



Beyond Legionellosis

Minimizing Patient Risk with
ANSI/ASHRAE Std. 514



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OVERVIEW

Learning Objectives

REVIEW

the reasons for publishing ANSI/ASHRAE Std 514, including additional hazards beyond *Legionella*

ASSESS

clinically significant microbial hazards and their link to waterborne disease outbreaks

DISTINGUISH

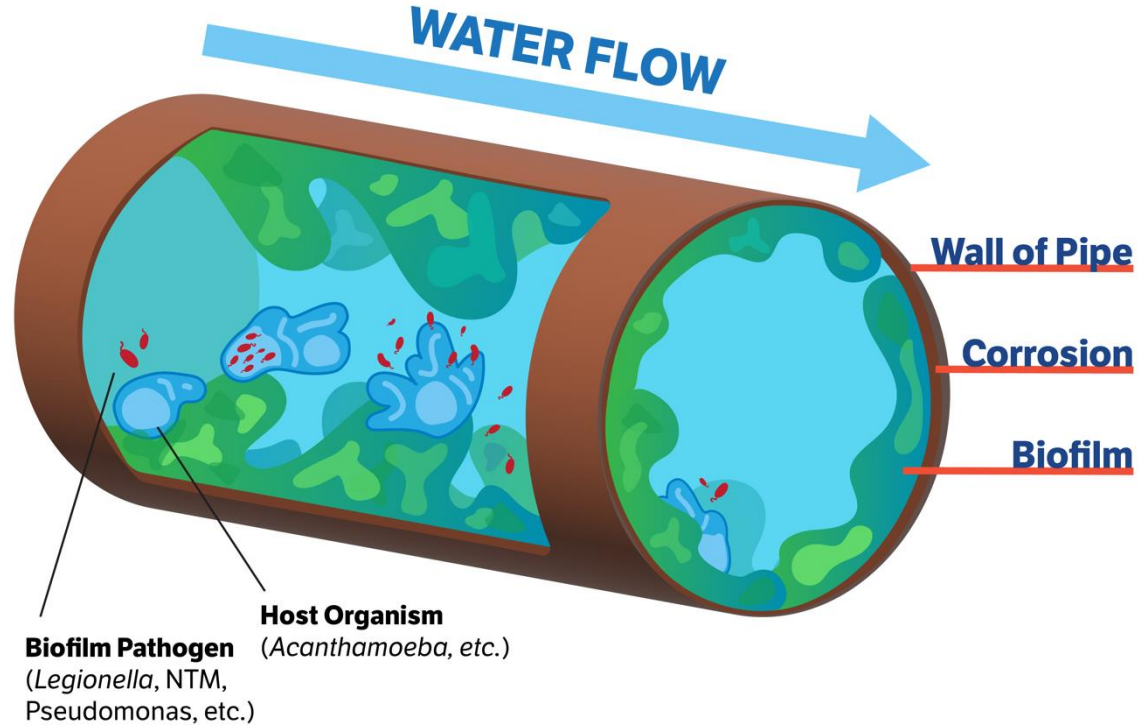
between the requirements of ANSI/ASHRAE Std 514 and ANSI/ASHRAE Std 188.

DISCUSS

key questions for a water management team (WMT) aligning with ANSI/ASHRAE Std 514.

WHY WAS ANSI/ASHRAE STD 514 PUBLISHED?

Biofilm Pathogen Lifecycle



WHY WAS ANSI/ASHRAE STD 514 PUBLISHED?

Disease Cases Associated with Biofilm Pathogens

HEALTHCARE FINDINGS

113

Outbreaks
(53%)

372

Hospitalizations
(66%)

