Water Management Plans (WMPs) for Healthcare Facilities

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Kentucky Public Health
Prevent. Promote. Protect.

PHAB Accredited Health Department – Advancing Public Health Performance – Public Health Accreditation Board

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Kentucky Department for Public Health

About Us

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The Kentucky Department for Public Health (KDPH) is dedicated to improving the health and safety of Kentuckians through *prevention*, *promotion*, and *protection*.

As a major part of the Cabinet for Health and Family Services, KDPH provides guidance and support for health departments in all 120 counties.

Serving as Kentucky's dedicated public health resource, KDPH is responsible for identifying and allocating resources to communities and public health institutions to prevent and protect against diseases, outbreaks, and hazards statewide.

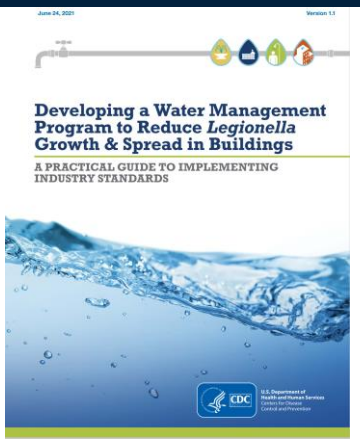
Kentucky Department for Public Health

Organizational Chart

Learning Objectives

- By the end of this presentation, the learner will be able to apply available tools in evaluating essential elements of a Water Management Plan (WMP) in accordance with healthcare standards.
- By the end of this presentation, the learner will be able to critically assess their facility's onsite water management program design and practice.
- By the end of this presentation, the learner will be able to modify and/or develop a comprehensive document that addresses all necessary elements of a functional WMP.

CDC's Water Management Toolkit



- Identify building water systems for which Legionella control measures are needed.
- Assess how much risk the hazardous conditions in those water systems pose.
- Apply control measures to reduce the hazardous conditions, whenever possible, to prevent Legionella growth and spread.
- Make sure the program is running as designed and is effective.

Legionella Toolkit-Version 1.1-June 24, 2021 (cdc.gov)

CSTE's WMP Evaluation Tool

- Council of State and Territorial Epidemiologists (CSTE) resources: Legionnaires (cste.org).
- The WMP should be a detailed written document that describes a comprehensive set of policies and procedures a facility will use to reduce the risk of growth and spread of Legionella and other opportunistic pathogens within its building water system(s) and other devices at high risk for Legionella growth and spread.
- Each WMP should be building-specific and describe processes and procedures for
  - **Eight (8) key elements** in accordance with
    - » ASHRAE Standard 188 and
    - » The CDC WMP Toolkit Legionella: Developing a Water Management Program

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What is a WMP?

- Written, typically electronic, dated document that reflects current practice.
  - A WMP dated 2018 is probably not current; a WMP with a March 2024 stamp better.
- Usually best if the water team actively creates a site-specific document.
  - If you use an online template, READ IT and make sure it matches your facility.
    - » Different facilities have different floor plans, premise plumbing, water features
  - If you 'borrow' a WMP from another facility, in or out of your organization – DITTO!
    - » Edit out previous author's identifying information
    - » Be absolutely sure the text reflects what you will do.
    - » Identify site-specific building water systems and site-specific control measures
    - » Identify specific job responsibilities

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WMP Structure

- Section 1: WMP Team
- Section 2: Building Water Systems (BWS)
  - Potable water supply
  - Cold and hot water distribution
  - Medical Devices
- Section 3: Flow Diagram
- Section 4: Areas at Highest Risk for Legionella (Lp) Growth/Spread
- Section 5: Control Measures and Monitoring Plan
- Section 6: Corrective Actions When Control Limits Are Not Met
- Section 7: Ensures Program is Running as Designed and is Effective
- Section 8: Documents & Communicates WMP Implementation Activities

Section 1: WMP Team

- Specifically identify a multidisciplinary group with skills and authority to effectively develop and implement the WMP.
  - Facilities administration/building management
  - Facilities engineering/maintenance department
  - Personnel with expertise in infection prevention
  - Personnel with an understanding of facility accreditation standards
- Team members are identified with responsibilities.
  - Implement the WMP and direct corrective action as needed
  - Maintain working knowledge of the facility water system(s)
  - Identify system control locations and control limits
  - Monitor and document program performance

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Section 2: BWS - Potable Water Supply

- The public water supplier should be identified or if water is supplied by its own source, the source (e.g., groundwater vs. surface water) and treatment should be specified.
  - The type of disinfection used by the supplier (e.g., chlorine, chloramine, UV) should be identified.
  - The number and location of water entry points to the facility should be identified.
  - Basic incoming water quality characteristics (e.g., disinfectant residual, pH, temperature) should also be described.

