Legionella Webinar Series

January – June 2019
4th Tuesday of each month
12-1pm CST/ 1-2pm EST
Raise awareness of **legionellosis** and prevention through water management programs.

Provide Tennessee healthcare facilities with information and resources to develop and implement water management programs.

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Reminders

- Webinars recorded, available online
  - Previous webinar recording, slides, resources
  - https://tha.com/events-education/legionella-webinar-series/

- Phone lines muted during webinar

- Questions taken at end
  - Type in chat box
Webinar Series Recap

- Legionellosis
- *Legionella* risk in healthcare facilities
- Prevention and water management programs
Legionellosis is caused by *Legionella* bacteria

- Gram-negative, aerobic, bacillus
- >60 species
**Steps Leading to Legionellosis**

- **Legionella** lives in fresh water
  - Natural reservoir for Legionella
  - Insufficient quantities to cause disease

- Certain conditions in large, complex water systems can lead to Legionella amplification
  - Temperature
  - Stagnation
  - Scale and sediment
  - Biofilm
  - Protozoa
  - Absence of disinfectant

- Certain devices can lead to aerosolization of water containing Legionella
  - Showers and faucets
  - Cooling towers
  - Hot tubs
  - Decorative fountains

- Legionella can be transmitted to susceptible hosts and cause disease
  - Age > 50 years
  - Smoking
  - Weakened immune system
  - Chronic disease

*Slide credit to: Chris Edens, PhD (CDC)*
Infection with *Legionella* is called legionellosis

**Pontiac fever**
- Mild, self-limited illness
- Symptoms: fever, malaise, chills, fatigue, headache
- No respiratory symptoms or abnormal findings on chest x-ray
- Incubation period: 1-3 days

**Legionnaires’ disease**
- Wide range of illness severity
- Symptoms: fever, cough, shortness of breath, gastrointestinal symptoms, malaise, neurologic signs
- Abnormal radiographic findings on chest x-ray
- Incubation period: 2-10 days
- Case fatality rate: ~10%
Incidence of legionellosis is rising in the US

- Incidence increased 5.5 times from 2000–2017
- ~7,500 cases in 2017

Source: CDC NEDSS data
Incidence of legionellosis is rising in Tennessee

Cases per 100,000 population

Year


203 cases
Healthcare-Associated Legionellosis

Definition: A case of legionellosis reporting exposure to a healthcare facility during the 10 days before their illness onset

- **Possible healthcare-associated case:**
  Patient spent part of their 10 day incubation period in the facility

- **Definite healthcare-associated case:**
  Patient spent their entire 10 day incubation period in the facility (did not leave the facility at any point)

- **Case Fatality Rate is ~25%**
Outbreaks of legionellosis occur in healthcare settings

Healthcare Outbreaks Associated With a Water Reservoir and Infection Prevention Strategies

Notes from the Field

Two Cases of Legionnaires’ Disease in Newborns After Water Births — Arizona, 2016

An Outbreak of Legionnaires Disease Associated with a Decorative Water Wall Fountain in a Hospital
Outbreaks of legionellosis are preventable

9 in 10 CDC investigations show almost all outbreaks were caused by problems preventable with more effective water management.
Requirements for Water Management Programs

• Hospitals, Critical Access Hospitals, Long Term Care
• Released June 2017, Updated July 2018

Expectations for Healthcare Facilities

Facilities must have water management plans and documentation that, at a minimum, ensure each facility:

• Conducts a facility risk assessment to identify where Legionella and other opportunistic waterborne pathogens (e.g. Pseudomonas, Acinetobacter, Burkholderia, Stenotrophomonas, nontuberculous mycobacteria, and fungi) could grow and spread in the facility water system.

• Develops and implements a water management program that considers the ASHRAE industry standard and the CDC toolkit.

• Specifies testing protocols and acceptable ranges for control measures, and document the results of testing and corrective actions taken when control limits are not maintained.

