Michigan Department of Licensing and Regulatory Affairs

Joint Provider Survey Training (JPST)

Tuesday, April 22, 2025

10:30-11:45am

Lansing Center

Legionella Response Coordinating with Local and State Agencies

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Presenters

- **MI Dept of Licensing and Regulatory Affairs (LARA)**
  - Andrea Wiggins, Manager, Health Facilities Engineering Section, BCHS
- **MI Dept of Health and Human Services (DHHS)**
  - Jake Reece, Epidemiologist, Surveillance & Infectious Disease Epidemiology Section, Communicable Disease Division
- **MI Dept of Environment, Great Lakes, and Energy (EGLE)**
  - Evan Huckins, Environmental Engineer, Noncommunity Water Supplies Engineering Unit, Drinking Water and Environmental Health Division
- **MI Dept of Labor and Economic Opportunity (LEO)**
  - Brian Roulier, Industrial Hygienist Manager, MIOSHA
- **Livingston County Health Department (LCHD)**
  - Matt Bolang, Health Officer
  - Juan Marquez, Medical Director
- **City of Detroit Health Department**
  - Darsheen Sheth, Program Manager, Communicable Diseases
  - Scott Withington, Environmental Health Manager

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Objectives

- Understand:
  - State and local agencies oversight, function, and role
  - Preventive efforts and provider steps to report, monitor, and mitigate – expectations of for provider
  - Case Studies

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Local and State Agency Oversight, Function, and Role

Legionella Response Coordinating with Local and State Agencies

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Agency Oversight, Function, and Role

MI Dept of Health and Human Services

- Oversees conducts surveillance on all reported Michigan legionellosis cases, as well as non-MI residents reporting potential Michigan exposures.
  - Reports legionellosis activity and case information to CDC.
- Supports local health jurisdictions with facility and clinical case investigations.
- Assists with environmental sampling in outbreak/investigation scenarios.
- Provides guidance and resources to local health and facilities within their jurisdictions.

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Agency Oversight, Function, and Role

MI Dept of Environment, Great Lakes, and Energy

- EGLE becomes involved if a facility decides to pursue chemical injection treatment as a strategy to control legionella, this is known as secondary treatment (ST).
- EGLE's involvement includes reviewing proposed treatment systems to ensure they meet engineering standards for public water supplies.
- EGLE ensures ST public water supplies are compliant in their operations with the Michigan Safe Drinking Water Act (Act 399).
- After designation as a public water supply, EGLE continues oversight with sanitary surveys (inspections) of ST public water supplies to ensure continued compliance with Act 399.

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Agency Oversight, Function, and Role

MI Dept of Licensing and Regulatory Affairs

- Bureau of Community and Health Systems (BCHS) has oversight for state licensing of nursing homes.
- Bureau of Survey and Certification (BSC) has oversight for certification of nursing homes to participate in the Medicare/Medicaid programs on behalf of the Centers for Medicare and Medicaid Services (CMS).
- Both state licensing and federal certification have requirements to ensure a safe and sanitary environment for residents including maintaining a water management plan and mitigating any risks to prevent the development and transmission of diseases.
- LARA conducts routine inspections and complaint investigations to determine compliance with state and federal regulations but relies on local health departments and DHHS for outbreak investigations.
- LARA can require licensed/certified providers to take steps to comply with local, state, and federal regulations to protect the health, safety, and welfare of residents.

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Agency Oversight, Function, and Role

MI Dept of Labor and Economic Opportunity

- The Michigan Occupational Safety and Health Administration (MIOSHA) has jurisdiction over employee health and safety in both the public and private sectors.
- MIOSHA's General Industry and Construction Safety and Health Divisions conduct inspections based on reports of employee fatalities, hospitalizations, complaints, and referrals.
- MIOSHA requires places of employment be kept free from recognized hazards.

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Preventive efforts and provider steps to report, monitor, and mitigate

Legionella Response Coordinating with Local and State Agencies

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Prevention

In the general population, Legionnaire's disease kills 10% of those diagnosed; in the CDC's analysis, 25% of cases acquired in the hospital or long-term care facility were fatal

"75% of cases acquired in healthcare settings could be prevented with better water management"
-*Vital Signs* report from the (CDC)

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From Fresh Water to Clinical Disease

***Legionella* lives in fresh water**	**Certain conditions in large, complex water systems can lead to *Legionella* amplification**	**Certain devices can aerosolize water containing *Legionella***	***Legionella* can be transmitted to susceptible hosts and cause disease**
			
• Natural reservoir for *Legionella* • Insufficient quantities to cause disease	• Temperature (77–108ºF) • Stagnation • Scale and sediment • Biofilm • Protozoa • Absence of disinfectant	• Showerheads and sink faucets • Cooling towers • Hot tubs • Decorative fountains	• Age > 50 years • Smoking • Weakened immune system • Chronic disease

Source: Centers for Disease Control and Prevention (CDC)

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Clinical Criteria

- Incubation period 2-14 days prior to symptom onset
  - Window for potential exposures
- Legionnaires' Disease
  - ➢ Clinical or radiographic diagnosis of pneumonia
    - If "pneumonia" is not recorded explicitly, symptoms must include acute onset of lower respiratory illness with fever and/or cough
  - ➢ Other symptoms: myalgia, malaise, headache, chills, shortness of breath, chest discomfort, abdominal pain, GI symptoms, confusion
  - ➢ Treated with antibiotics
- Pontiac Fever
  - ➢ Milder illness
  - ➢ At least one symptom including fever, chills, myalgia, malaise, headache, fatigue, nausea/vomiting
  - ➢ Often self-limiting

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Diagnostic Testing

- **Urinary Antigen Test (UAT)**
  - Specific for *L. pneumophila* serogroup 1
  - Majority of cases diagnosed by UAT
- **Culture of lower respiratory specimens**
  - Detects all species and serogroups of *Legionella*
- **Best practice – test in combination**
  - Can compare clinical and environmental specimens
  - Detect non-*pneumophila* serogroup 1
- **Serum antibody – try to collect UAT and culture**
  - Fourfold or greater rise in titer meets confirmatory lab criteria
  - Single antibody tests alone will not meet confirmatory lab criteria