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Section 2: BWS - Cold and Hot Water Distribution

- Cold Water
  - Description of the type of piping material, age, cold water storage, and the number and location of cold-water outlets in the facility.
  - Identification of any flow restrictors, aerators, showerheads, wand attachments, drinking fountains, etc.
- Hot Water
  - Description should indicate if hot water is recirculated and describe the type of piping material, age, and type and extent of any insulation used to help maintain temperature.
  - Specify the number of hot water outlets and location of any thermal mixing valves within the facility.
- Water heating method, storage, (if present) mixing valves, and number of heating units
  - Information on the age, model, and manufacturer of the heating units including the type of heating (e.g., electric, gas, oil), capacity of the units, and temperature settings.

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Section 2: BWS - Secondary Treatment & Devices

- Description and level of any secondary treatment provided to either the hot or cold-water system.
  - Water softening, filtering, and/or supplemental disinfectant
  - Point of use outlets (cold and hot water)
- Description of devices.
  - Hot tubs or whirlpool spas, decorative fountains, ice machines, or other water devices connected to the building water system
  - Cooling towers
  - Equipment with water spraying function connected to the building water system (e.g., irrigation systems, fire suppression, emergency eye wash stations)
  - Description of any water or energy conservation systems or devices for the building that impact water storage, distribution, or use

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Section 2 BWS - Medical devices

- Description of medical procedures or devices that may expose patients to water droplets, such as hydrotherapy tubs, respiratory therapy equipment, humidification devices and dental unit water lines.
- Description of areas with patients more vulnerable to infection (e.g., bone marrow transplant units, oncology floors, or intensive care units).
- Description of clinical support areas (including dietary and central supply) which could contribute to spread by aspiration.
- Include all components and devices that can contribute to Legionella growth and spread.

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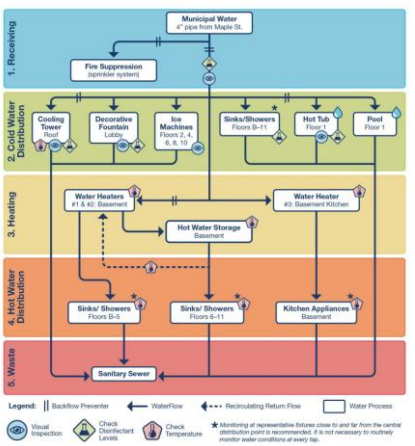
Section 3: Flow Diagram

- Shows how water is supplied to the facility/ building, how it is processed, distributed, and used throughout the facility/building.
- The diagram, and accompanying text, should include all areas of potential concern, such as dead ends/low flow areas, cold and hot water storage tanks, treatment processes, and cooling towers.
- In addition, any devices in the facility that can create aerosols, such as decorative fountains or hot tubs, should also be included and detailed.
- The diagram should also include sampling points identified in elements 3 and 4.



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Section 4: Areas at Highest Risk for Lp Growth/Spread

- Key areas to be identified are
  - Areas within the facility/building water system prone to low water flow and/or stagnation;
  - Areas of sediment accumulation;
  - Backflow preventer installations;
  - Areas of potential cross connections;
  - Hot or cold-water storage;
  - Water lines with temperatures in range to support Legionella growth; and
  - Low disinfectant levels.
- This means you need to [continually]measure disinfection, temperature, and pH.

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Section 4: Areas at Highest Risk for Lp Growth/Spread

- Hot and/or cold-water storage tanks or water conditioning equipment such as filtration units, water softeners, etc.
- Areas where water may be stagnant for periods of time including dead legs in water piping, wings or rooms that are vacant, temporarily unused or have been repurposed, and/or areas with variable temperature or disinfectant level indicating increased water age
- Areas with consistently low or no residual disinfectant.
- Areas where temperatures can support Legionella growth (e.g., hot water should be stored above 140°F, hot water in circulation should not fall below 120°F, and cold water should be stored and circulated below 77°F) (e.g., point of use fixtures, return loops).
- Fixtures of concern (i.e., sinks, faucets, hoses, shower heads, aerators, flow restrictors, shower wands, or other fixtures that aerosolize water).
- Water fixtures or devices within and associated with the facility that are conducive to Legionella growth and spread (e.g., cooling towers, decorative fountains, ice machines, sinks/showers, and/or hot tubs).
- Areas identified on WICRA or after a Module 11.