• Maintains compliance with other applicable Federal, State and local requirements.

Note: CMS does not require water cultures for Legionella or other opportunistic water borne pathogens. Testing protocols are at the discretion of the provider.
Resources

Resource links and previous recorded webinars available online:
https://tha.com/events-education/legionella-webinar-series/
Developing a Water Management Program

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Developing A Water Management Program

Learning Objectives:

• Describe the major steps necessary for developing a water management program
• Understand the necessary skills and roles needed on a multi-disciplinary water management program team
• Discuss the steps to implementing an ongoing water management program
• Discuss available guides and resources for implementing industry standards
Expectations for Healthcare Facilities and Surveyors

Review policies and procedures and reports documenting water management implementation results to verify that the facility has:

- Conducted **risk assessment** for potential areas of growth and spread.
- Implemented a **water management program** that considers the ASHRAE industry standard and CDC toolkit and that includes control measures (e.g., physical controls, temperature management, disinfectant level control, visual inspections, and environmental testing).
- Specified **testing protocols** and acceptable ranges for control measures and documented the results of testing and corrective actions taken when control limits are not maintained.

https://surveyor-training-content2.s3.amazonaws.com/data/Legionella/Legionella_Export.html
Main Components of Water Management Programs

1. Establish a water management program team
2. Perform a preliminary risk assessment to determine applicability/scope.
3. Describe the building water systems using flow diagrams and a written description.
4. Perform Hazard Analysis: Identify areas where Legionella could grow and spread
5. Decide where control measures should be applied and how to monitor them
7. Make sure the program is running as designed and is effective
8. Document and communicate all the activities
Developing a Water Management Program

Water Management Program Development Model

- WMP Risk Assessment
  - Water Features
  - Potable Water Systems
  - Utility Cooling Towers
  - Develop WMT and POCs
  - Process Flow Diagrams
  - Hazard Assessment(s)
  - Develop Critical Control Points (CCP)
  - Establish Hazard Control Limits and Monitoring (PMs)
  - Documentation
    - PM Logs & Metrics
  - Verification
    - Facility WMT
    - Corporate WMT
Steps to Develop a Water Management Program

Water Management Program Team (WMT)

Necessary skills and roles needed on a multi-disciplinary water management program team (WMT):

- Senior leader (authority to make decisions about water restrictions & response measures)
- Infection prevention/epidemiology (Per ASHRAE 188 a certified IP or an epidemiologist)
- Facilities Management leader (familiar with the building water systems)
- Quality/Risk Management (familiar with regulations and able to advise on risk determination)
Steps to Develop a Water Management Program

Water Management Program Team (WMT) Formation

1. Select members
2. Educate team on requirements
3. Determine solution model
   - CDC Toolkit + ASHRAE188 with in-house developed policies, procedures, etc.
   - 3rd party
     - Prepackaged WMP program (LAMPS, phiAnalytics™, etc.)
     - Consultant/Vendor (Phigenics, HCPro/Chem Aqua, Garret Callahan, etc.)
Role of Consultants

• Help deliver documents and provide expertise to team
  • Perform Hazard Analysis
  • Draft PFDs and Water Use Description
  • Recommend Limits and actions for CCPs
  • Provide Online database for WMP Storage
  • Standardization and Quality across Large Companies
  • Independent Verification and Validation

• Important to remember the facility owns and operates the program as such responsible for all final decisions

• Consultants should be considered non-voting members of WMT
Developing a Water Management Program

Waterborne Pathogen Risk Assessment

“Conduct a facility risk assessment to identify where waterborne pathogens… could grow and spread in the facility water system.”

• Identify buildings at increased risk for legionella
  https://www.cdc.gov/legionella/maintenance/wmp-risk.html

• Be sure to consider patient risk groups & healthcare reservoirs such as medical equipment and patient care devices.