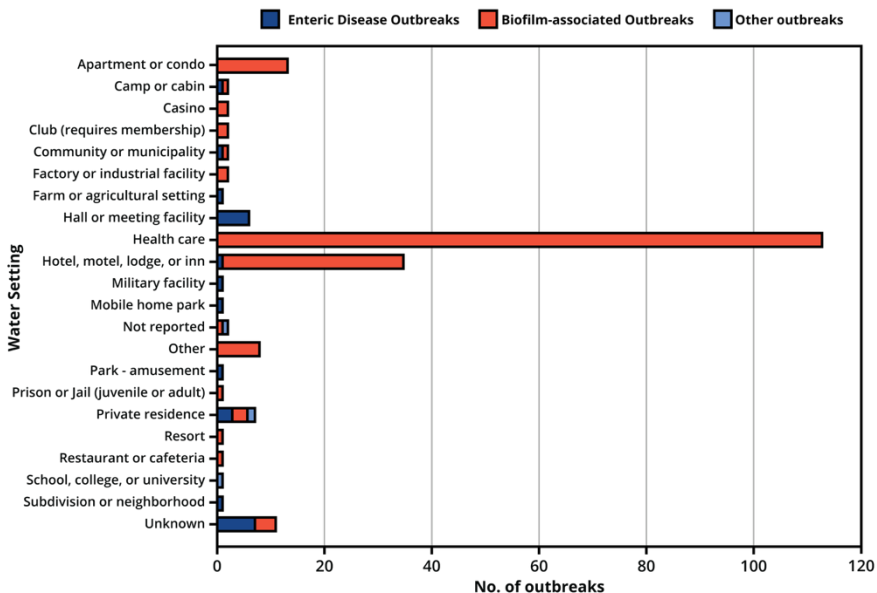
456

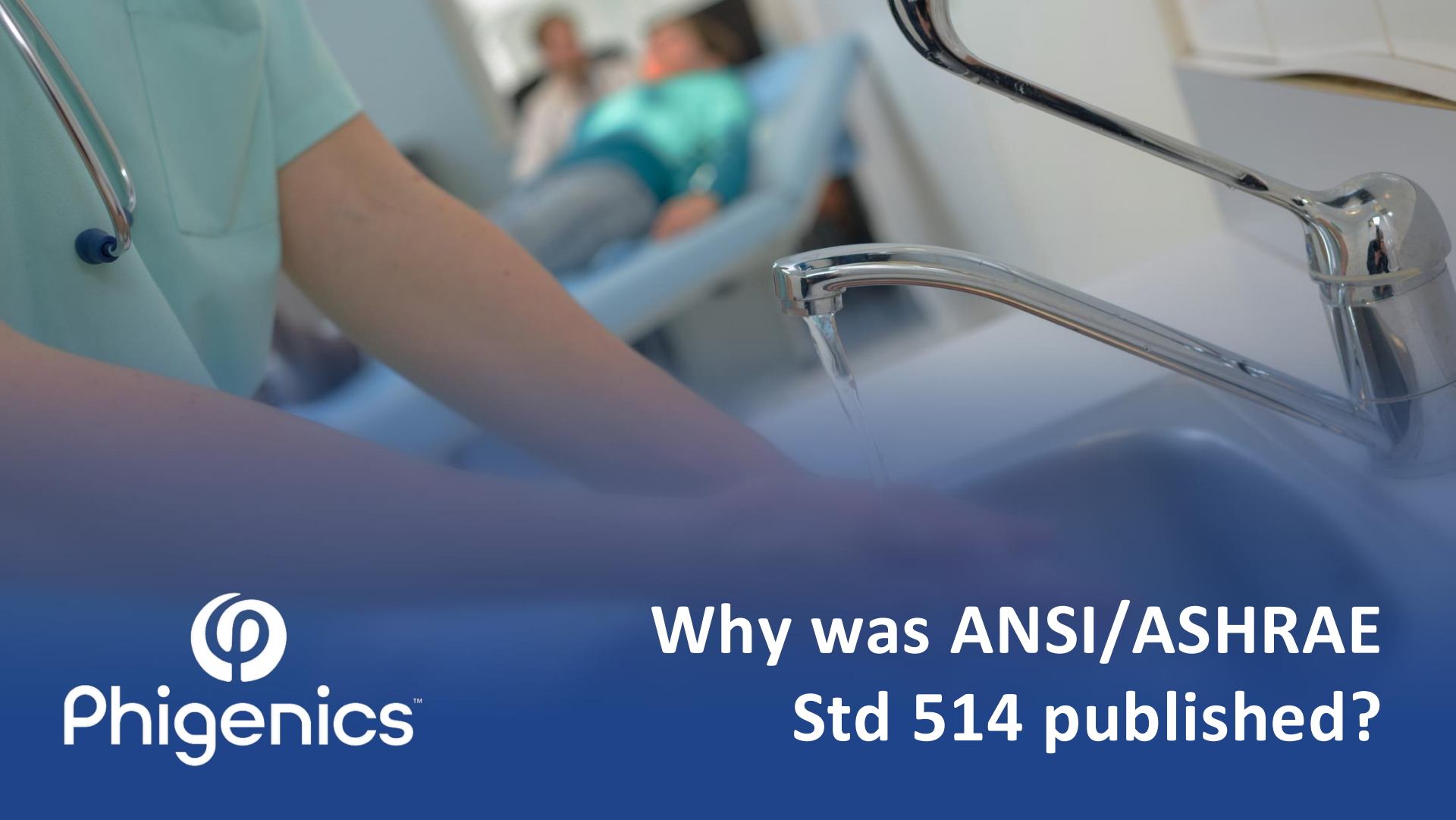
Cases
(21%)

75

Deaths
(87%)

Figure 3. Number of reported drinking water-associated outbreaks, by water setting of exposure.





