

Founded in 1946, Magnus is a private Canadian company that develops manufactures and markets integrated chemical, equipment and service solutions for commercial and industrial water treatment and metalworking applications. Magnus is committed, through continuous innovation, exceptional service, and by continuously developing our technical expertise, to bring forward value added and eco-proactive solutions aimed at optimizing our customer's performance and preserving the environment.

Our team of experts, specialized chemists and engineers, is committed to creating positive impacts on all your needs by constantly improving the various technologies and application methods. Magnus is constantly investing in research and development to offer you eco-responsible, effective programs. Our mission is to bring you the best solutions for optimizing system energy performance and rationalizing operating costs while protecting the environment and the safety of the population.

▶ 1271 Ampère
Boucherville QC
J4B 5Z5 Canada

1 800 363 9929
T 450 655 1344
F 450 655 5428

▶ 965 Newton bureau 139
Québec QC
G1P 4M4 Canada

1 855 634 1400
T 418 634 1400
F 418 634 1500

▶ 1621 McEwen Drive, Unit 1
Whitby ON
L1N 9A5 Canada

1 800 522 5815
T 905 434 5599
F 905 434 7252

legionelle@magnus.ca

 **Magnus**[®]
www.magnus.ca

LEGIONELLA Action plan

COOLING TOWERS

 **Magnus**[®]

detection control

prevention

WHAT IS LEGIONELLA?

Legionella is the bacteria responsible for Legionnaire's disease. This is a serious lung disease that manifests itself as an infection of the respiratory tract, causing the victim's death in about 25% of observed cases. According to surveys by health organizations like Health Canada, CDC, OSHA, AWT and others, this infection affects thousands of people every year.

The *Legionella* bacteria is transmitted to humans when contaminated water, present in the form of a mist, is inhaled, thereby carrying the microorganism into the lungs. The infection can be benign (Pontiac fever) in a majority of cases, but it is regularly serious (Legionellosis) and often fatal for those most at risk.

In fact the individual's initial health status is a major factor in terms of the degree of risk of infection. Typically, the elderly and those with weakened immune systems are the hosts most likely to be infected. Health institutions, extended-care facilities, residences for the elderly and even hotels are, obviously, among the places most often involved in outbreaks of Legionellosis.

Considering that the infection occurs only through inhalation, the main sources of contamination are installations favouring the production of mist, such as:

- ▶ Showers
- ▶ Humidifiers and vaporizers
- ▶ Spas and decorative fountains
- ▶ Aerosol-generating medical equipment
- ▶ Cooling towers

TURNKEY RISK-MINIMIZATION PROGRAM

The proliferation of the *Legionella* bacteria in a cooling system is a complex problem, and implementing an effective prevention plan requires an overall approach that includes the following steps:

- ▶ Awareness-raising and training for managers and operators
- ▶ Audit of mechanical installations and operating methods
- ▶ Formulation of recommended good practices
- ▶ Monitoring of *Legionella pneumophila* populations
- ▶ Appropriate and open-ended water treatment and maintenance program

The initial audit of the installation is intended to assess the primary risk factors that may cause a critical growth in the pathogenic microorganism. This step therefore makes it possible to apply the required corrections and adapt preventive measures that will minimize the risk posed by the bacteria.

The expertise Magnus has acquired in regard to the *Legionella* bacteria's behaviour and control now makes it possible to optimize preventive programs. Recommendations, maintenance procedures and disinfection methods are adapted to system requirements to ensure an operation that is as safe as possible.

Magnus has developed an innovative approach to monitoring microorganisms. This detection technique relies on an analysis of the *Legionella pneumophila* bacteria's DNA using PCR technology. This technology provides a fast and precise measurement of the bacteria (under 48 hours). Regular assessment of bacteria concentrations in water and biofilm allow appropriate tweaking of the treatment programs to obtain optimum control.



PCR analyses done in Magnus laboratories.

TECHNOLOGY AND DISINFECTION

The treatment technology to control the bacteria's growth or to disinfect a contaminated cooling system is chosen according to the system's physical characteristics and operation conditions. Magnus always suggests treatment technologies that have been proven effective against the *Legionella* bacteria.

- ▶ Chlorination
- ▶ Bromination
- ▶ Specific non-oxidizing biocides
- ▶ Chlorine dioxide
- ▶ Ozonation



Some of these techniques can be used both as prevention and treatment, and by continuous or intermittent application. Depending on the chosen technology, temporary or permanent installation of equipment may be required.

The choice of treatment should take into account restrictions relating to the use of the various disinfectants. This includes primarily environmental impact, health and safety risks, compatibility with the inhibiting treatments in place, and the susceptibility of the system components to corrosion. In all circumstances, the objective remains effective control of the *Legionella* bacteria, while maintaining the system's integrity and performance.

LEGIONELLA POLICY

Magnus believes that the *Legionella* bacteria should be regularly monitored for all water systems that may be home to this pathogenic microorganism and that may pose a risk of contamination for people. The decision to proceed with detection analyses must therefore be based on an assessment of the risk posed for each of the systems in question. It should be accompanied by an appropriate action plan that includes staff training, implementation of a preventive maintenance schedule, and the planned responses that may be required depending on the results of the monitoring.

RESPONSE PROGRAM

To support its customers in preventing Legionellosis, Magnus offers a set of services back up by specialized resources and cutting-edge technological instrumentation. These responses may include, but are not limited to:

- ▶ Audit of mechanical installations
- ▶ Formulation of a prevention plan and best practices
- ▶ Monitoring of bacteria by specific analyses
- ▶ System disinfection by qualified staff

COMMITMENT

As a member of the AWT, and in order to advance decisions aimed at preventing Legionnaire's disease, Magnus is committed to regularly conveying the results of research and development in the most recent technologies relating to the control of the *Legionella* bacteria.

