

ANALYSIS OF *LEGIONELLA* SPP/ *LEGIONELLA PNEUMOPHILA* IN WATER

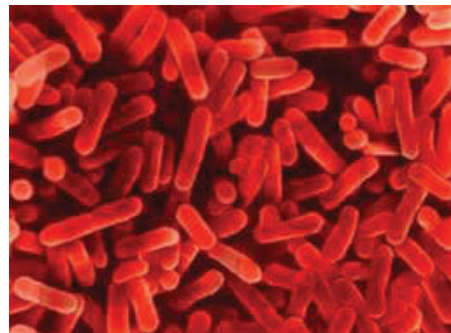
TECHNICAL
BULLETIN

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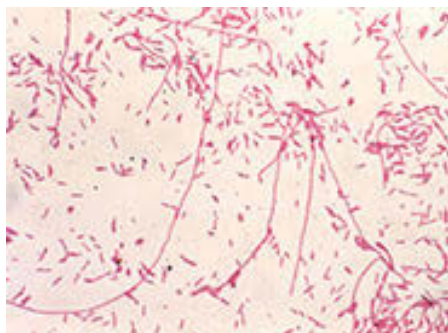
Context & Regulation

In order to protect public health, the Régie du Bâtiment du Québec (RBQ) has modified the Building Chapter of its Safety Code to include a regulation concerning the maintenance of cooling towers, mandatory since the summer of 2013. This regulation applies to all water cooling towers of industrial and institutional buildings, and mercantile occupancies. The first regulatory phase consisted of listing all the towers in the province of Quebec and developing a strict maintenance program.

The RBQ also made various recommendations that will be included in the second regulatory phase. Among the requirements, the water quality must be periodically monitored with physicochemical/microbiological indicators, as well as the determination of the concentration of *Legionella pneumophila*:

- The tower owner must determine the concentration of *Legionella pneumophila* at every restart after wintering and subsequently every 30 days. This can be done by taking a sample or arranging to have a sample collected.
- If a decontamination procedure has been applied after obtaining a result posing a health risk, a sample should be taken between 2 to 7 days from the procedure to ensure compliance has been restored. It is also recommended to perform another test after a major change in the maintenance program. After adding biocide it is important to wait at least 48 hours before sampling.
- The table on the following page suggests different levels of action and control strategies according to the monthly monitoring results for *Legionella pneumophila*.

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Level of Action	Monitoring Result	Control Strategy
Normal	< 10 000 CFU/L	Continue with the treatment and the maintenance program
Intervention Threshold	≥ 10 000 CFU/L < 1000 000 CFU/L	Identify the cause of the increase and take corrective actions Check efficiency of corrective actions
	Impossible to quantify the concentration of <i>Legionella pneumophila</i> due to an interfering flora	Identify the causes of interfering flora Apply corrective actions Check efficiency of corrective actions
Health Risk Immediate Action	≥ 1000 000 CFU/L	Promptly engage the decontamination procedure Identify the causes and modify the maintenance program accordingly Check efficiency of corrective actions Perform another analysis by culture for <i>Legionella pneumophila</i> The laboratory is obliged to release a statement to the RBQ and the Public Health Department

For more details on the RBQ's regulation, and for the explanatory guide to cooling tower maintenance, please visit the following websites:

Regulation: <https://www.rbq.gouv.qc.ca/salle-de-presse/les-grands-dossiers/tours-de-refroidissement-a-leau/reglement-sur-les-tours-de-refroidissement-a-leau.html>
(French only)

Guide: <https://www.rbq.gouv.qc.ca/salle-de-presse/les-grands-dossiers/tours-de-refroidissement-a-leau/guide-et-documents-de-formation-a-telecharger.html>
(French only)

Detection of *Legionella* spp/*Legionella pneumophila* in Water

Maxxam offers an enumeration method for *Legionella* spp by culture with an identification of *Legionella pneumophila*, the principal species causing legionellosis. Maxxam is accredited by the Ministère du Développement Durable, de l'Environnement, de la Faune et des Parcs (MDDEFP) for domain 606.

ANALYSIS OF *LEGIONELLA* SPP/*LEGIONELLA* *PNEUMOPHILA* IN WATER



Cooling Tower Sampling

Sampling is an essential step for achieving accurate test results. Please abide by the following guidelines when collecting a sample:

- Always take samples safely and use containers sent by the laboratory (250ml sterile container).
- Preservative is present in the container in order to inhibit oxidizing biocidal effect, such as the presence of chlorine.
- Collect the sample from a representative area of the water system.
- Clearly identify the containers.
- Send samples to the laboratory in a cooler on the same day they are collected.
- Cooling the samples is unnecessary and they should be transported at room temperature.
- Temperature fluctuations must be avoided.
- Sample analysis should be performed as soon as possible and within 48 hours after sampling.

For a detailed sampling procedure document, consult the CEAEQ's document entitled *Protocole d'échantillonnage de l'eau du circuit des tours de refroidissement pour la recherche des légionelles DR-09-11 (French only)*:

http://www.ceaeq.gouv.qc.ca/documents/publications/echantillonnage/DR09_11echant_tours.pdf



Analytical Method Offered

Maxxam's analytical method is inspired from recognized methods for *Legionella* determination. Quality controls are performed with known *Legionella* strains for every series of analysis to ensure validity of results obtained. Results are reported in CFU/L (colony-forming unit per water litre).

Since *Legionella* are slow-growing bacteria, it may take up to 10 working days to obtain analysis results. Also, as other flora is often present with *Legionella* in a sample, it is important to keep in mind that the detection of *Legionella* can be impaired. A sample can undergo various treatments to remove the interfering flora, but it can result in an underestimation of the concentration of *Legionella*.

For more information regarding *Legionella* analysis provided by Maxxam, please contact your account manager.