LEGIONELLA PREVENTION AND CONTROL

Hospital and Healthcare Facility Services

LEGIONELLA PREVENTION AND CONTROL. FROM THE SAFE WATER AUTHORITY.®

A GROWING THREAT

In a 2015 report, the CDC confirmed an alarming increase in Legionella bacteria-related disease outbreaks in the U.S. Most troubling: the fact that more than half of those infections originated in hospitals or healthcare facilities. And according to the journal, *Infection Control and Hospital Epidemiology*, the fatality rate of hospital-acquired Legionella is 28%.

In the absence of a Legionella vaccine, this threat must be stopped at its source: the facility water system. OSHA, WHO, and the EPA have all agreed on one point: the responsibility falls directly to the facility owner or manager to institute and maintain a rigorous water management plan.

*National Institutes of Health: US National Library of Medicine, 5 August 2015

LEGIONELLA

WHAT

Legionella (e.g., *Legionella pneumophila*) is a bacterial pathogen that, in humans, causes a severe form of pneumonia. The infection is water-born – not air-born – and typically enters the lungs via aerosolized water.

WHERE

In man-made environments, the pathogen can multiply in water sources susceptible to stagnation and contamination, such as central air conditioning systems, cooling towers, evaporative coolers, humidifiers, whirlpool spas, water heating systems, showers, ice machines, and misting systems.

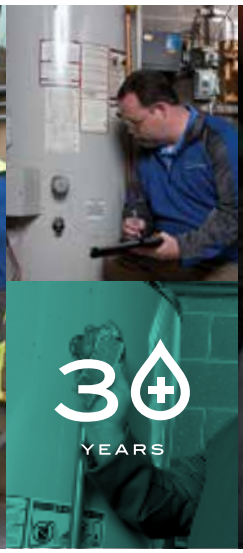
HOW

The bacteria attack the immune response system by infecting white blood cells, destroying them, and multiplying. There is no preventive vaccine; treatment is via antibiotics. Hospital-acquired Legionella pneumonia has a fatality rate of 28%, and if treatment is delayed by misdiagnosis, can rise as high as 50%.*

THE HYDROCORP WATER MANAGEMENT PROGRAM

Water System Analysis and Drawings. From the Experts.

Strict guidelines, including ASHRAE Standard 188 (American Society of Heating, Refrigerating and Air Conditioning Engineers) and VHA Directive 1061 have established minimum Legionellosis risk management requirements for building water systems. HydroCorp can help you meet them. Our detailed water system survey, drawings and program development services are the foundation for a water management plan, that will help identify and mitigate legionella and other threats to hospitals and healthcare facilities.



PROTECTING WATER. PROTECTING PEOPLE.

It's not surprising that HydroCorp should take the lead on this critical health and safety issue. It's something we've done for **over 30 years** now...keeping water safe is our specialty. Through comprehensive piping inspections, cross-connection control and backflow prevention services, **we've helped ensure safe water for millions, in industries and municipalities across the country.**

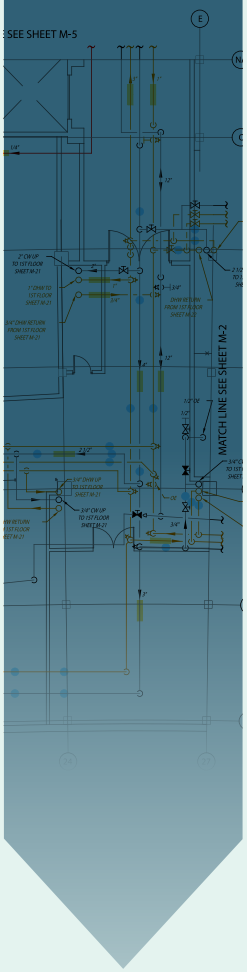
Your water management program for healthcare facilities is delivered in two phases:

Phase I is a comprehensive in-field survey and physical mapping of the entire water system, with all piping and CCPs – Critical Control Points – identified, evaluated and characterized.

