

Considerations for a Water Management Plan (WMP)

Developing and maintaining a water management plan is a multi-step, continuous process. Consider the following points when drafting a water management plan:

Organizational approach

- 1- One approach to organizing WMP activities that has been successful in settings with numerous water aerosol-generating devices included:
 - Inventory all devices that use water and water fixtures that have the potential to produce aerosols. Aerosols are a fine spray of microscopic water droplets that may contain *Legionella* bacteria, which can be deeply inhaled into the lungs. Note that aerosols may be present but not always visible.
 - Categorize from low to high risk for *Legionella* growth (e.g., temperature, re-use of or recirculating water, presence/absence of a disinfectant residual, potential to produce aerosols). See the [CDC Legionella Control Toolkit](#) for more information about hazardous conditions that are commonly associated with *Legionella* growth.
 - Categorize from low to high risk for transmission (aerosolization and exposure opportunity).
 - For each device:
 - Determine suitable locations for monitoring water parameters and monitoring frequency.
 - Determine what corrective actions will be taken if water parameters are outside control limits.
 - Determine remediation steps (i.e., contingency responses per ASHRAE Standard 188).

- 2- Refer to ASHRAE Standard 188 and the CDC Water Management Program toolkit to develop and implement a WMP. Developing and maintaining a WMP is a multi-step, continuous process. The key elements of an ASHRAE-compliant WMP include:
 - Establishing a water management program team
 - Describing the building water systems using text and flow diagrams
 - Identifying areas where *Legionella* could grow and spread
 - Deciding where control measures should be applied and how to monitor them
 - Establishing ways to intervene when control limits are not met
 - Making sure the program is running as designed and is effective
 - Documenting and communicating all activities

- 3- Once established, the WMP should be reviewed at least once per year by the water management team. The program should also be reviewed and revised when any of the following events occur (note this is not an exhaustive list):
 - Data review shows control measures are persistently outside control limits
 - A major maintenance or water service change occurs, such as:
 - New construction
 - Equipment changes (e.g., new chlorinator pump)

- Changes in treatment products (e.g., disinfectants)
- Changes in water usage
- Changes in the municipal water supply
- One or more cases of disease are thought to be associated with your system(s)

Cooling Towers (CTs)

- Review and update the CT WMP to ensure compliance with industry standards.
 - If the CTs are fully de-energized when not in use (as opposed to circulating water without the fans), ensure that biocide is added while the system is circulating and not skipped when the system is in standby.
 - Ensure that water is circulated at least three times a week throughout the CTs during periods of low use, including any basin sweeping and filtration systems.
 - Ensure that if the system is turned off for five days or more for any reason that the full wet startup procedure is followed (per ASHRAE Guideline 12-2020) prior to use.

Resources

- ASHRAE Standard 188 and Guideline 12: <https://www.ashrae.org/technical-resources/standards-and-guidelines>
 - Free, read-only versions: <https://www.ashrae.org/technical-resources/standards-and-guidelines/read-only-versions-of-ashrae-standards>
- CDC Water Management Program Toolkit: <https://www.cdc.gov/legionella/wmp/toolkit/index.html>
- CDC *Legionella* Control Toolkit (includes remediation guidance for cooling towers, hot tubs, and other systems and devices): <https://www.cdc.gov/legionella/wmp/control-toolkit/index.html>
- Cooling Technology Institute Guideline 159: https://cti-marketplace.myshopify.com/products/gdl-59?_pos=1&_sid=f856850c8&_ss=r
- CDC Sampling Procedure and Potential Sampling Sites: <https://www.cdc.gov/legionella/downloads/cdc-sampling-procedure.pdf>
- CDC Legionnaires' Disease Fact Sheet: <https://www.cdc.gov/legionella/downloads/fs-legionnaires.pdf>
- CDC How *Legionella* Affects Building Water Systems and People: <https://www.cdc.gov/legionella/infographics/legionella-affects-water-systems.html>