for people developing Legionnaires' disease.**

Testing should only be conducted by experienced professionals who know how to collect samples for *Legionella* bacteria and who understand how to interpret the results as they relate to plumbing systems and cooling towers.



Environmental samples for *Legionella* bacteria should be analyzed by an environmental laboratory that is registered and certified for *Legionella* testing by the CT DPH. Note that *Legionella* is **NOT** included with routine water testing - you must make a special request for it.

Testing for *Legionella* Bacteria in Buildings

Testing buildings for *Legionella* bacteria gives building operators feedback about how well controls are working.

Stand-alone testing of building water systems and cooling towers for *Legionella* bacteria will **NOT** tell you if building occupants are at risk for developing Legionnaires' disease.

For additional information, please contact the following CT DPH programs:

Questions about environmental testing, data interpretation, environmental lab reports:	Environmental & Occupational Health Assessment Program 860-509-7740
Questions about disease transmission, travel-associated <i>Legionella</i> , confirmed case statistics:	Epidemiology Program: 860-509-7994
Questions about laboratory certification:	Environmental Laboratory Certification Program 860-509-7389