

How will the New *Legionella* standard effect your facility operations?



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Disclaimer

- Not a microbiologist



Objective

- Brief background of Legionella
- Review American Industrial Hygiene Association Guidance document
- Review the proposed ASHRAE 188P standard
- Impacts to facilities



Background

- Legionnaires' disease, or legionellosis – potentially fatal form of lung infection (pneumonia) caused by the gram-negative bacterium *Legionella pneumophila*.
- Disease first identified in 1976 when a group of American Legionnaires contracted it at a convention in Philadelphia
 - 34 of 221 persons died



Typical locations

- Hot tubs & spas
- Cooling towers
- Hot water tanks
- Large plumbing systems
- Decorative fountains



Legionella bacteria origin

- 58 species and over 70 serogroups of which it is believed that half are susceptible to humans.
- Primarily found in aquatic environments



Factors affecting growth

- Factors that affect *Legionella* colonization & increase the risk of human disease in water systems
 - Temperature (80°F–120°F)
 - Accumulated debris
 - Scale & biofilm
 - Stagnant water, low flow, or “dead legs”
 - Residual chlorine <0.5 ppm
 - Presence of algae, amoebae and protozoa



Elements of Infection

1. Bacteria present in a water system
2. Inhalation of a water aerosol containing the bacteria
3. Infection of individuals who are prone to infection
 - Advanced Age
 - Suppressed Immune System
 - Other Factors

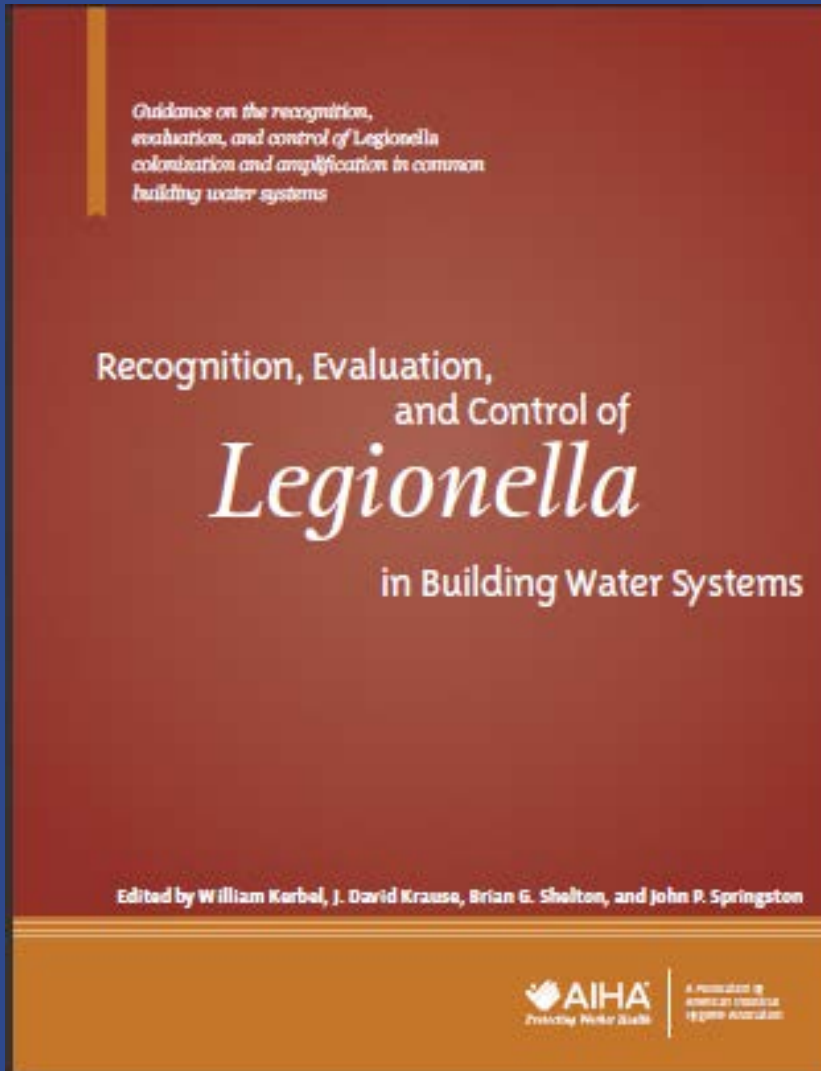


Prevalence of disease

- 4,954 confirmed cases reported in the US (2013).
- Many infections are not diagnosed or reported.
- Higher illness rates in summer and early fall.
- Exclusively in developed or industrialized settings.