• Perform Environmental assessment of identified buildings

Adapted from https://surveyor-training-content2.s3.amazonaws.com/data/Legionella/Legionella_Export.html
Steps to Develop a Water Management Program

Water Management Program Step - Research

1. Gather information
3. Use risk assessment to determine applicability and scope of plan
4. Determine capability/capacity to perform testing protocols and maintenance practices.
Steps to Develop a Water Management Program

WMP Development Step – Map information

Develop Water flow diagrams

- All water supply sources and service entrances
- All water treatment systems and system control measures
- All water processing steps
- All areas where hazardous conditions may contribute to the amplification of Legionella
- All water end points
- Other points identified by the Designated Team
Steps to Develop a Water Management Program

Water System Description (Text format example)

1. Water enters the basement of the property via a 4-inch main from the municipal water line at Maple Street. Water is immediately drawn off to charge the fire suppression system. The rest of the water is sent through cold water distribution. There is backflow prevention throughout the system, including between the cold water distribution and the city water main and between the cold water distribution and the fire suppression system.

2. Cold water is distributed directly to the lit decorative fountain in the lobby, the cooling tower on the roof, the hot tub and pool on the first floor, ice machines on floors 2, 4, 6, 8, and 10, and shower and faucet fixtures in rooms on all 12 floors. All internal plumbing consists of 2-inch copper and polyvinyl chloride (PVC) piping. There is backflow prevention between cold water distribution and the utility lines that serve the cooling tower and hot tub/pool room.

3. Cold water is heated to 140°F by two joined 120-gallon water heaters. The heaters supply a 500-gallon storage tank. Cold water is also delivered to an 80-gallon water heater in the basement that serves the kitchen and staff break room.
Steps to Develop a Water Management Program

Water System Description (Text format example)

4. Hot water is distributed to plumbing fixtures in the basement through floor 5 from the joined water heaters in the basement on a direct (non-recirculating) line. Hot water is distributed to floors 6 through 11 from the storage tank with a recirculating line designed to return to the joined water heaters in the basement. Note that hot water is tempered (mixed with cold water) at the fixtures by thermostatic mixing valves.

5. Hot, cold, and tempered waste water is discarded through the sanitary sewer line.
Steps to Develop a Water Management Program

**Water System Mapping**

Development of a water system flow diagram of the entire building water system.

The purpose of the diagram is to help identify potential hazard conditions as well as to identify high-risk patient care locations.
Steps to Develop a Water Management Program

WMP Development
Step – Map Information

Sample Detailed Diagram
Steps to Develop a Water Management Program

Water System Mapping
Sample Potable Water System Flow Diagram
Steps to Develop a Water Management Program

**Water System Mapping**

Sample Utility

Water System Flow Diagram
Steps to Develop a Water Management Program

WMP Development Step – Determine Control Points/Location

Hazard Analysis - Systematic evaluation of physical conditions to determine where hazardous conditions can occur based identified systems and points of use.

Use previously completed risk assessment to identify/include areas with higher probability of infection based upon the intended use of water and the relative vulnerability of patients to Legionellosis in those areas.
Steps to Develop a Water Management Program

WMP Development Step – Determine Control Points/Location

Identify Areas Where Legionella Could Grow & Spread

Adapted from CDC Legionella Toolkit Pg 11
Steps to Develop a Water Management Program

WMP Development Step – Determine Control Points/Location

Hazard Assessment/Analysis

The water management Hazard Assessment is an evaluation to identify and prioritize hazardous water conditions that may exist that could affect the health of patients, staff members or the general public.