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Laboratory Criteria for Epi Case Definition

Confirmatory laboratory evidence:

- Isolation of any *Legionella* organism from lower respiratory secretions, lung tissue, pleural fluid, or extrapulmonary site
- Detection of any *Legionella* species from lower respiratory secretions, lung tissue, pleural fluid, or extrapulmonary site by a validated nucleic acid amplification test
- Detection of *Legionella pneumophila* serogroup 1 antigen in urine using validated reagents
- Fourfold or greater rise in specific serum antibody titer to *Legionella pneumophila* serogroup 1 using validated reagents

Supportive laboratory evidence:

- Fourfold or greater rise in antibody titer to specific species or serogroups of *Legionella* other than *L. pneumophila* serogroup 1 (e.g., *L. micdadei*, *L. pneumophila* serogroup 6)
- Fourfold or greater rise in antibody titer to multiple species of *Legionella* using pooled antigens.
- Detection of specific *Legionella* antigen or staining of the organism in lower respiratory secretions, lung tissue, pleural fluid, or extrapulmonary site associated with clinical disease by direct fluorescent antibody (DFA) staining, immunohistochemistry (IHC), or other similar method, using validated reagents

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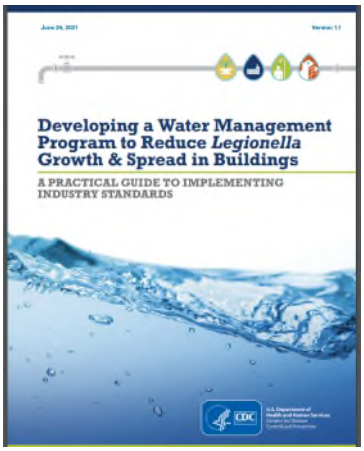
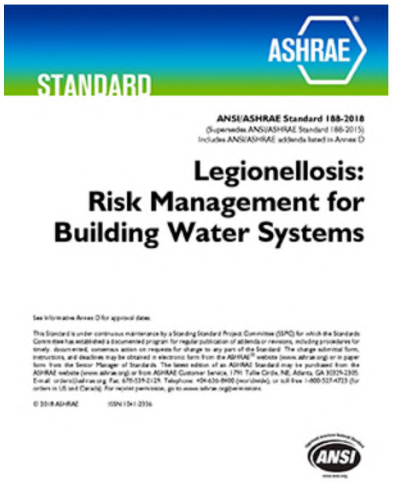
SELECTED LITERATURE





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Developing a Water Management Program

- Establish Water Management Team
- Create Process Flow Diagram
- Perform Hazard Analysis
- Identify Control Points
- Identify Control Measures
- Determine Critical Limits
- Monitoring
- Corrective Actions
- Verification and Validation

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ESTABLISH WATER MANAGEMENT TEAM

- Facilities Manager
- Building Administrator
- Building Engineer/Maintenance
- Water Treatment Professional
- Infection Prevention
- Nursing
- Clinical Engineering

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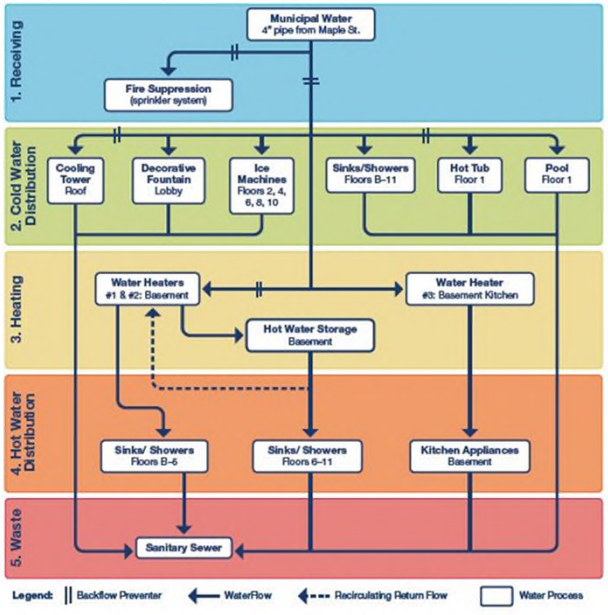

PROCESS FLOW DIAGRAM

RISK ASSESSMENT

- Review existing systems
- Identify vulnerable populations
- Determine system vulnerabilities

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RISK ASSESSMENT PREMISE PLUMBING

- Hazards
  - Chemical
    - Lead
    - Disinfection by-products (e.g., trihalomethanes)
  - Physical
    - Water that can cause scalding
  - Microbial
    - *Legionella*
    - *Pseudomonas*

- Hazardous Conditions
  - Sediment/solid buildup in low-flow areas
  - Low water temperatures in the distribution system (bacterial growth)
  - High temperatures from the outlets (scalding)
  - Water age due to low-flow fixtures, inconsistent turnover
  - Disinfectant residual too high or too low
  - Materials may be incompatible with the disinfectant chemical
  - Quality of water entering the building contaminated
  - Cross-connections can cause ingress of contaminants
  - Over-softening water causing corrosion
  - Filters/filter media not maintained or changed regularly

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RISK ASSESSMENT COOLING TOWER SYSTEMS

- Hazardous conditions
  - Sediment buildup in the basin
  - Algae growth in the tower
  - Corrosion in the tower or heat exchanger
  - Uneven flow distribution
  - Scale on the fill material
  - Temperatures conducive to bacterial growth
  - Stagnant water in piping
  - Inadequately maintained equipment
  - Lack of regular cleaning