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Section 4: Areas at Highest Risk for Lp Growth/Spread

- The description includes appropriate back flow prevention devices at makeup water and other cross connections, automated water treatment system(s) (e.g., automated anticorrosion, anti-scale, and disinfectant addition and monitoring systems), high-efficiency drift eliminators, location relative to building air intakes (at least 25 feet away), and water recirculation during intermittent use.
- System piping is designed to avoid stagnation or dead legs in all associated equipment, components, devices, heat exchangers, chillers, pumps, bypasses, and equalizer(s).
- Cooling tower system design, configuration, and placement are consistent with ASHRAE Guideline 12 and CDC recommendations.

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Section 5: Control Measures & Monitoring Plan

- In general, there are three types of hazard controls that should be discussed in the WMP:
  - Water age and stagnation, which can lead to reduction of water temperature and disinfectant level and promotes bacterial growth;
  - Disinfectant levels, which can be reduced through heating, storage and/or filtering; and
  - Thermal control of premise plumbing water.
- At each hazardous location identified in section 3, clear control limits such as maximum/minimum water temperature and disinfectant concentrations must be established to ensure conditions are not conducive to the growth of Legionella bacteria.

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Section 5: Control Measures and Monitoring Plan

- Specifies control point locations, parameter to be measured (e.g., temperature, pH, disinfectant level), and acceptable level or range of each parameter.
- Specifies control limits (quantitative or qualitative) for each control location,
- Specifies the frequency each location is to be monitored (e.g., daily, weekly, monthly, quarterly).
- Provides a sampling plan in response to scheduled/unanticipated changes in building water system.
- Cooling tower system design, configuration, and placement are consistent with ASHRAE Guideline 12 and CDC recommendations.

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Section 6: Corrective Actions When Control Limits Are Not Met

- Contains a plan for identifying and addressing areas of the facility/building where water may have become stagnant.
- Elimination of any identified pipework that is no longer in use or has become isolated from the regular flow of water in the facility/building's water distribution system (e.g., dead legs).
- Procedures for allowing the reoccupation of rooms or closed off areas of the facility/building through a combination of water fixture flushing and monitoring (e.g., start-up/shut down procedure).
- Building/facility does not have vacant rooms or closed off areas.
- An action plan for addressing high risk aerosolizing water features (e.g., decorative fountains).

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Section 6: Corrective Actions When Control Limits Are Not Met

- Identifies person(s) responsible for taking corrective action(s) and time frame for action(s).
- Identifies notification procedures when control limits are exceeded, and corrective action is required.
- Procedures are identified if control limits are not met despite corrective action (e.g., steps to take if flushing, for example, does not resolve issue).
- Includes an environmental Legionella testing program.

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Section 7: Ensure Program is Running as Designed and is Effective

- Specifies the use of logbooks, or other types of documentation, to identify monitoring and any appropriate response actions.
  - Example of the document/log being used to collect the information, to include the date, time, location, and person performing the specific activity.
- Requires documentation of analysis results and observations and comparison to control limits.
- Describes and requires documentation of specific actions taken if control limits are exceeded.
- Describes and requires documentation of additional actions to be taken if control limits are found to be repeatedly exceeded at any monitoring location.
- WMP incorporates facility's routine surveillance for healthcare-associated Legionnaires' disease as part of the validation protocol.

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Section 7: Ensure Program is Running as Designed and is Effective

- Describes the number of samples to be collected, sampling locations, sample collection protocols and analytical method used.
- The number of samples provides an appropriate representation of the building's water systems.
- Contains a testing frequency (e.g., monthly, quarterly, annually) appropriate for the risk of legionellosis in the facility/building (e.g., annual sampling may not be adequate to validate WMP performance).
- WMP indicates what events, in addition to routine testing, trigger additional testing (e.g., water service disruptions, before returning unoccupied areas to service, associated cases of legionellosis).
- Contains context for interpreting results both from the percentage of positive samples found, location(s) of Legionella detection, the quantified number of Legionella in each sample, the trends over time, and the type of Legionella detected.

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Section 8: Documents & Communicates WMP Implementation Activities

- Specifies communication between team member and facility/building management on results and actions taken while implementing WMP and who is responsible for communicating information to other entities.
- Specifies that WMP is, at a minimum, reviewed annually and when there have been changes to the facility/building water system, including the addition of new equipment/features that could generate aerosols.
- The WMP should be a living document that is reviewed and updated as necessary, minimally on an annual basis. All WMP implementation activities should be clearly documented, including testing, results, corrective action(s) taken, and communication between team members and facility/building management.

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Questions?

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