



Sustainable and Integrated Water Energy Solutions

The background of the slide features a cluster of blue, rod-shaped bacteria, likely Legionella, on the left side. The bacteria are arranged in a dense, overlapping group. To the right of the bacteria, the background transitions into a blue and green abstract shape that resembles a stylized wave or a curved path. The blue part is on top, and the green part is on the bottom, separated by a white line. The overall design is clean and professional, with a focus on the theme of water and risk management.

Legionella RISK Management Program

Legionnaires' disease is a severe, pneumonia-like form of Legionellosis that can cause serious and sometimes deadly, complications. With heightened concern over Legionella and the potential for Legionnaires' disease, cooling tower owners are turning to Rochester Midland Corporation (RMC) for solutions that manage Legionella bacteria risk. Minimizing this risk requires good processes, good programs, consistent application and documentation.

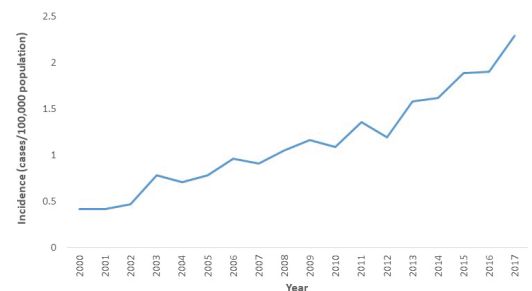
No program can promise sterile conditions in a system at all times. However, when properly applied and maintained, RMC's Legionella risk management program limits risk effectively, addresses factors influencing growth and transmission and reduces the likelihood of exposure.

The 5 key components of the program are as follows:

1. **System Risk Assessment** – A comprehensive mechanical and operational assessment of the cooling tower's potential for Legionella contamination.
2. **Intensive Microbiological Treatment Program** – Implementation of an intensive microbiological treatment program specifically designed to minimize the presence of bacteria and Legionella-harboring biofilms.
3. **Disinfection** – Discourages the growth of Legionella through the use of periodic disinfection of all parts of the system.
4. **Monitoring** – Provides a consistent level of performance and control through routine monitoring of critical water parameters and system indicators.
5. **Water Management Plan (WMP)** – Provides a record system designed to assist in the selection and implementation of the proper precautionary measures and treatments to minimize growth or exposure.

Per the CDC the number of people with Legionnaires disease grew 5.5 times from 2000-2017

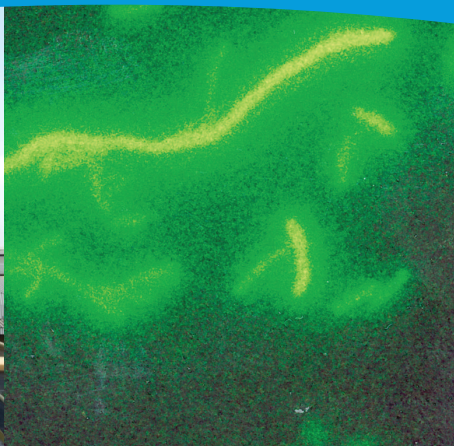
Legionnaires' disease is on the rise in the United States



Rate of reported cases increased 5.5 times (2000–2017)

Source: National Notifiable Diseases Surveillance System

Centers for Disease Control and Prevention (CDC)



Industrial water-handling systems can provide an optimum environment for growth and transmission of Legionella organisms. Factors that enhance colonization and transmission of the organism include:

- Water temperatures in the range of 20° to 50° C (68° to 122° F).
- Stagnant water conditions.
- Presence of scale, sediment and sludge.
- Presence of biofilms.
- Production of aerosols.

Effective Legionella risk management is dependent upon many factors, including keeping the system clean and reducing nutrients available for bacteria to survive and multiply. A comprehensive system approach should include:

- High-performance corrosion, scale and deposit programs.
- Intensive microbiological treatment program.
- Proactive, preventative system maintenance programs.
- Consistent, conscientious inspection, monitoring and control.

Sustainability

Our water management programs are designed to protect and enhance equipment life while providing energy and cost savings through improved heat transfer efficiency. Our goal is to build sustainable programs for water management by focusing on financial benefits, environmental stewardship and improvements to workplace health and productivity.



People

- Training Programs
- Reduce Labor Time
- Reduce Occupational Safety Hazards
- Legionella Risk Minimization



Planet

- Clean Heat Transfer Saves Energy
- Lower Water and Chemical Usage
- Reduce Carbon Footprint



Profit

- Fuel, Water and Chemical Savings
- Extends Equipment Life and Saves Capital
- Recycle of Processed Water Saves on Total Water Expense



1: SYSTEM RISK ASSESSMENT

Provide a thorough assessment for cooling systems. The major risk factors evaluated include:

- Stagnant water conditions that result from operational procedures, the mode of operation, intermittent usage, water circulation and the existence of dead legs.
- Microbiological growth factors including the presence of biofilms, algae and protozoa, exposure of water to direct sunlight, water temperatures and nutrient levels.
- Water quality including microbiological counts and contaminants that lead to the formation of deposits and corrosion.
- Design of cooling tower system including physical design, condition and maintenance.
- Location of and access to cooling towers, water-handling system, including the potential for impact from the surrounding environment and potential for personnel exposure to aerosols.