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RISK ASSESSMENT DECORATIVE FOUNTAINS AND INDOOR WATER FEATURES

- Hazards
  - Even clear water untreated can cause *Legionella* growth
- Hazardous conditions
  - Materials scrubbed from the air and reunited with falling water droplets
  - Water age due to intermittent use
  - Higher outdoor temperatures facilitated by pumps/filters
  - Equipment and submerged lighting may raise temperature
  - Scale deposits
  - Fountains in patient care areas
  - Non-distilled makeup water

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RISK ASSESSMENT ICE MACHINES

- Hazards
  - *Legionella* and biofilm associated pathogens
- Hazardous conditions
  - Location in small, warm rooms (temperature fluctuation)
  - Excessive water piping (water age)
  - Warm condenser coil
  - Filter saturation
  - Lack of regular cleaning/sanitization

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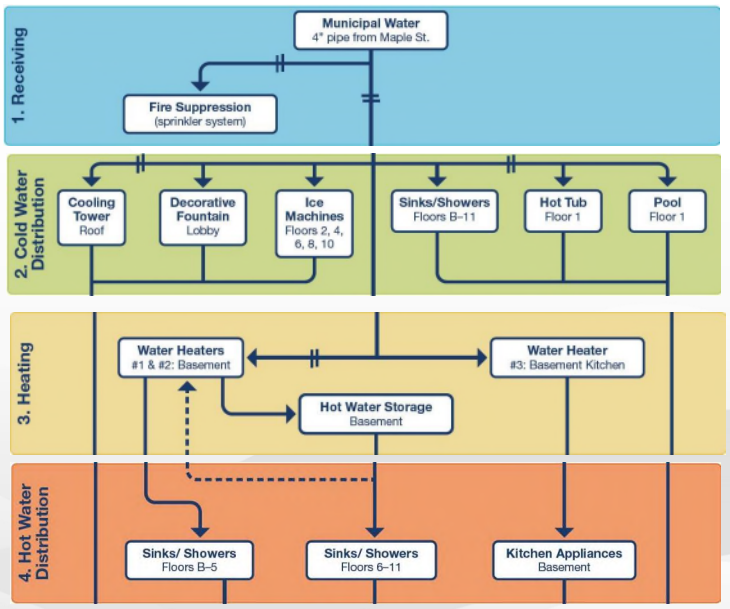
IDENTIFY CONTROL POINTS

- Receiving – Incoming Main
- Cold Water Distribution
- Hot Water Storage
- Hot Water Distribution



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CONTROL MEASURES PREMISE PLUMBING

- Temperature
- Disinfectant Residual
- pH
- Flushing
- Backflow devices to prevent cross-connections

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CONTROL MEASURES COOLING TOWER SYSTEMS

- Routine water treatment
- Routine maintenance of pH levels
- Routine corrosion control
- Routine scale and deposits control

CONTROL MEASURES DECORATIVE WATER FEATURES

- Chemical disinfection
- Filtration
- Removal of algae

CONTROL MEASURES ICE MACHINES

- Adequate ventilation and space
- Filter Changes
- Routine Cleaning – surface and mechanical

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MONITORING

- For each control measure, the Team determines the means, method, and frequency by which critical limits are monitored
- Monitoring results are always quantitative and immediate
- **Example:**
  - Control measure
    - Water is heated
  - Monitoring
    - Means
      - (e.g., thermometer)
    - Method
      - (e.g., place under shower for 1 minute)
    - Frequency
      - (e.g., daily)

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CORRECTIVE ACTIONS

- For each control measure, the Team determines *in advance* the actions to be taken when monitoring indicates a control measure is outside of the critical limits
- **Example**
  - Control measure
    - Water is heated
  - Critical limit
    - Temperature range
  - Monitoring
    - Temperature is lower than acceptable range
  - Corrective Action
    - Turn heater temp setting to desired range, measure every 30 minutes until in range
    - Person responsible: John Doe
    - Minimum response time: 8 hours

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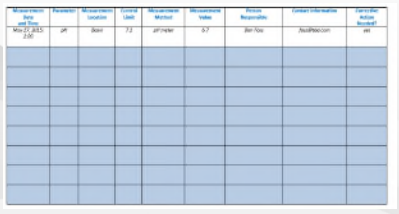
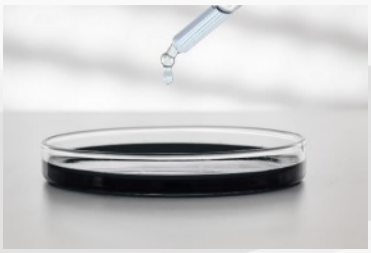
VERIFICATION AND VALIDATION

- Verification
  - Monitoring records
  - Disinfection reports
  - Chemical dosing records
  - Vendor service records
  - Inspection reports
- Validation
  - Microbial testing
  - Parametric testing
  - Re-evaluation
  - Water quality





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CONCLUSIONS

- Evaluate all systems that use water
- Identify control measures that can be implemented to prevent amplification
- Avoid control measures/control limits that cause unintended consequences
- Water management programs are ever-evolving strategies
  - **Document, Document, Document** all activities
  - Implement corrective actions
  - Review Water Management Program at least once a year with team

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Healthcare-Associated Legionellosis

Among patients who meet clinical and lab criteria for confirmed Legionnaires Disease:

- **Presumptive healthcare-associated Legionnaires' disease:** A case with ≥10 days of continuous stay at a healthcare facility during the 14 days before onset of symptoms.
- **Possible healthcare-associated Legionnaires' disease:** A case that spent a portion of the 14 days before date of symptom onset in one or more healthcare facilities but does not meet the criteria for presumptive healthcare-associated Legionnaires' disease.

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What to Expect

Initial meeting with the local health department to discuss the case(s).