<table>
<thead>
<tr>
<th>Water System / Device Hazard Assessment Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>System / Device:</td>
</tr>
<tr>
<td>Identification Number:</td>
</tr>
<tr>
<td>Location:</td>
</tr>
<tr>
<td>Assessment Date:</td>
</tr>
<tr>
<td>Conducted By:</td>
</tr>
</tbody>
</table>

Risk Assessment Tool Definitions

Severity Classification | Probability
---|---
Class I – Critical - may cause severe illness or death | A – Significant potential for Legionella growth and exposure to aerosols with at risk building occupants.
Class II – Marginal - may cause severe illness | B – Significant potential for Legionella growth and exposure to aerosols with building occupants.
Class III – Probable would not affect safety or health | C – Low potential for Legionella growth and exposure to aerosols with building occupants.
Class IV – Negligible – would not affect safety or health | D – No potential for Legionella growth and exposure to aerosols with building occupants.

Risk Assessment Determination:

<table>
<thead>
<tr>
<th>Severity Class</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>I,A</td>
<td>1</td>
</tr>
<tr>
<td>II,B</td>
<td>2</td>
</tr>
<tr>
<td>III,C</td>
<td>3</td>
</tr>
<tr>
<td>IV,D</td>
<td>4</td>
</tr>
</tbody>
</table>

If the results of the evaluation determine is 1, 2 or 3, a control measure is required. If the results of the evaluation determine is greater than 3, a control measure is not required, but is optional.

Control Measure

Required __________ Not Required __________ Optional __________

Applicable Assessment Criteria-Regulations

- ASHRAE Standard 188- Water Management in Health Care Facilities.
- ASHRAE Guideline "12-2000 Minimizing the Risk of Legionellosis Associated with Building Water Systems"
Steps to Develop a Water Management Program

WMP Development Step

–Control Point identification

Identification of control locations and establishment of control limits for maintaining safe water conditions.
Steps to Develop a Water Management Program

WMP Development Step – Develop PMs and Response plans

Use established control measures & control limits to develop preventative maintenance (PMs)

• Develop and implement monitoring procedures
• Develop response procedures/action plans
• Create a record repository for both PMs and corrective actions
### Steps to Develop a Water Management Program

**WMP Development Step – Sample control measure**

**Control Measures**

<table>
<thead>
<tr>
<th>Control Measure Number: DWM16</th>
<th>Category: Domestic Water System Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keywords:</td>
<td>flushing after minor plumbing repairs</td>
</tr>
<tr>
<td>Status:</td>
<td></td>
</tr>
<tr>
<td>Control Measure:</td>
<td>Flush fixtures downstream of minor plumbing work for at least 5 minutes before returning the outlet to service. [11/17/17]</td>
</tr>
<tr>
<td>Locations:</td>
<td>POUs</td>
</tr>
<tr>
<td>Monitoring:</td>
<td>Include the flushing procedure in the work order given to the contractor or employee performing the work and require that person to log the flush date and time for each fixture affected. [11/17/17]</td>
</tr>
</tbody>
</table>

**Frequency of control measure task:** Every 0 days

**Frequency of compliance verification:** Every 1 Years

**Limits:**

**Corrective Action:** Investigate and correct noncompliance [11/17/17]

**Suggested Training:**

**Date Compliance Last Verified:**

**Documentation:**

**Verification Person:**

**Due Date for Next Verification or Performance:**

**Comments:**
Steps to Develop a Water Management Program

WMP Development Step
Monitoring PMs & Corrective Action Plans

Development of monitoring procedures for control measures and corrective action plans to include all necessary actions to stop ongoing negative effects when control measures are out of set parameters and to restore system to normal operations.
Steps to Develop a Water Management Program

Sample Procedure for Domestic Hot Water

Standard Operating Procedure (SOP): Domestic Water Hot

Risk mitigation strategy: (Showers, Sinks)
- Maintain clean nozzle, eliminate aerator for sinks.
- Prevent aging of water
- Maintain chlorine level above 2.0 ppm

Methodology
- Flush faucets for three (3) minutes weekly
- Visual inspection nozzle for scale. Verify no aerator on sinks.
- Visual inspection any hoses (showers) to assure drainage
- Test chlorine level at various faucets quarterly.
- Document results

Remediation actions
Clean nozzle, conduct 15 minute flush, add chlorine, Notify water management team.