**Why was ANSI/ASHRAE
Std 514 published?**

WHY WAS ANSI/ASHRAE STD 514 PUBLISHED?

What are the goals of Water Management Programs (WMPs)?



KEEP PATIENTS SAFE

from acquiring
Legionellosis or other
waterborne illnesses



ACHIEVE COMPLIANCE

with accreditation and
survey requirements
(CMS/TJC/CDC NHSN)



DRIVE DEFENSIBILITY

against litigation
with documentation

WHY WAS ANSI/ASHRAE STD 514 PUBLISHED?

The growing burden of waterborne diseases

ANNUAL IMPACT

7.15M
Illnesses

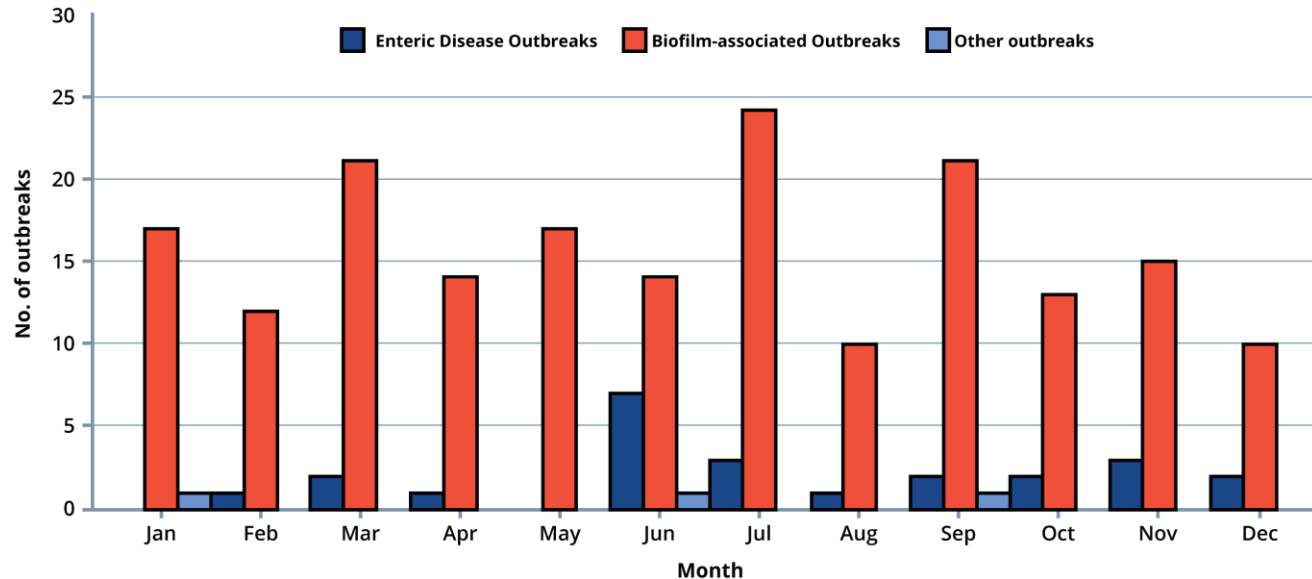
6,630
Deaths

\$3.3B
In Costs

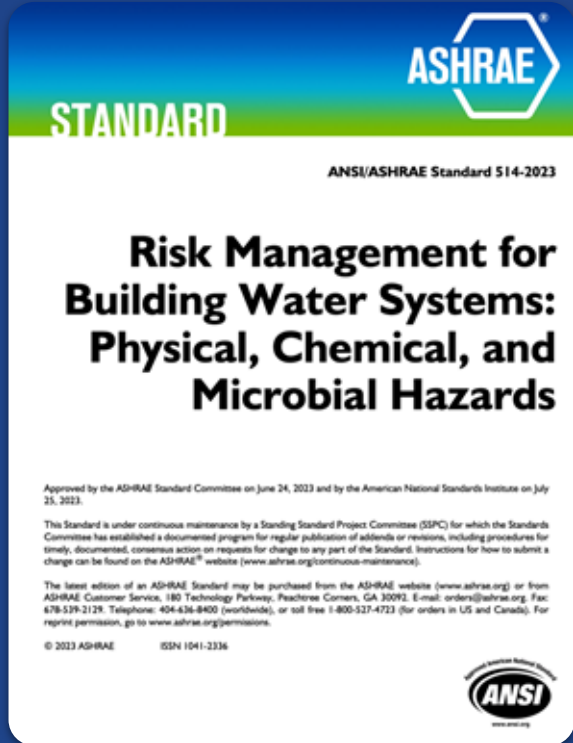
Source: CDC MMWR — Surveillance of Waterborne Disease Outbreaks Associated with Drinking Water — United States, 2015–2020

WHY WAS ANSI/ASHRAE STD 514 PUBLISHED?

Figure 2. Surveillance of Waterborne Disease Outbreaks Associated with Drinking Water — United States, 2015–2020, CDC



ANSI/ASHRAE STD 514: KEY OVERVIEW