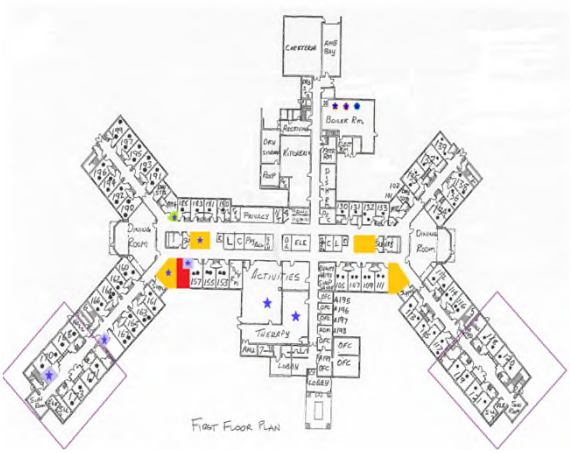
"Path of the patient(s)" – is the exposure isolated to one area or water system?

Requested follow-up information

- Plumbing schematic
- Water management plan
- Cooling tower maintenance records
- Hot water distribution system
- Chart review of all cases of pneumonia over the past 6 months

Implement immediate control measures (bottled water, shower filters, monitoring of resident symptoms)

Inform patients discharged over the previous few weeks notifying of the current case(s)



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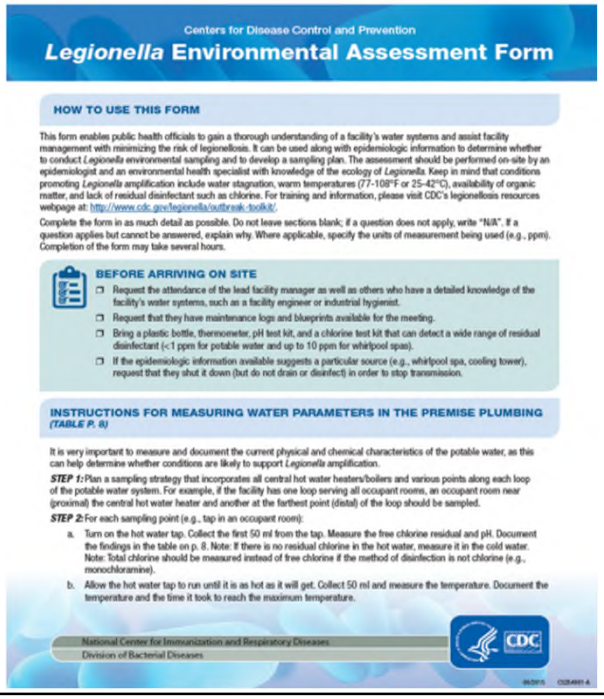
Environmental Investigation

Necessary to identify possible environmental sources of *Legionella*

Multi-step process that provides a thorough understanding of a facility's water system(s)

Involves visual inspection and specialized testing of water parameters

Risk assessment needed for a WMP



Centers for Disease Control and Prevention

***Legionella* Environmental Assessment Form**

HOW TO USE THIS FORM

This form enables public health officials to gain a thorough understanding of a facility's water systems and assist facility management with minimizing the risk of legionellosis. It can be used along with epidemiologic information to determine whether to conduct *Legionella* environmental sampling and to develop a sampling plan. The assessment should be performed on-site by an epidemiologist and an environmental health specialist with knowledge of the ecology of *Legionella*. Keep in mind that conditions promoting *Legionella* amplification include water stagnation, warm temperatures (77-108°F or 25-42°C), availability of organic matter, and lack of residual disinfectant such as chlorine. For training and information, please visit CDC's legionellosis resources webpage at: http://www.cdc.gov/legionella/outbreak-toolkit/.

Complete the form in as much detail as possible. Do not leave sections blank; if a question does not apply, write "N/A". If a question applies but cannot be answered, explain why. Where applicable, specify the units of measurement being used (e.g., ppm). Completion of the form may take several hours.

BEFORE ARRIVING ON SITE

- ❒ Request the attendance of the lead facility manager as well as others who have a detailed knowledge of the facility's water systems, such as a facility engineer or industrial hygienist.
- ❒ Request that they have maintenance logs and blueprints available for the meeting.
- ❒ Bring a plastic bottle, thermometer, pH test kit, and a chlorine test kit that can detect a wide range of residual disinfectant (<1 ppm for potable water and up to 10 ppm for whirlpool spas).
- ❒ If the epidemiologic information available suggests a particular source (e.g., whirlpool spa, cooling tower), request that they shut it down (but do not drain or disinfect) in order to stop transmission.

INSTRUCTIONS FOR MEASURING WATER PARAMETERS IN THE PREMISE PLUMBING *(TABLE P. 8)*

It is very important to measure and document the current physical and chemical characteristics of the potable water, as this can help determine whether conditions are likely to support *Legionella* amplification.

STEP 1: Plan a sampling strategy that incorporates all central hot water heaters/boilers and various points along each loop of the potable water system. For example, if the facility has one loop serving all occupant rooms, an occupant room near (proximal) the central hot water heater and another at the farthest point (distal) of the loop should be sampled.

STEP 2: For each sampling point (e.g., tap in an occupant room):

a. Turn on the hot water tap. Collect the first 50 ml from the tap. Measure the free chlorine residual and pH. Document the findings in the table on p. 8. Note: If there is no residual chlorine in the hot water, measure it in the cold water. Note: Total chlorine should be measured instead of free chlorine if the method of disinfection is not chlorine (e.g., monochloramine).

b. Allow the hot water tap to run until it is as hot as it will get. Collect 50 ml and measure the temperature. Document the temperature and the time it took to reach the maximum temperature.