See Investigation & Treatment protocols section for recommended treatment as needed.
Developing a water management program

WMP Notification And Communication Diagram

Technician sees deficiency

| Technician notifies Verification Person about the deficiency |
| 2 days max |

| Verification Person reviews condition and notifies Remediator about the need for corrective action |
| 2 days max |

| Remediator proposes corrective action |

Corrective action is implemented in a time frame appropriate for the condition, risk, and remedial steps required.

Communication and Notification for Responding to Control Measure Deficiencies

- **Verification Person:** Person listed as responsible for reviewing documentation and verifying implementation of a control measure
- **Technician:** The person(s) carrying out the control measures (e.g., inspecting a cooling tower basin)
- **Remediator:** Person responsible for executing the implementation of the corrective action

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Developing a water management program

Water Management Plan Step – Waterborne Pathogen Outbreak Procedures

**Investigation & Treatment Protocols** - Develop protocols for investigation and treatment for events or outbreaks.

Consider adopting existing available resources such as the Investigation & Treatment Protocols from the OSHA Technical Manual Section III: Chapter 7 “Legionnaires' Disease” as the standard protocol for responding to probable or confirmed legionella or other waterborne pathogen cases.

See [https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_7.html](https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_7.html)

(More on this in Webinar 5)
Developing a water management program

- Lab delivers report of Legionella test results to the Recipient
  - 1 day max
- Recipient forwards the lab report to the Interpreter
  - 2 days max
- Interpreter reviews results and sends recommendations to the Decision Makers
  - 2 days max
- Decision Makers decide on an action and notify Remediation(s) as applicable
- Corrective action is implemented in a time frame appropriate for the risk and remedial steps required.

**Communication and Notification for Responding to Legionella Test Results**
- **Sampler**: Person who collects the samples
- **Lab**: Laboratory that tests the samples for Legionella
- **Recipient**: Person to whom the lab report is submitted
- **Interpreter**: Person who will interpret the results and make recommendations for follow-up actions
- **Decision Makers**: Person(s) who will decide what actions, if any, to take based on the test results
- **Remediators**: Person(s) responsible for executing the implementation of the follow-up actions
Steps to Develop a Water Management Program

WMP Development Step – Implement Program

- Educate all personnel on water management program and their role.
- Implement monitoring program
- Test corrective action/response procedures
Steps to Develop a Water Management Program

WMP Development Step – Review/revise program

Scheduled:

Monthly for first 6 months, then quarterly if monitoring is effective or:

When processes change:

Whenever a building or portion of a building is changed such that one or more water systems is affected. (Low Census, Program cessation, etc.)

New Construction, Renovations

• The WMP Team should review the scope of work for building water risks associated with the project.
Steps to Develop a Water Management Program

WMP Development Step – Review/revise program

New Construction, Renovations – (Continued)

The building designer and builder should be required:

- to work cooperatively with the WMP Team in the evaluation process
- to work cooperatively to comply with applicable WMP components/regulations
- to provide timely documented reports confirming compliance with the risk management plan
- to provide a commissioning plan to minimize risk of waterborne pathogen outbreak/injury
Steps to Develop a Water Management Program

WMP Development Step – Review/revise program

Major maintenance:

whenever major maintenance to a building water system is performed

Outages:

whenever there is a supplier water service disruption.