Phase II results in a Water System Management Plan Report detailing the site's water system, CCPs, establishment of control limits and measures, sampling and plan validation, and recommendations to address potential threat areas.

LEGIONELLA PREVENTION AND CONTROL SERVICES

PHASE I



FIELD SURVEY AND WATER SYSTEM DRAWINGS

Comprehensive Water System Inventory with Complete Water Piping Drawings

Expanded Survey of Facility's Entire Potable Cold and Hot Water Piping Systems, Including:

- Hot and cold water supply source evaluation
- Hot or tempered water supply and return piping
- Mixing and anti-scald valves
- All system valves and orientation
- Hammer arrestors
- Storage tanks/expansion tanks and sizes
- Recirculating pumps
- All water-using equipment (sinks, showers, spas, ice machines, etc.)
- Pipe diameter, material, insulation, and label identification
- Water filters/treatment devices
- Backflow preventers

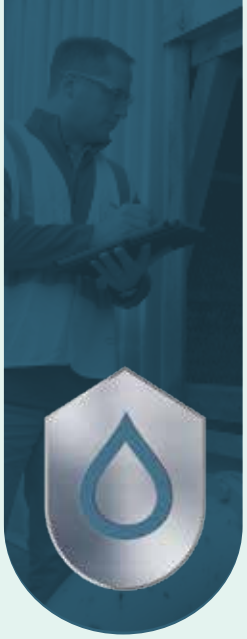
Data Collected May Be Used To Mitigate Legionella By Identifying:

- Potentially hazardous cross connections
- Dead legs
- Leaks in piping system
- Areas subject to low water flow/stagnation
- Areas of piping system vulnerable to decreased temperatures and/or disinfectant residuals
- System components requiring replacement or removal
- Water system points requiring preventative maintenance and monitoring

Digital (CAD) and Physical Drawings:

- Mapping of entire water system, including all piping, CCPs, backflow prevention devices, dead legs, water usage points and recommendations

PHASE II



ANALYSIS AND RECOMMENDATIONS REPORT

Water System Management Plan Report – Critical Control Point Identification

Executive Summary of Water Supply to Building:

- Includes source evaluation, age of building and water piping system, types of water treatment and water supply network, history of any water-related events, etc.

Critical Control Point (CCP) Inventory:

- Inventory of individual equipment (Critical Control Points, or Water Management Points) that may pose a risk for allowing Legionella growth or proliferation. These may include cooling towers, evaporative condensers, domestic hot-water systems, humidifiers, spas and whirlpools, backflow preventers, etc.

Critical Control Point (CCP) Description and Status:

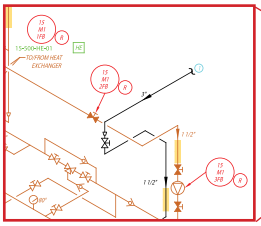
- Description of each individual CCP, and recommendations to address any acute conditions at individual CCPs

Program Recommendations:

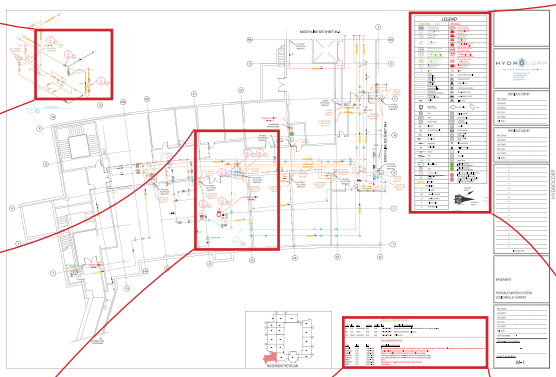
- Recommendations for ongoing preventative maintenance and control measures to maintain CCPs within safe operating and control parameters