National Center for Immunization and Respiratory Diseases
Division of Bacterial Diseases

CDC

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Environmental Investigation

- Follow the “path of the patient(s)”
- Collect water quality parameters
  - Temperature – Legionella grows best between 77°-113° F
  - Disinfectant – A detectable level is need to limit growth
  - PH – Disinfectants are more effective at a neutral pH
- Establish sampling locations
  - Highest interest are the hot water systems
  - Patient sinks and shower area
  - Features and equipment capable of producing aerosols

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Now it’s your turn…

- Strongly recommend contracting with a professional water systems consultant
  - Conduct the Environmental Sampling
  - Perform the Water Quality Parameters
  - Relationship with an ELITE Certified Lab
  - Assist with Remediation if Needed
  - Assist in Updating WMP
  - Communicate with local health department

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Testing and Sampling

- Parameter Testing
  - Temperature
  - Disinfectant
  - pH

- Environmental Sampling
  - Every other week for 3 months
  - Once a month for additional 3 months
  - Locations and frequency may change based on results

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Possible barriers to prevention and control

- Lack of a MWP team
- A printed CDC Toolkit or a consultant template, but nothing is specific to the facility
- No control measures specified
- No corrective actions to be taken when control limits are not met
- WMP has not been revisited or updated with current staff

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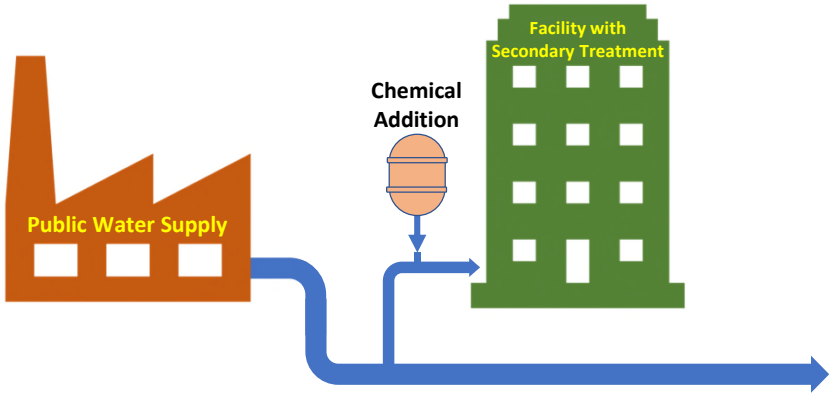
Secondary Water Treatment (ST)



- If all other options have proved ineffective to control legionella, a facility may pursue secondary water treatment.
- Secondary treatment is the addition of chemicals into incoming municipal water (city water).
- Installation of secondary treatment causes a facility to meet the definition of a public water supply and be subject to regulation as such.

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Key Requirements of a ST Public Water Supply

- Facilities **pursuing secondary treatment** must:
  - Submit application forms and supporting documents for EGLE review.
  - Have a State of Michigan Certified Drinking Water Operator.
  - Receive a **permit from EGLE prior to installation** of secondary treatment**.**
  - Receive an **authorization of use letter prior to operation** of secondary treatment.

- Facilities **operating permitted secondary treatment** must:
  - Maintain a State of Michigan Certified Drinking Water Operator.
  - Conduct ongoing monitoring and sampling and submit results to EGLE.
  - Conduct ongoing cross connection control activities for the whole facility.
  - Meet with EGLE staff for future onsite inspections.

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Example Secondary Treatment System

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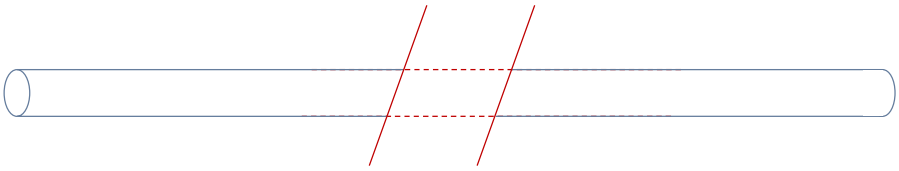
Unpermitted Secondary Treatment Systems

- What to do if a facility has unpermitted secondary treatment?
  - Unpermitted systems must be physically disconnected.
  - Installation is only permissible after an EGLE engineering review of the design, issuance of a permit and issuance of installation/use authorization letters.



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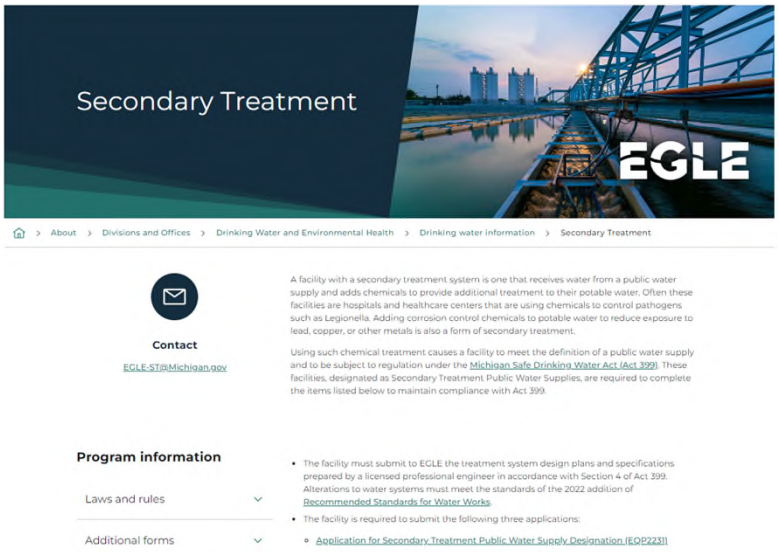
EGLE Secondary Treatment Website



- Contact us with any questions.
  - EGLE Secondary Treatment Program
    EGLE-ST@michigan.gov
  - Evan Huckins
    HuckinsE@michigan.gov

Michigan.gov/EGLE/About/Organization/Drinking-Water-and-Environmental-Health/Drinking-Water/Secondary-Treatment

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How MIOSHA Addresses Legionella

- MIOSHA does not have a Legionella specific standard
- However, all employers are required to provide a workplace free from recognized hazard which are capable or causing death or serious harm.
  - This is known as the “General Duty Clause”.
- Where MIOSHA does not have a standard, the use of Consensus Standards, Industry Best Practices, or Internal Standards can provide protection to employees.
- Most Legionella inspections result from reports of employee hospitalizations or fatalities, referrals from other agencies, or employee complaints.

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What Are the Elements the General Duty Clause?

- Failure to keep the workplace free from a recognized hazard which employees were exposed to.
- The hazard is recognized.
- The hazard was causing, or likely to cause, death or serious harm.
- There is a feasible means of abatement.