MINIMUM PRACTICES ADDITIONAL HAZARDS

To manage overall risk from **microbial hazards other than *Legionella***, as well as from **physical and chemical hazards** associated with potable and non-potable building water systems

COMPREHENSIVE FRAMEWORK

ANSI/ASHRAE Standard 514 provides a framework for the development of water management programs, **from design and construction to occupancy, including post-occupancy modifications and renovations**

CONSISTENT WITH ASHRAE 188

This standard is consistent with the structure of ASHRAE 188 and its methodology



ANSI/ASHRAE Std 514: Key Overview

Section 5: General Requirements

Section 5

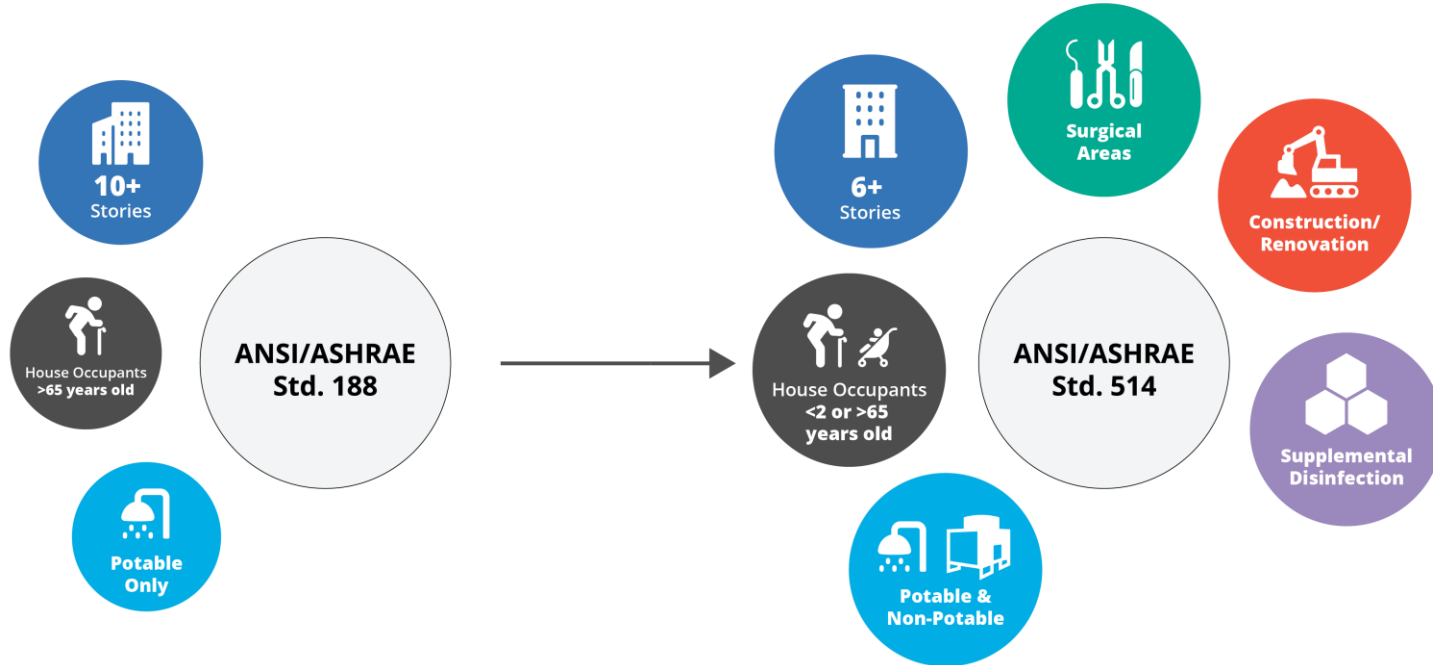
- Team shall review and update the Program annually to incorporate changes
- Team shall review the scope of work, determine the risk, and revise the WMP in places where the Team determines that revisions should be made.



