

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.

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LEGIONELLA Action plan

DOMESTIC WATER

 **Magnus**[®]



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

Contamination of a domestic water system with the *Legionella* bacteria is generally associated with several factors. Defective operating conditions, poor water circulation, and inadequate temperature control can be the cause. Lack of maintenance and the presence of tartar, corrosion or biofilm residues can also stimulate the growth of this microorganism. The problem is therefore a complex one. The Magnus prevention plan includes the following:

- ▶ 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
- ▶ Implementation of an appropriate maintenance and treatment program

The initial diagnosis of water production, storage and distribution systems is intended to identify operating and maintenance problems likely to lead to a proliferation of the bacteria. After this audit, we issue recommendations for improving installation management.

Corrective and preventive measures, including cleaning and disinfection of systems, may be required. The expertise Magnus has acquired in the behaviour and control of the *Legionella* bacteria enables us to effectively assist the operator in developing an action plan adapted to the needs of the systems involved, to ensure that they operate as safely as possible.

Magnus has developed an innovative approach to monitoring the microorganism in domestic water systems. 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). Assessment of the bacteria's concentrations makes it possible to identify contamination problems and to immediately check the effectiveness of the measures taken.



PCR analyses done in Magnus laboratories.

TECHNOLOGY AND DISINFECTION

Disinfection of a domestic hot-water system contaminated with the *Legionella* bacteria requires the use of proven technologies that are acceptable in a potable-water context. Although in most situations the required response is one of treatment, it may also be necessary to set up a preventive maintenance program to control the bacteria's growth. Magnus offers the treatment technologies that are right for these systems.

- ▶ Chlorination
- ▶ Chloramination
- ▶ Catalyzed peroxide
- ▶ Chlorine dioxide
- ▶ Copper/silver ionization
- ▶ Thermal disinfection



Depending on the chosen technology, temporary or permanent installation of equipment may be required. The choice of treatment should take into account the mechanical constraints of the system to be treated: The treatment is applied according to the restrictions on use particular to the disinfectant chosen. In all circumstances, the objective is effective control of the *Legionella* bacteria while maintaining the quality and wholesomeness of domestic water.



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 backed 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 personnel

COMMITMENT

As a member of the AWT, and in order to move ahead with 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.