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Traits of MIOSHA Legionella General Duty Violations

- Reported cases of legionnaires disease in employees
  - Cases resulted in hospitalizations or fatalities
- Legionella identified in a water source at the facility
- Water management plan implementation
  - Absent or inadequate
- Maintenance deficiencies
- Disinfection programs deficiencies

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LIVINGSTON COUNTY
Health Department

CASE STUDY #1

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Agency Oversight, Function, and Role

Local Health Department

- Local Public Authority
- Conduct investigation and CD surveillance of all reportable diseases and outbreaks (including *Legionella*)
- Provide clinical guidance to healthcare facilities, as needed
- Facilitate analysis of clinical samples at Michigan BOL
- Provide environmental consultation for water supply system
- Provide educational resources
- Emergency Orders, if needed

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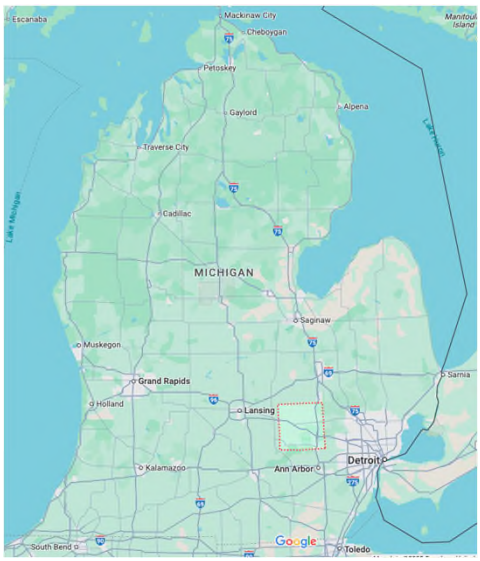

Background of Livingston County

- Population 196,757
- 1 Full-Service Hospital
- 2 Emergency Departments
- 6 Licensed Skilled Nursing Facilities

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Disease Notification

67 yoM with pneumonia and positive *Legionella* test reported in March 2024 via electronic lab reporting in the Michigan Disease Surveillance System (MDSS)

Address matched a skilled nursing facility

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Patient Information

Past medical history of COPD with baseline O2

Onset 3/1/24 – worsening cough and increasing O2 requirements

Admitted 3/3/24 with hypoxemia and respiratory failure

- Chest X-ray showed right lower lobe pneumonia
- Positive *Legionella* urinary antigen on admission

Resided at skilled nursing facility for ~ 6 months

Seen at local ED 4 days prior to symptom onset for unrelated concern

- ✓ **Meets Case Definition**
- ✓ **Meets Definition for Presumptive Healthcare Associated (HCA) Case**
- ✓ **Warrants Public Health Investigation**

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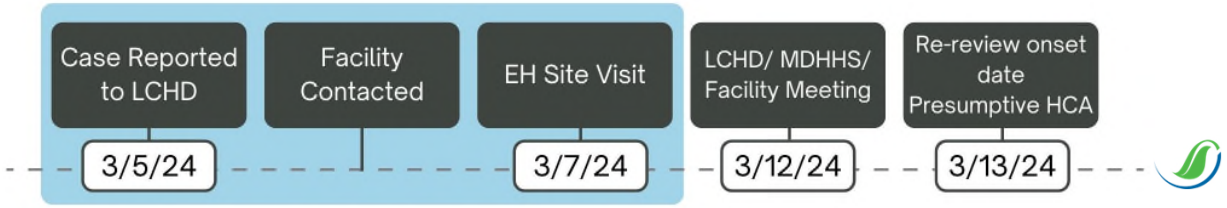
Investigation Timeline

- Facility contacted
  - Additional information & patient's records
  - List of facility associated pneumonias
  - Water management plan & water supply schematics
- Planned LCHD environmental health visit



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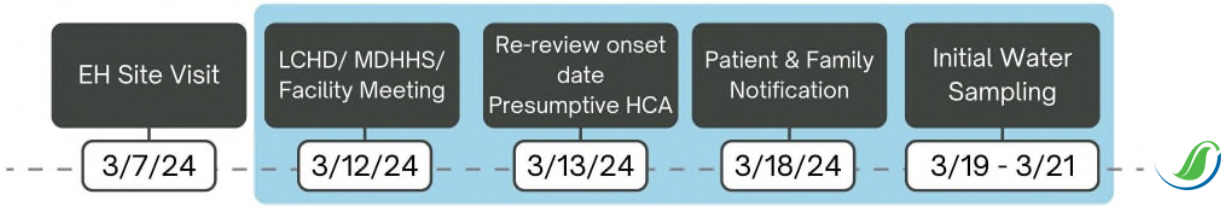
Investigation

- Additional investigation led to adjustment of onset date
  - No longer included ED as possible exposure

Recommendations

- Active clinical surveillance
  - Urinary and Sputum Samples
- Environmental sampling
  - Initial: LCHD with MDHHS consultation
- Resident and family notification
- ICAR (Infection Control Assessment and Response)



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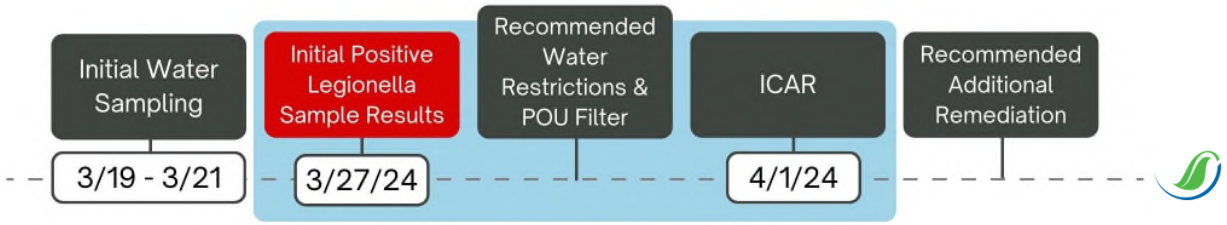
Positive Environmental Sample