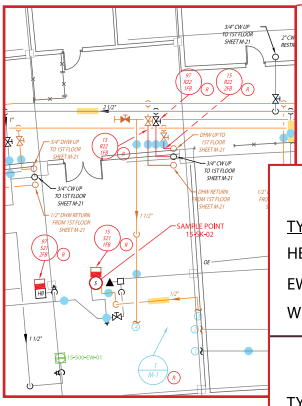
HYDROCORP LEGIONELLA SURVEY

Potable Water System Drawing: Highlights

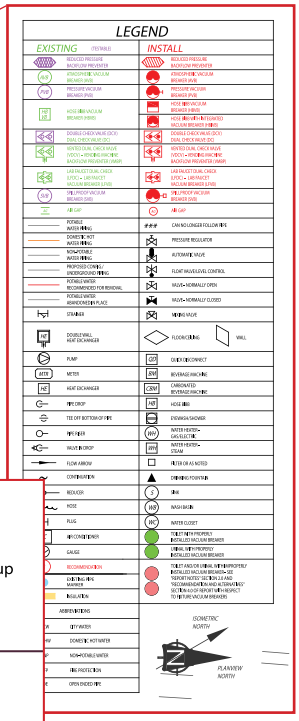


Critical Control Point:
Heat Exchanger





Sample Points and
Recommendation
Sites



Legend Identifies
All Fixtures, Systems,
CCPs, Sample Points
and Action Items

CRITICAL CONTROL POINTS

TYPE	SIZE	MFR	MODEL	SERIAL	ID#	DESCRIPTION/REMARKS
HE	2.00	Armstrong	WX	N/A	15-500-HE-01	Basement Mechanical Room domestic hot water make-up
EW	1.25	Haws	N/A	N/A	15-500-EW-01	Basement Mechanical Room
WH	10GAL	Lochinvar	N/A	N/A	15-500-WH-01	Utility sink

RECOMMENDATIONS

TYPE	SIZE	ID#	DESCRIPTION/REMARKS
MODIFY	1.50	15M1-1FB	**Increase temperature setting on domestic water heat exchanger to 130°F on outlet and maintain return temperature of 124°F**
REPLACE	1.50	15M1-2FB	**Replace leaking shutoff valve with approved shutoff valve**
REPAIR	1.50	15M1-3FB	**Repair or replace hot water return recirculation pump**
REMOVE	0.75	15R22-1FB	**Hot water piping not in use - disconnect and cap (Dead Leg)**
REMOVE	0.75	15R22-2FB	**Hot water piping not in use - disconnect and cap (Dead Leg)**
HBVB	0.75	15S21-1FB	**Sink**
REMOVE	0.75	97R22-1FB	**Piping not in use - disconnect and cap (Dead Leg)**
HBVB	0.75	97S21-2FB	**Hose bibb**

Listed CCPs and Recommendations

BECAUSE KNOWING MEANS PEACE OF MIND

The astonishing complexity of a typical healthcare facility water system makes it difficult to stay up to-the-minute about every potential safety risk. Facilities change. New functions and new capacities are incorporated. Maintenance schedules get modified. Drawings get misplaced. Put simply, there are dark corners in virtually every major building water system. And you probably don't know where they all are.

With HydroCorp, you'll know...

Potential threats are identified, from Legionella to backflow. You have complete system visibility, a clear map that identifies every line and component of your water system. This map is the foundation for a robust risk mitigation plan, for efficient, cost-effective maintenance and inspections, and for planning expansions and renovations. And HydroCorp can take responsibility for implementing a complete water management plan, customized for your needs and budgets.

THE DECISION IS CLEAR

The costs of any Legionella outbreak, in terms of life and financial exposure, are grave. But especially for hospitals and healthcare facilities – facilities designed to treat disease, not cause it – the outcomes can be catastrophic. A rigorous water management program may have helped prevent recent outbreaks, and the deaths that followed. And it can help prevent them in the future. For organizations devoted to saving and preserving lives, that's an easy decision to make.

Call HydroCorp today at 248.250.5000.

HYDROCORP®

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