



Carolina's HealthCare System

ANSI/ASHRAE Standard 188-2015

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One

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- Approved by ASHRAE on June 4, 2015 and ANSI on June 26, 2015.
- The standard is not a code at this time.
- The standard is based upon the HACCP concept.

Hazard Analysis and Critical Control Point

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☐ PURPOSE

The purpose of the standard is to establish *Legionellosis* risk management requirements for *building water systems*.

☐ SCOPE

- Provides minimum requirements for the design, construction, commissioning, operation, maintenance, repair, replacement and expansion of new and existing buildings and their associated water systems and components.
- Applies to all human occupied buildings except single-family residential buildings.
- Intended for use by owners and managers of human-occupied buildings and those involved in design, construction...of *centralized building water systems*.

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- It is estimated that over 25,000 cases of Legionnaires' disease occur each year and cause more than 4,000 deaths.
- 66% of the outbreaks are related to building potable water.
- 42% of Pseudomonas Pneumonia infections in hospitalized patients have been linked to tap water.
- An outbreak of Legionnaires' disease can trigger a knee jerk reaction with far reaching and costly implications as it recently did in New York City.

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■ DEFINITIONS

- *Analysis of building water systems*: the systematic evaluation of potentially hazardous conditions associated with each step in the process flow diagram.
- *Authority having jurisdiction (AHJ)*: an organization, office, or individual responsible for enforcing the requirements of the standard.
- *Control location*: a point where a physical, mechanical, operational, or chemical *control measure* is required.
- *Control limit*: a maximum value, a minimum value, or a range of values to which a chemical or physical parameter associated with a *control measure* must be monitored and maintained in order to reduce the occurrence of a *hazardous condition* to an acceptable level.
- *Corrective action*: action taken to return control values to within established limits.
- *Hazard*: *Legionella* bacteria in a *building water system* that, in the absence of *control*, can cause harm to humans.

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■ DEFINITIONS (Continued)

- *Monitoring*: conducting a planned sequence of observations or measurements of the physical and chemical requirements of *control measures*.
- *Process flow diagram*: a step-by-step drawing of a *building water system* that includes the location of all water processing steps – including but not limited to conditioning, storing, heating, cooling, recirculation, and distribution – that are a part of the *building water system*
- *Testing*: conducting a planned sequence of observations or measurements of physical, chemical, or microbial characteristics of water to assess whether conditions throughout *building water systems* meet the goals set by the *Program Team*. **Nowhere in this standard is testing for *Legionellosis* required.**
- *Validation*: initial and ongoing confirmation that the *Program*, when implemented as designed, effectively controls the *hazardous conditions* throughout the *building water systems*.

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☐ DEFINITIONS (Continued)

- *Verification*: initial and ongoing confirmation that the *Program* is being implemented as designed.
- *Water Management Program*: the risk management plan for the prevention and *control of legionellosis* associated with *building water systems*, including documentation of the plan's implementation and operation.

☐ Hazards are things that have the potential to cause harm.

☐ **Hazard** ≠ Risk

Risk = (Probability) x (Severity)

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■ Hazards Associated with Building Water Systems

- Microbial hazards include pathogens of clinical concern that can colonize plumbing systems and cause and cause disease such as Gram-negative bacteria (*Legionella* and *pseudomonas*).
- Colonization of building water systems has three major components:
 - Intrusion – pathogen enters the building water system.
 - Amplification – pathogens multiply to very large numbers.
 - Transmission – pathogens exit the system and infect vulnerable people.

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■ Section 4 – Compliance (Owner Responsibility)

- Section 4.1 – Building Designer Requirements

Requires a survey of the building to determine if the design contains any devices or factors described in Section 5. Any devices or factors must comply with all applicable requirements of Section 8.

- Section 4.2 – Building Owner Requirements

Requires the building owner to survey existing buildings, new buildings, and any renovation ... to determine if the design contains any devices or factors described in Section 5.