- Positive culture from shower room sink
- Prompts additional sampling every 2 weeks for 6 months by facility

- Recommend water restrictions & remediations
  - POU filters
  - Remove aerators
  - Temporary restrictions
    - Bottled water, Sponge baths, and Pause use of ice machine



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Additional Remediation Recommendations

Increase boiler temperature

Increase flushing frequency

Sanitize unused water faucets before sampling

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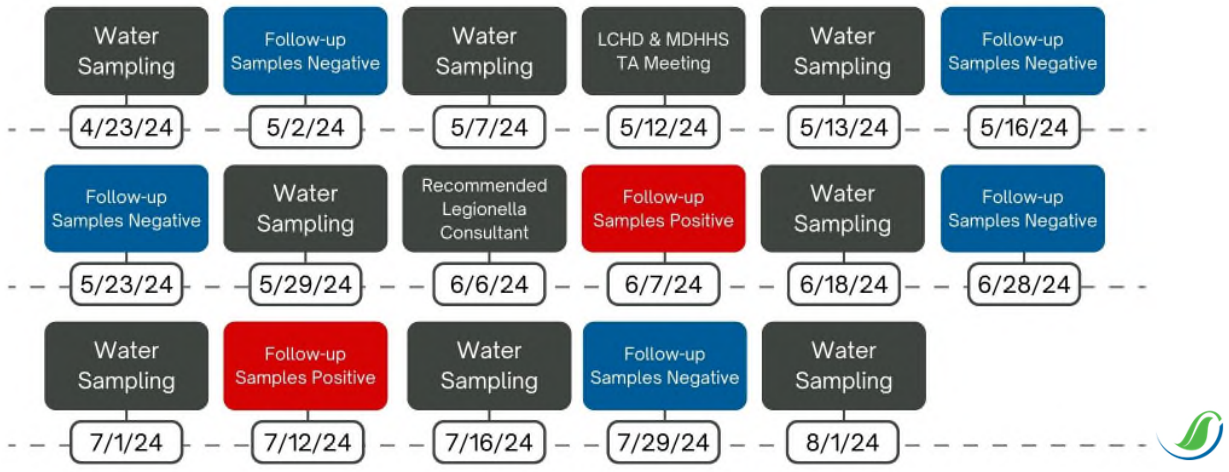
Continued Sampling (intermittently positive)



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Presumptive Case

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Second Case

- 75 yoM
- Reported by facility on 8/12/24
- Admitted to hospital for unrelated care
- Shortly after admission, developed fever and hypotension (? Possible cough)
- CXR showed basilar opacities concerning for infection
- Positive *Legionella* urinary antigen
- Blood culture (+) for MRSA
- Treated for both MRSA and *Legionella* with improvement

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Preliminary Investigation

Lived across hall from initial case

Resident at facility since June 2024

Undergoes dialysis only at facility

Initially reported to leave facility with family – sign out sheets showed no off-site excursions

- ✓ **Meets Case Definition**
- ✓ **Meets Definition for Presumptive HCA Case**
- ✓ **Warrants Public Health Investigation**

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Expansion of Initial Investigation

- Additional 6 months of active clinical surveillance
- Patient / family notification
- Environmental Health
  - Additional sampling sites recommended
  - Additional water restrictions recommended
  - Recommended hiring water consultant and considering additional remediation

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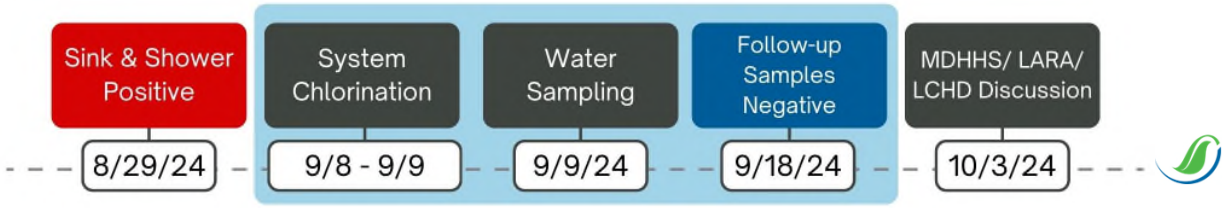
Additional Sampling & Chlorination

- Initial sampling of affected area showed positive shower and sink
- System wide chlorination performed



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LARA Collaboration

- Met with LARA & MDHHS in October 2024 to discuss most appropriate agency to continue environmental monitoring and remediation recommendations
- Requested LARA to follow up with facility

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Lessons Learned

Facility should have a WMP that details their water distribution system, including dead-end plumbing.

Facility should be implementing routine WMP practices such as:

A. Routine temperature checks at water heater, showers, and sinks – Temperature drops from water heater to point of use.

B. Routine flushing of unused sinks, showers, eye wash stations, etc.

C. Routine water sampling.

Facility should be familiar with mitigation strategies and have an implementation plan to initiate when positive samples are detected.

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Lessons Learned (continued)

Not every healthcare facility has the expertise to develop a water management plan – consider consultants.

Testing, remediation, and clinical surveillance is a long process.

Regular communication with the right individuals is important.

Multiple agencies have different & important roles in this process – Healthcare Facility, MDHHS, LARA, and LHD.

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Role & Response

- Apply MDHHS legionellosis protocol to specific investigation, support Livingston through process.
- Assist with sampling plan development, on site sampling, and provide water restriction/remediation guidance.
- Notifying Livingston of any additional cases associated with facility residing outside of their jurisdiction.
  - Adjust investigation as needed (i.e., new areas for targeted testing, water restrictions, etc.)

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Role & Response

LARA notified by local health department to provide technical guidance on LARA authority and possible assistance if needed.

As the state licensing agency, LARA has oversight to ensure a safe environment for patients in state licensed facilities.

