

Legionnaires' Disease

Legionnaires' disease is a fatal form of pneumonia that affects 8,000-18,000 individuals in the United States every year. The disease is caused by bacterium *Legionella pneumophila* and other related bacteria. *Legionella* is common in natural and man-made aquatic environments. Individuals whom are older than 50 years, smoke, have chronic lung disease, or have weakened immune systems are more susceptible to the disease.

Legionella thrives in environments suitable with temperatures around 20°C (45°F), and a steady source of nutrients (sludge, scale, rust, algae, other organic matter).

Legionella can be found in;

- Hot tubs
- Cooling towers
- Hot water tanks
- Large plumbing systems
- Decorative fountains

Spread of Disease

Contraction of Legionnaires' disease is not from person to person but is contributed to mist and water vapor droplets propelled from areas containing the bacteria.

Symptom signs include but are not limited to;

- Coughing
- Shortness of breath (SOB)
- High fever
- Muscle aches
- Headaches

Incubation of *Legionella* is between 2-10 days. Most victims of Legionnaires' disease show no symptoms and it is important that if you suspect that you have come into contact with the bacteria to contact your doctor or local health department.

Prevention

Following the instructions below will help prevent Legionella from contaminating your water systems.

Physical Flush

- Store cold water at temperatures below 20°C (68 °F)
- Store hot water at temperatures above 60°C (140°F)
- Circulate water with minimum return temperature of 51°C (124°F)
- Avoid scalding problem by installing preset thermostatic mixing valves

Chemical Flush

- Chlorination (bleach) wash followed by flushing
- Hot or cold water system with elevated holdings tank should be inspected and cleaned annually
- Heating element should be located near or on the bottom of the tank to avoid temperature stratification

Decontaminating Already Infected Systems

Raise hot water temperature to 71-77°C (160-170°F); this will kill any *Legionella* bacteria remaining in the system. Flush hot water throughout system for 5-15 minutes.

Avoid recontamination of your system by:

- Maintaining proper temperature control or continuously supplemental chlorination
- Monthly removals of shower heads and tap aerators to clean out sediment and scale with chlorine bleach solution.

For more information on Legionnaires' disease visit:

<http://www.cdc.gov/legionella/index.html>

For information on how to diagnose the Legionnaires' disease visit:

<https://www.cdc.gov/legionella/about/diagnosis.html>

Legionnaires' Disease

***Legionella* and Hot Tubs**

Legionella is a bacterium responsible for Legionnaires' disease. *Legionella* is commonly spread from contaminated water sources that release vapor or mist particles into the air. These particles are then inhaled and cause symptoms similar to pneumonia. Since *Legionella* is naturally found in water, the bacterium is commonly found in places like hot water tanks, plumbing systems, and cooling towers, but is also found in hot tubs. Hot tubs that are **not** regularly inspected and cleaned can become contaminated by the *Legionella* bacterium. It is important to take necessary precautions when owning a hot tub and following the steps listed to promote good health and safety.

Legionella bacterium relies on temperatures around 20°C (45°F), and needs a steady source of nutrients to grow (sludge, scale, rust, algae, other organic matter).



Testing Hot Tub Water

- Purchase pool test strips at local pool supply stores
- Chlorine levels below 3 parts per million (ppm) or bromine levels below 4 ppm can lead to *Legionella* growth.
- If your chlorine and bromine levels are too low, the hot tub operator or owner should act immediately.

Preventing and Protecting Your Hot Tub from *Legionella*

1. Before draining the water in the hot tub, run a line flush product through the tub to remove biofilm.
2. Drain and disinfect the hot tub using hot tub cleaning supplies; this should be done every 3-4 months.
3. Remove slime or biofilm by scrubbing and be sure to remove cleaner after finishing.
4. Either replace hot tub water filters or clean with hot tub cleaning supplies according to the manufacturer's recommendations.
5. Replace hot tub water by inserting a hose into filter well so that it runs through the filters and goes through the pipes.
6. Turn hot tub on and resupply it with shock and sanitizer.
7. Provide hot tub with proper disinfectant and pH levels and check them at least 2x a day.

It is important to continue referring to the owner's manual of your hot tub and to not exceed number of occupants listed.

For more information on how to properly clean a hot tub, visit:

<http://www.swimuniversity.com/how-to-drain-and-clean-a-hot-tub/>