- Section 4.3 – Health Care Facility Requirements

- Facilities that do not meet the qualifications of 4.3.2 shall comply with Sections 4.2, 6, and 7
- Facilities that meet that meet the requirements of Sections 4.3.2.a and 4.3.2.b shall comply with Sections 4.2, 6, and 7, or Normative Annex A, “Health Care Facilities”.

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■ Section 4 – Compliance (Owner Responsibility)

- Section 4.3.2.a

The health care facility is accredited by a regional, national, or international accrediting agency or by the authority having jurisdiction (AHJ) over health care facility Infection Prevention and Control (IC) activities.

- Section 4.3.2.b

The health care facility IC program has an infection preventionist that is certified in infection prevention control (CIC) by the Certification Board of Infection control and Epidemiology (CBIC) or other certifying body, or the health care facility has an epidemiologist with a minimum of a master's degree or equivalent.

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☐ NORMATIVE ANNEX A, HEALTH CARE FACILITIES

- A1. Supplemental definitions
- A2. Designated Team
- A3. Water System Flow Diagram
- A4. Risk Management Plan
- A5. Existing Buildings, New Construction, and Renovations
- A6. Building Water System Procedures

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Normative Annex A

Program Team

Water System Flow Diagram

Analyze Building Water Systems

Control Measures

Corrective Actions

System Start-up, Shutdown, and Corrective Maintenance

Confirmation and Documentation



Risk Management Plan

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■ Designated Team – senior leadership shall select the individual for leading the team. The team membership shall include, but is not limited to

- a person with authority to make command decisions;
- a member of the facilities management staff familiar with the building water systems; and
- a member of the health care facility Infection Prevention and Control (IC) program who is an infection preventionist certified in infection prevention control (CIC) by the CBIC or by an equivalent body, or who is an epidemiologist with a minimum of a master's degree or equivalent.

■ The designated team is responsible for developing, implementing, and documenting all applicable requirements of Annex A.

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☐ Water System Flow Diagram – the building water system flow diagram shall include

- all water system supply sources;
- all water supply service entrances;
- all water treatment systems and control measures;
- all water processing steps;
- all areas where hazardous conditions may contribute to the potential for *Legionellosis* amplification;
- all water use end points;
- other points determined by the *Designated Team*.

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☐ Risk Management Plan

The *legionellosis* risk management plan shall include procedures for

- Name, title, and contact information for the Designated Team members;
- the water system flow diagrams;
- the systematic evaluation of the physical and chemical conditions in the flow diagram;
- identification of areas with a higher probability of infection;
- an evaluation of the results of the above;
- the procedures required for prevention and control of *legionellosis* associated with the above;
- assignment of responsibilities for each action required by the plan;
- documentation of all aspects of the plan and findings;
- disease prevention responses to elevated risks;
- actions to be taken if IC identifies probable or confirmed *legionellosis* cases;
- procedures to confirm implementation and continued progress of the plan.

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☐ Existing Buildings

The Designated Team shall evaluate existing buildings under the requirements of the Management Plan at least annually, and whenever

- a building or portion thereof is changed such that one or more systems is affected;
- whenever major maintenance is performed;
- whenever there is a water service disruption from the utility supplying the building.

☐ New Construction and Renovations

The Designated Team shall review the scope of work and determine the associated risks, and shall require the building designer and builder

- to work closely with the Designated Team on all phases of design and construction;
- to comply with all codes and standards for prevention of *legionellosis*;
- to provide timely documentation of compliance with the risk plan;
- to provide a commissioning plan.

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■ The *Legionellosis* Risk Management Plan shall include procedures for the following building water systems or shall include a determination and rationale for any procedures not required:

- Potable water systems
- Cooling towers and evaporative condensers
- Pools and spas
- Ornamental fountains and open water features

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■ Plan of Action

- Develop PM standards for cooling towers.
- Verify/correct cooling tower asset list.
 - Verify who is providing maintenance.
 - Verify who is providing water treatment.
- Develop water system flow diagrams.
- Develop water system management programs.
- Develop system start-up and shutdown procedures, maintenance procedures (other than cooling towers), and water treatment procedures.
- Develop and implement compliance standards.
- Corrective actions.

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QUESTIONS?