What is the _____ required to do?

	Building Designer	Building Owner	Healthcare facilities
Comply with ASHRAE 188	✓	✓	✓
Survey	• New buildings • Renovations • Additions • Modifications	Annually Before occupancy of: New Buildings Before construction begins on: • Renovations • Additions • Modifications	New and existing healthcare facilities
Requirements	Section 7	Section 5 Section 6 (appl. sections)	Section 8 Section 6 (appl. sections)

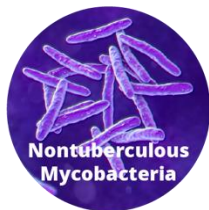
ASHRAE Std 514 — Expanded Facility Characteristics



ANSI/ASHRAE STD 514: KEY OVERVIEW

All the Clinically Significant Microbial Hazards identified by ASHRAE Std. 514

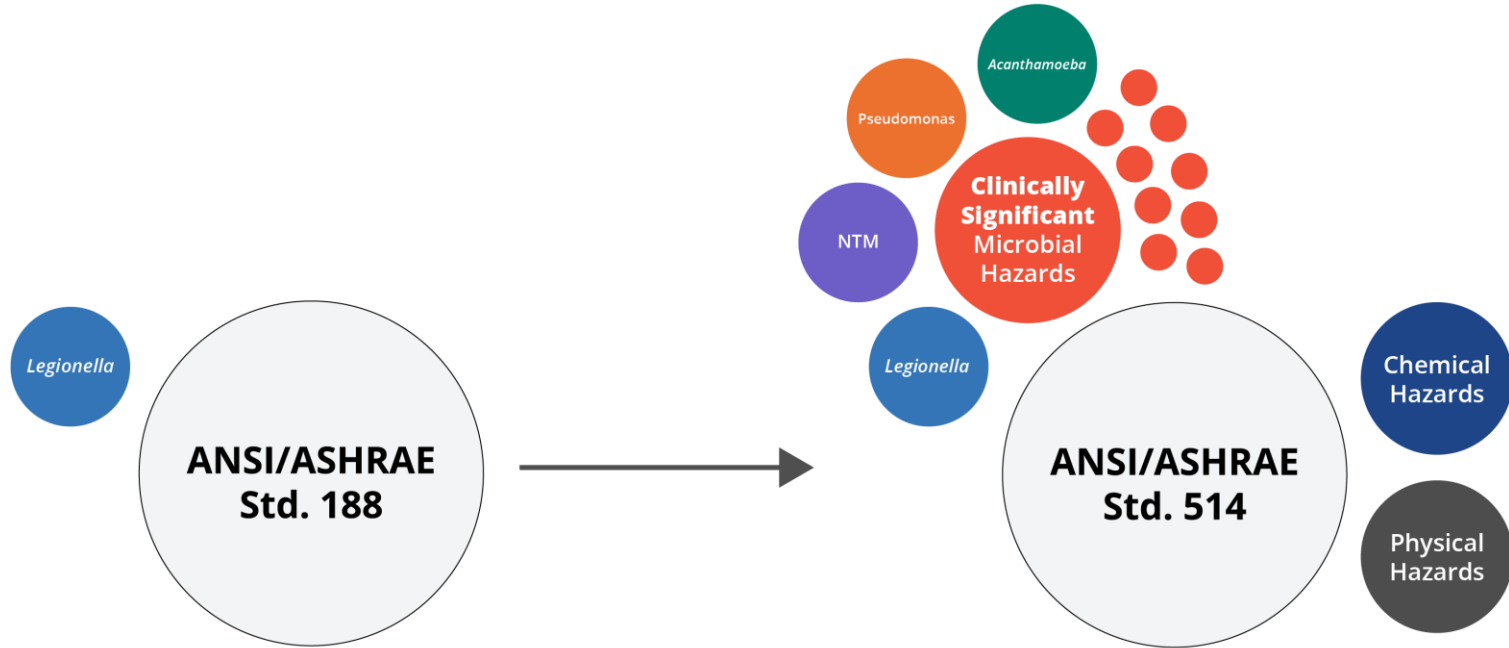
PRIMARY



ADDITIONAL

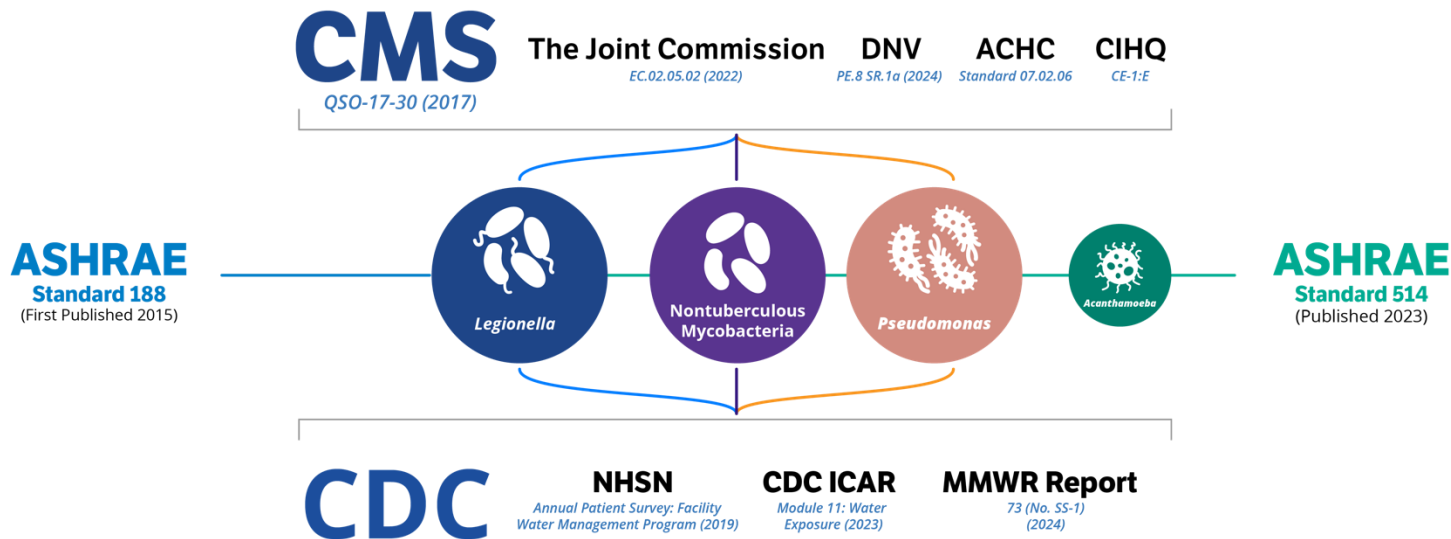


ASHRAE Std 514 — Expanded Hazards



ANSI/ASHRAE STD 514: KEY OVERVIEW

Connecting Surveillance, Accreditation, and Standards to Clinically Significant Microbial Hazards



ANSI/ASHRAE STD 514: KEY OVERVIEW

Connecting Surveillance, Accreditation, and Standards to Clinically Significant Microbial Hazards



CMS Memo S&C 17-30 Facility Requirements to Prevent *Legionella* Infections

Facilities must develop and adhere to policies and procedures that inhibit microbial growth in building water systems that reduce the risk of growth and spread of *Legionella* and other opportunistic pathogens in water



Joint Commission Environment of Care Standard PE.04.01.05

Effective January 1, 2026:
The organization has a water management programs that address *Legionella* and other waterborne pathogens



DNV SR.1a Utility Management System

The Utility Management System shall have a water management program to reduce the risk of growth and spread of *Legionella* and other opportunistic pathogens in building water systems



NHSN Facility Water Management Program (WMP) Survey | Question #74

Does your facility have a water management program (WMP) to prevent the growth and transmission of *Legionella* and other opportunistic waterborne pathogens (for example, *Pseudomonas*, *Acinetobacter*, *Burkholderia*, nontuberculous mycobacteria, and fungi)?