Annually:

reassess entire program
Developing a water management program

Sample Water Management Program Development Schedule

<table>
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<tr>
<th>Procedure</th>
<th>By</th>
<th>Date Due</th>
</tr>
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<tbody>
<tr>
<td>Develop Water Management Team and POCs</td>
<td>Corporate</td>
<td>10/14/2019</td>
</tr>
<tr>
<td>Perform Initial Risk Assessment</td>
<td>Facility</td>
<td>10/21/2019</td>
</tr>
<tr>
<td>Develop Flow Diagrams</td>
<td>Facility</td>
<td>10/31/2019</td>
</tr>
<tr>
<td>Complete Hazard Assessments</td>
<td>Facility</td>
<td>11/11/2019</td>
</tr>
<tr>
<td>Develop Critical Control Points (CCP)</td>
<td>Facility</td>
<td>11/30/2019</td>
</tr>
<tr>
<td>Develop Control Limits and Monitoring</td>
<td>Corporate</td>
<td>12/31/2019</td>
</tr>
<tr>
<td>Begin Operations</td>
<td>All</td>
<td>1/1/2019</td>
</tr>
<tr>
<td>Complete CMMS(Work Order System) Integration</td>
<td>Corporate</td>
<td>2/15/2019</td>
</tr>
<tr>
<td>Verification</td>
<td>Facility</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Validation</td>
<td>Corporate</td>
<td>Quarterly</td>
</tr>
<tr>
<td>Program Reassessment/Revision</td>
<td>All</td>
<td>Annually</td>
</tr>
</tbody>
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Available Guides and Resources for implementing water management programs (WMPs)

CMS Surveyor Training Webinars –

Great to learn what they are trained to be looking for when they audit your program.


A Joint Presentation By TDPH, THA, and THEA
Industry standards and guidelines for water management programs (WMPs)

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Industry standards and guidelines for water management programs (WMPs)

ASHRAE 188 defines:

• Types of buildings and devices that need a WMP
• Minimum components of a WMP
• Devices to be controlled in order to prevent the growth
• WMP WMTs - Water management program team members
• When and how often WMPs should be reassessed and updated

It also includes an annex with special considerations, such as clinical surveillance, for healthcare facilities.
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A, Risk Management Plan

**Designated Team** (Minimum)(A3, page 12)

1. A person with senior leadership authority to make command decisions about water restrictions and response measures.
2. A member of the facilities management staff familiar with the building water systems.
3. A member of the health care facility Infection Prevention and Control Program who is a certified IP or epidemiologist with a masters degree.
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A, Risk Management Plan

The building water systems shall be graphically represented in **water system flow diagrams** that include (A.3, page 12)

- All water supply sources and service entrances
- All water treatment systems and system control measures
- All water processing steps
- All areas where hazardous conditions may contribute to the amplification of Legionella
- All water end points
- Other points identified by the Designated Team
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A, Risk Management Plan

The **risk management plan** shall include:

- name, title, and contact information of WMT
- *water system flow diagrams*
- Systematic evaluation (Hazard Assessment) to identify:
  - Control Locations
  - procedures required for prevention and *control*
  - assignment of responsibility
  - Documentation
  - Disease prevention responses
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A, Risk Management Plan

The risk management plan shall include:

• ensuring actions to be taken when legionella is probable or identified:
  • follow established IC processes
  • include implementation of remediation actions
  • include evaluation of the legionellosis risk management plan and any necessary changes
• procedures to confirm initially & continuously that WMP is implemented and effective (validation)
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A5.1 Existing Buildings

- Annual evaluation
- Whenever major maintenance occurs
- After water service disruptions
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A5.2 new construction and renovations
WMT (including architect and contractor) to perform hazard evaluation & modify WMP:
• during the early planning,
• during each phase of design and construction, and
• during commissioning;
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A5.2 new construction and renovations

1. WMT (including architect and contractor) to perform hazard evaluation & modify WMP:
   - during the early planning,
   - during each phase of design and construction, and
   - during commissioning

2. Provide timely documented reports of compliance

3. Provide a commissioning plan
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A6 Building Water System Procedures

a. Potable water systems
   1. Systems start-up and shutdown
   2. System maintenance
   3. Water treatment
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A6 Building Water System Procedures

b. Cooling towers
   1. System maintenance
   2. Water treatment
   3. Shutdown & startup
   4. Disinfection
   5. Location of cooling tower makeup valve
Industry standards and guidelines for water management programs (WMPs)

Requirements of Normative Annex A5, Maintenance & Construction

A6 Building Water System Procedures

c. Pools and Spas
   1. Operated & maintained per OEM

d. Ornamental fountains and open water features
   1. Operation
   2. Maintenance
   3. Water treatment
ASHRAE 188 does not provide guidance on target water parameters, such as temperature and disinfectant levels.