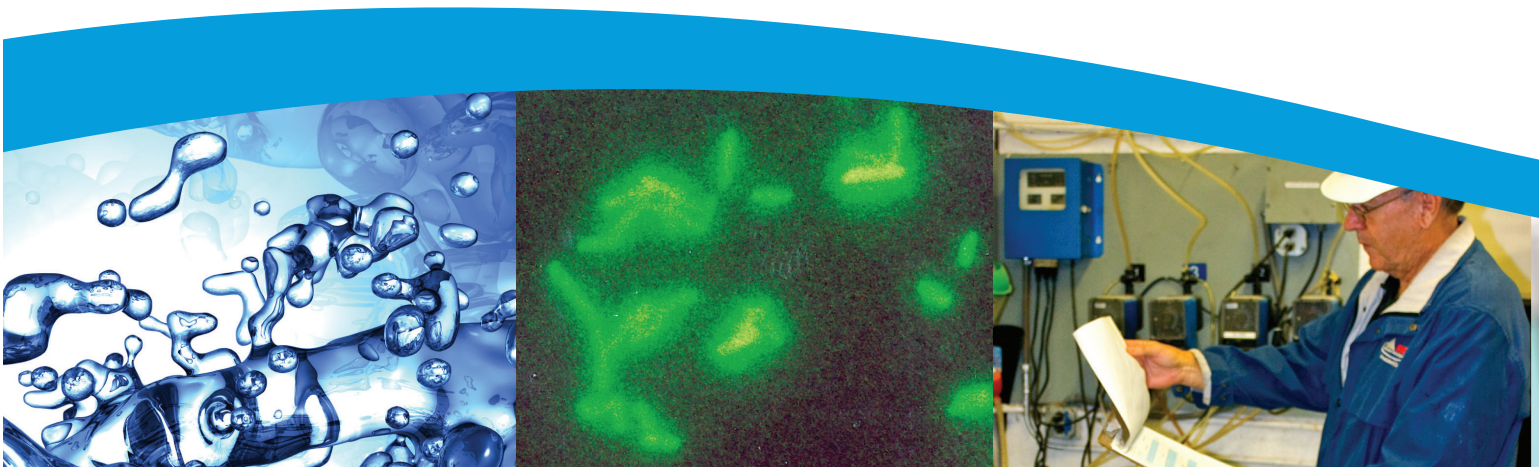
The system assessment provides a framework for program recommendations that are geared toward providing an effective, well-maintained water system.

2: INTENSIVE MICROBIOLOGICAL TREATMENT PROGRAM

An effective *Legionella* control program requires a more intensive approach than a performance-based microbiological control program. Intensive microbiological treatment programs are specifically designed to minimize the growth of biofilms and *Legionella*. RMC's intensive microbiological treatment program options include the following:

- Oxidizing microbiocides to effectively control planktonic bacteria in bulk water.
- Non-oxidizing microbiocides to effectively penetrate, remove and disperse biofilms.
- Biodispersants to ensure the removal and dispersion of biofilm into the bulk water.

Intensive microbiological treatment programs are expected to effectively maintain system cleanliness and consequently reduce the presence of *Legionella* and their host organisms.



3: DISINFECTION

As recommended by various published guidelines for Legionella control, periodic disinfection is recommended for systems that:

- Have process leaks into the water system.
- Experience heavy biofouling.
- Utilize reclaimed wastewater as makeup.
- Have stagnant conditions for extended periods of time.
- Show elevated total aerobic bacteria counts that regularly exceed 100,000 CFU/mL*
- Show Legionella test results greater than 100 CFU/mL.

Disinfection is accomplished through:

- On-line system hyperhalogenation.
- Off-line system cleaning and hyperhalogenation.
- Emergency disinfection, if indicated.

Guidelines, such as those published by Cooling Technology Institute (U.S.) recommend an emergency response protocol for decontamination under high risk conditions. Decontamination includes the use of oxidizing and/or non-oxidizing biocides, and increased dosages for a specific period of time.

monitoring
proactive
preventative



4: MONITORING AND CONTROL

RMC recommends regular monitoring and control practices. Automation techniques are available to enhance the precision and accuracy of monitoring and control. We offer a range of control and monitoring systems designed to accommodate a variety of applications and complexities.

Monitoring and control products is a complete line of products ranging from single variable “feed and bleed” to fully integrated, feed-forward, multi input/output systems with remote operations.

Pre-engineered and turnkey equipment systems allow for immediate installation and operation with minimal pre-startup requirements.

Oxidation-Reduction Potential (ORP) is proven to be the most effective, accurate means of monitoring and controlling halogen programs. ORP offers many advantages over traditional means of monitoring, including:

- A direct measurement of the “work value” of the oxidant regardless of dissociation due to pH.
- Accurate, cost-effective sensor technology requiring low-probe maintenance.
- Automation via continuous, microprocessor-based ORP control provides precise maintenance of critical oxidant levels.

Most professional and government agencies that have issued Legionella position statements and guidelines do not recommend routine bacterial testing for a variety of reasons. Legionella testing is, however, available through a certified Legionella laboratory.

control healthcare
clean
effective



5: Water Management Plan (WMP)

Documentation of any Legionella Risk Management Program should include:

- Water quality testing logs
- Chemical treatment logs
- Microbiological testing logs
- Inspection reports
- Maintenance records
- Operational records
- Remedial action records
- Sterilization reports and records
- Training records
- Contingency plans and records

The documentation component is extremely important. Documentation provides the necessary assurance that a risk minimization program is being implemented for the facility's water-handling systems and will help with sustainability, development and management of water.



Call us today at **800.388.4762**
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