Environmental Division

AGAT Laboratories

Legionella Sampling Instructions

Although the Legionella bacteria occurs naturally in the environment, water systems create the most common source of exposure. Buildings with large and complex plumbing systems can provide optimal conditions for the survival and proliferation of Legionella, especially in water systems where the temperature ranges from 25 to 50°C. Sanitizers used to control the growth of bacteria become less effective in aging and deteriorating systems that subsequently allow water to become stagnant and/or accumulate biofilms.

People can be exposed to Legionella by inhalation when the contaminated water is transported in aerosol form by air coolers, shower heads, spas, decorative fountains, or other devices that produce water vapour or droplets. Atmospheric coolers, often located on the roofs of buildings, use water to disperse heat from buildings by evaporation into the atmosphere which creates an ideal condition for the proliferation and spread of Legionella over large areas.

To minimize the risk of exposure to Legionella, owners of cooling systems, decorative fountains, storm water ponds and other potential exposure sources, require an operating permit. Moreover, they are required to implement a maintenance schedule and a maintenance log to monitor the system according to the regulatory requirements of their city/province.

Sampling Procedure

- Always use the containers provided by the laboratory.
- Never rinse the containers supplied by the laboratory as they contain the preservatives required for testing.
- Samples must be taken between 48 hours and 7 days after the last water treatment (disinfection, decontamination, etc.).
- Cooling towers, open water systems (decorative fountains): Fill the container by submerging it in the basin vertically at a 45-degree angle and leaving the opening on the surface. Be careful not to spill the preservative inside and make sure to leave an empty headspace of at least 2.5 cm at the top. Be careful not to sample the deposits that are at the bottom of the basin.
- Taps: Use a water outlet valve that is upstream of the water treatment injection point. Open the valve and allow the water to run for at least 30 seconds to purge the stagnant water in the pipe leading to the valve. It may be useful to use a bucket to collect the purged water. Discard the purged water. Then collect the sample from the freshly purged

valve without touching the sample container to the valve. Be careful not to spill the preservative inside the container and make sure to leave an empty headspace of at least 2.5 cm at the top.

- The necessary aseptic conditions must be respected when taking the sample. Avoid placing your fingers or any other object inside the sample container's neck and stopper and limit the container's exposure to air during sampling.

- Carefully and tightly cap all the containers after sample collection. Wipe dry the outside of the container.

- Record the sample information immediately after collecting all the samples using the Legionella Chain of Custody (COC) analysis request form.

- Transport samples using a rigid box that protects them from light exposure, impact, and extreme temperatures such as an insulated cooler. To prevent bottle breakage, secure the samples with soft packing material. The Legionella COC analysis request form can be placed inside the shipping container. Be sure to use a plastic bag or sleeve to protect the COC from damage.

- Samples must be transported at room temperature and do not need to be cooled.

- The laboratory must receive the samples within 48 hours of sampling.

For reference, the table below shows the recommended sampling frequency and the threshold levels stipulated in the guidelines of Public Works and Government Services Canada (MD 15161-2013, 2016). Check with the local authorities in your city/province to find out if other monitoring programs need to be implemented*.

System	Testing frequency	Required sample volume	Compliance threshold
Cooling tower	1 per month	200-1000ml	<10 000 UFC/L
Open water systems (Decorative fountains)	1 every 2 months	1000ml	<1000 UFC/L
Hot water system (Shower)	1 every 6 months	1000ml	<1000 UFC/L
Hot water system (remote system setup (< 50°C))	1 per year	1000ml	<1000 UFC/L
Drinking water	NA	1,000 ml	NA
Wastewater	NA	200 ml	NA

* For example, starting January 2022, the city of Vancouver requires the monitoring of storm water tanks and decorative fountains at a frequency of once every 2 months, with a compliance threshold of 10,000 CFU/L.

Since 2013, AGAT Laboratories has been accredited under ISO/IEC 17025 for quantifying Legionella bacteria that causes Legionnaires' disease. You can count on our expertise and our service to meet your analytical needs. Please contact our customer service for further information regarding our rates and services. Our technical team will be happy to provide personalized support for your project requirements. Contact us at **info@agatlabs.com** to learn more.