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CASE STUDY 2
DETROIT

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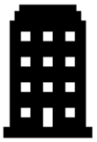
Agency Oversight, Function, and Role

Detroit Health Department

Investigate reports of Legionella

Oversight of reports of Legionella

Coordinate with facility and state partners



Oversight of facilities with exposures

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Role & Response

Receive and respond to positive reports of Legionella

Investigate facilities associated with exposures

Educate patients and facilities on Legionella

Coordinate discussions between regional and local partners

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Role & Response

Investigation begins

JANUARY 2023

- Positive healthcare associated case from Facility X is reported to the Detroit Health Department
- Investigation at Facility X begins:
  - Notification letter to the facility
  - Water management plan and water sampling results is requested
  - Relevant remediation recommendations are provided
  - Input on water management Plan is provided

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Role & Response

Timeline continued…

FEB 2023
- Meeting request from Detroit Health Department with relevant stakeholders i.e., MDHHS, X

MAR 2023
- Detroit Health Department and MDHHS recommended need for secondary water treatment system
- Environmental, Great Lakes& Energy (EGLE) looped in

APR 2023
- Follow-up meetings between Detroit Health Department, MDHHS, EGLE and X to discuss progress on remediation and secondary disinfection system

JUL 2023
- Facility X initiated application for secondary disinfection system

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Role & Response

Timeline continued…

AUG 2023
- Detroit Health Department hosted meetings with MDHHS, EGLE and X to receive updates on remediation and sec disinfection system application

SEPT 2023
- Facility X hosted in-person meeting with Detroit Health Department and MDHHS
- Discussed challenges over conducting comprehensive testing, filter installation and operationalizing sec disinfection system

OCT 2023
- Detroit Health Department continued monitoring water sampling results and updates on secondary disinfection system

NOV - DEC 2023
- Multiple follow ups were sent, but no further updates were received from Facility X

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Role & Response

Timeline continued…

NOV 2023
- Installation permit issued by EGLE to Facility X

DEC 2023
- EGLE and Detroit Building Safety and Engineering Department (BSEED) plumbing inspector conduct inspections at Facility X

JAN - MAR 2024
- Facility X worked on completing the submission of required documents to EGLE
- Detroit Health Department continued monitoring water sampling result and water parameters

MAR 2024
- Facility X received Operational Permit for the secondary disinfection system from EGLE

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Role & Response

Timeline continued…

MAY 2024
- Secondary water treatment system officially operationalized

JUN 2024
- Facility X advised to continue sharing quarterly water sampling results with the Detroit Health Department for review

SINCE JUN 2024
- The Detroit Health Department and MDHHS continued monitoring water sampling results, filter installation updates and Monthly Operational Reports (MOR's)

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Role & Response

Where are we now?

- Secondary water treatment system installed and operational
- DHD continues to monitor test results at Facility X until significant improvement in legionella positivity is seen

Next Steps

- Continue to monitor test results for positivity
- The Detroit Health Department continues to advocate for continued efforts to reduce the risk of transmission
- Continued monitoring for cases related to health care facilities in Detroit.

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Role & Response

- Apply MDHHS legionellosis protocol to specific investigation, support DHD through process.
- Assist with sampling plan development and provide water restriction/remediation guidance.
- Notifying DHD of any additional cases associated with facility residing outside of their jurisdiction.
- Adjust investigation as needed (i.e., new areas for targeted testing, water restrictions, etc.)

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Role & Response

- The facility applied for a permit for supplemental chlorine treatment of the hot water plumbing systems serving two floors of the facility.
- EGLE reviewed the design of the treatment systems with the facility's contractor.
- The contractor provided construction drawings, a sampling plan, and designated an individual to be the certified operator in charge of monitoring the treatment system.
- EGLE met onsite with the contractor, representative from the Detroit building department, and Detroit Health Department to review the treatment system. When the design and operation plan were found to be acceptable, EGLE issued the permit for the facility to begin treatment.

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State and Local Contacts – Legionella

- **MI Dept of Health and Human Services (DHHS)**
  - Jake Reece, Legionellosis Epidemiologist, reecej2@michigan.gov
- **MI Dept of Environment, Great Lakes, and Energy (EGLE)**
  - Secondary treatment program, EGLE-ST@michigan.gov
- **MI Dept of Licensing and Regulatory Affairs (LARA)**
  - Andrea Wiggins, Manager, Health Facilities Engineering Section, wigginsa2@michigan.gov
- **MI Association of Local Public Health (MALPH)**
  - Local Public Health Department Directory
- **MI Department of Labor and Economic Opportunity**
  - MIOSHA Toll Free Main Line – 1-800-866-4674

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References & Resources

- ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems.* June 26, 2015. ASHRAE: Atlanta
- ASHRAE 514: Addressing Legionella and Other Waterborne Pathogens in Building Water Systems
- CDC – Home page, *Developing a Water Management Program to Reduce Legionella Growth and Spread in Buildings, etc.*
  - www.cdc.gov/legionella/index.html
  - https://www.cdc.gov/control-legionella/php/wmp/index.html
  - https://www.cdc.gov/control-legionella/php/toolkit/wmp-toolkit.html
  - https://www.cdc.gov/control-legionella/media/pdfs/toolkit.pdf

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References & Resources continued...

- Legionella Ecology & Intro to Env Health and Engineering for Outbreaks https://youtu.be/RV0bmdliQjQ?feature=shared
- Interpreting the Environmental Assessment for Legionellosis https://youtu.be/fRnAsRYjzis?feature=shared
- How to Make a Sampling Plan for Legionellosis Outbreak Investigations https://youtu.be/xeFa2P2rddE?feature=shared
- How to Sample Potable Water During Legionellosis Outbreak Investigations https://youtu.be/suz7COHOL0k?feature=shared
- How to Sample Cooling Towers during Legionellosis Outbreak Investigations https://youtu.be/sye-CwertMA?feature=shared
- How to Sample Spas and Fountains During Legionellosis Outbreak https://youtu.be/oOP9gEmhLZk?feature=shared

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