

Preventing Legionnaires disease

You work hard to maintain your building. That's why it's important to ensure you're protected from all potential losses – including those caused by illness from exposure to harmful bacteria.

As a building owner, you're legally responsible for the health and safety of your occupants, which includes preventing the transmission of disease. Yet each year, people become ill from exposure to a harmful contaminant – Legionella bacteria – which results in a condition commonly referred to as Legionnaires disease.



Background

Legionnaires disease was first documented when 221 elderly members of the American Legion became ill with severe coughs and pneumonia-like symptoms while attending a conference in Philadelphia in 1976.

Of that group, close to 80 were hospitalized and 34 died, setting off a frantic search for the cause by the U.S. Centre for Disease Control (CDC).

The CDC tracked it down to a bacterium found in the HVAC system, which was being spread inside the building by the dispersion of very fine water mists from the system's cooling tower.

Legionnaires disease facts

- Legionnaires disease is a type of pneumonia which is fatal in 10 to 15% of those infected.
- At-risk individuals include the elderly, people with weak immune systems, smokers, heavy drinkers and diabetics.
- The incubation period is between 2 to 10 days and symptoms mimic the flu with high fever, chest pains and the development of pneumonia.
- Legionnaires disease can be treated with medication, if caught early.

Causes and mitigation

Contaminated water droplets present the greatest risk of exposure, as this size of droplet can be inhaled deep into the lungs.

Sources of contamination include:

- Hot water heaters
- Potable water distribution systems
- Cooling towers

Legionella bacteria grow rapidly at temperatures between 35C and 46C, and bio-films – which often form in cooling towers and standing water – provide a host environment.

The bacterium is killed easily and quickly by exposure to temperatures > 70C (or exposure for two minutes at 60C or 32 minutes at 50C). In addition to heat, the bacteria can be killed with bactericidal compounds containing silver and copper.

Destroying all bio-films is very important to prevent bacteria growth or re-growth.

Other sources of Legionella

The following is a short list of other sources which require proper attention to maintenance and cleaning:

- ✓ Water fountains
- ✓ Hot tubs
- ✓ Showers
- ✓ Green walls
- ✓ Dead legs of water delivery systems
- ✓ Car washes
- ✓ Water based metal working fluid systems
- ✓ Water stored for long periods

Your routine inspection checklist

Disease prevention should be on your routine maintenance checklist.

- ✓ Ensure that “drift eliminators” installed on your cooling tower are designed to reduce water droplet formation and pick-up by your return air system.
- ✓ Inspect and test your cooling tower water at least monthly (more frequently in hot weather) for evidence of bacterial infection.
- ✓ Disinfect and clean the cooling tower system completely every 6 months or more frequently in hot, humid weather and at any sign of contamination.
- ✓ Flush plumbing systems, fountains and any other water sources regularly and disinfect any lines if needed, especially if the pipes are not copper.
- ✓ Hire a licensed and qualified contractor for any necessary work and ensure written records are kept as required by your Province or Municipality.

Consequences of inaction

Many municipalities have enacted bylaws to ensure proper maintenance is carried out.

Failure to conduct proper maintenance procedures can result in hefty fines, a public relations nightmare or a class action lawsuit for allegations of negligence from building occupants, especially if there are any fatalities associated with an outbreak.

Conclusion

A well developed inspection and maintenance program for your heating cooling and water systems will reduce the potential of exposing those occupying your premises to hazardous bacteria like Legionnaires disease.

This will help reduce any risk and liability exposure, lower your energy costs, and it can also extend the life of your systems.

Additional information sources

Government of Ontario: Clean Water Act
http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/index.htm

City of Hamilton: Legionella
<http://www.hamilton.ca/HealthandSocialServices/PublicHealth/Legionella/>

CBC article regarding Legionnaires disease outbreaks in Quebec
<http://www.cbc.ca/news/canada/montreal/story/2012/09/14/legionnaire-prevent.html>

United States Department of Labor
http://www.osha.gov/dts/osta/otm/legionnaires/cool_evap.html

Nalco: An Ecolab company, Cleaning and Disinfection program
<http://www.nalco.com/services/cleaning-disinfection.htm>

For further information on this topic, please contact your independent insurance broker.

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