ASHRAE 188 also does not describe how to perform emergency remediation or give guidance about what to do if cases of disease are associated with the facility.
Industry standards and guidelines for water management programs (WMPs)

ASHE MONOGRAPH:
Water Management in Health Care Facilities:
Complying with ASHRAE Standard 188


A Joint Presentation By TDPH, THA, and THEA
Industry standards and guidelines for water management programs (WMPs)

AIHA publication:
Recognition, Evaluation, and Control of Legionella in Building Water Systems

Industry standards and guidelines for water management programs (WMPs)

CDC Toolkit has many other references as well.

**References & Resources**

There are many references and resources that can help you develop and implement your Legionella water management program, some of which are listed below.

**Standard**

- **Standard 169—Legionellosis: Risk Management for Building Water Systems** (ANSI Approved)
  - ASHRAE
  - Published 2015
  - [www.techstreet.com/ashrae/products/1897551](http://www.techstreet.com/ashrae/products/1897551)

**Guidelines**

- **Guideline 12—Minimizing the Risk of Legionellosis Associated with Building Water Systems**
  - ASHRAE
  - Published 2000
  - [www.techstreet.com/ashrae/products/232362](http://www.techstreet.com/ashrae/products/232362)

- **Legionellosis Guidelines: Best Practices for Control of Legionella**
  - Cooling Technology Institute
  - Published 2008

- **Model Aquatic Health Code Guidance**
  - Centers for Disease Control and Prevention
  - Published 2014
  - [www.cdc.gov/mah/index.html](http://www.cdc.gov/mah/index.html)

**Laboratory Resources**

- **CDC’s ELITE Program**
  - Centers for Disease Control and Prevention
  - [www.cdc.gov/ELITE/Public/EliteHome.aspx](http://www.cdc.gov/ELITE/Public/EliteHome.aspx)

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A Joint Presentation By TDPH, THA, and THEA

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**Planning Guides & Toolkits**

  - Centers for Disease Control and Prevention, American Water Works Association
  - Published 2012

- Drinking Water Advisory Communication Toolbox
  - US Department of Health & Human Services, Centers for Disease Control and Prevention, Environmental Protection Agency, American Water Works Association
  - Published 2013

- Investigation Tools for Clusters and Outbreaks of Legionnaires’ Disease
  - Centers for Disease Control and Prevention
  - [www.cdc.gov/legionella/outbreak-toolkit](http://www.cdc.gov/legionella/outbreak-toolkit)

**Healthcare Resources**

  - [www.cdc.gov/mmwr/preview/mmwrhtml/rr5410a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5410a1.htm)

  - [www.cdc.gov/mmwr/preview/mmwrhtml/mm5301a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5301a1.htm)

- Prevention of Healthcare-associated Legionella Disease and Scoliosis Injury from Potable Water Distribution Systems
  - Veterans Health Administration
  - Published 2014

**Legionnaires’ Disease Information**

- Legionnaires’ Disease Website
  - Centers for Disease Control and Prevention
  - [www.cdc.gov/legionella](http://www.cdc.gov/legionella)
Healthcare Experiences with Water Management Programs

Next month is Webinar 4: April 23  Presenters: Adam, Jane

Learning Objectives:

• Discuss perspectives from healthcare facilities regarding the implementation of water management programs

• Development of water management programs in a variety of healthcare settings

• Challenges & lessons learned with to water management programs in healthcare facilities
Questions?

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