CDC Infection Control Assessment and Response (ICAR) Program | Question # 1

Does your facility have a water management program (WMP) to prevent the growth and transmission of *Legionella* and other opportunistic waterborne pathogens (for example, *Pseudomonas*, *Acinetobacter*, *Burkholderia*, nontuberculous mycobacteria, and fungi)?



Questions for the Team

01.

QUESTIONS FOR THE TEAM

Should our WMP address these additional hazards for patient safety?



MICROBIAL
(Beyond Legionellosis)



CHEMICAL



PHYSICAL

02.

QUESTIONS FOR THE TEAM

Do we have the right program controls in place? CDC S.T.A.R. Method



SEDIMENT & BIOFILM

- Flushing
- Cleaning
- Maintenance



TEMPERATURE

- Control limits



WATER AGE

- Flushing



DISINFECTANT RESIDUAL

- Control Limits

03.

QUESTIONS FOR THE TEAM

Is our Validation Strategy being applied in the right place, frequency, method?

Clinical Risk Categories - susceptibility to waterborne pathogen disease	Environmental Risk Categories - for waterborne pathogen growth and aerosolized water exposure			
	Highest	High	Medium	Low
Highest	North/D: Central Sterile (Vacant), Oncology (Inpatient), Lower A/Bldg H: Radiation Oncology (Low Use)	East Wing: Ambulatory Surgery, GI, Oral Surgery, East Bldg/F: Surgical ICU, North/D: Cath Lab, Lower A/Bldg H: Medical ICU, PACU/Post-Op, West: NICU, Pediatric ICU	East Wing: Central Sterile (EW), Derm Surgery, MOHS Surgery, Radiation Oncology, East Bldg/F: Central Sterile, MOB: Oncology, North/D: Acute Med/Surg (3N-8N), Vascular IR, Central E: Endoscopy, Pharmacy, Pulmonary Rehab, Dialysis, West: OB OR	
High	East Bldg/F: Lab (Vacant), Lower A/H: Ambulance Garage, ED, West: OR/Surgery Suite, Birth Center, PEDs, Longterm Rehab	Central E: Dietary	East Wing: Wound Healing, East Bldg/F: Blood Draw, MOB: MRI, PEDs, Radiology, Orthopedics, North/D: MRI, Ultrasound, XRay, Central E: CT Scan, Nuclear Medicine, PT (Echo/Gym), West: Pediatric Sedation	
Medium	East Wing: Short Stay (2 East), MOB: Employee Health/Vacant Areas	MOB: Sleep Lab	MOB: Dermatology, Heart Failure, OB, Ophthalmology, Family Practice, Internal Medicine, Occupational Therapy, Physical Medicine, ENT, North/D: Cardiac Rehab, Infusion Center	
Low	East Wing: Staff Locker Rooms (Oral Surg), Vacant/Shell Space, East Bldg/F: Staff Locker Rooms, Lower A/H: Boiler Room (Lockers), Central E: Staff Lockers, West: On-Call	Office Space	East Wing: Child Welfare, MOB: Legal/Admin, North/D/Central E/West: Admin, West: Auditorium	East Bldg/F: Mail Room, MOB: LL Offices

04.

QUESTIONS FOR THE TEAM

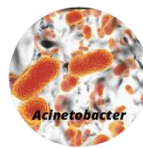
Are we addressing the right microbial hazards to align with standards and surveys?

Historical/regional concerns

PRIMARY



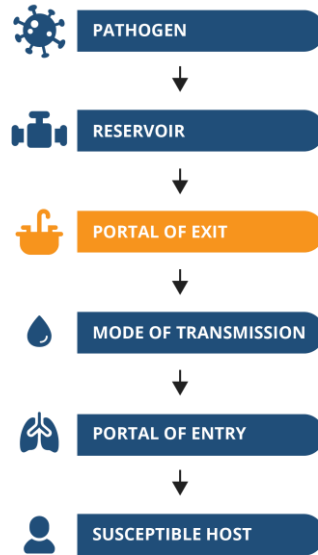
ADDITIONAL



05.

QUESTIONS FOR THE TEAM

Are we involving the right stakeholders, such as infection prevention?



"Premise or point of use was the most cited contributing factor type for all biofilm associated pathogen outbreaks and was linked with 287 (73%) individual contributing factors."
- CDC MMWR Report, 3/14/24



ASHRAE 514 Figure C-1 Chain of Infection