AIHA Guidance Document



- Published 2015
- Assist Industrial Hygienist's and Property Owners



AIHA Guidance Document

- Chapter 1 – Introduction
- Chapter 2 – Background
- Chapter 3 – Assessing *Legionella* Risks
- Chapter 4 – Evaluating Prevention, Control, & Remediation Efforts
- Chapter 5 – Additional Considerations
- Appendix 1 – Definitions & Acronyms
- Appendix 2 – Water Treatment Technologies
- Appendix 3 – Existing Guidance Documents



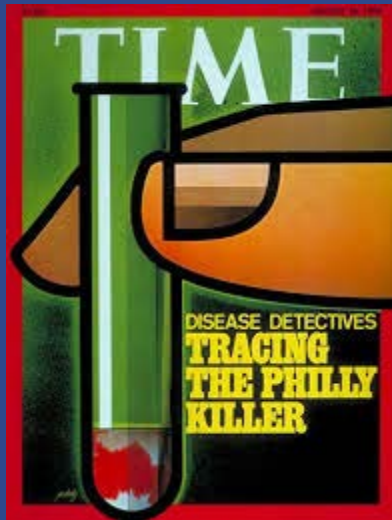
AIHA Guidance Document

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Notable Outbreaks

- 1976 Philadelphia
 - American Legion Convention
 - 221 reported cases
 - 34 deaths
- Infection traced to cooling tower



Notable Outbreaks

- 1999 Netherlands
 - Home Show
 - 252 reported cases
 - 32 deaths
- Infection by inhaling vapor from spa water



Notable Outbreaks

- 2001 - 2008, Las Vegas, NV
 - Condominium Complex
 - 9 reported cases
- Infection through potable water supply



Notable Outbreaks

- 2005 Rapid City, SD
 - Restaurant
 - 8 reported cases
- Infection traced to decorative fountain



Notable Outbreaks

- 2011, Ocean City, MD
 - Resort Hotel
 - 6 reported cases
 - 1 death
- Infection through potable water supply



Notable Outbreaks

- 2011 New Brunswick, NJ
 - Hospital
 - 8 reported cases
 - 3 deaths
- Infection through potable water supply



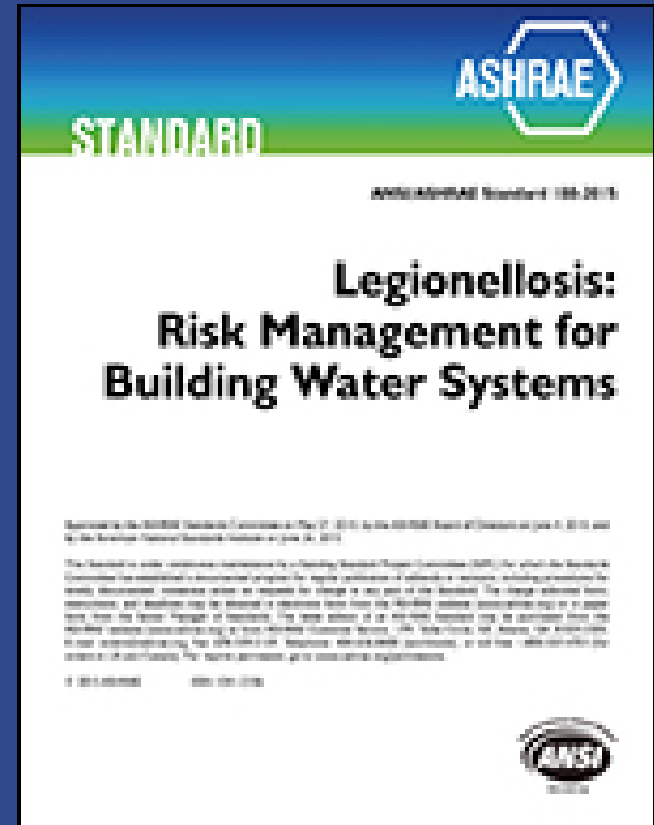
Recent Outbreak

- Summer 2015, Bronx New York
 - 12 fatalities
 - Over 100 reported cases of Legionaire's Disease
- All cases tracked to a single cooling tower
- **New York Health Department 8/12/2015:** All owners of cooling towers shall inspect such towers within 30 days of the effective date of this Part, unless such tower has been inspected within 30 days prior to the effective date of this Part. Thereafter, owners shall ensure that all cooling towers are inspected at intervals not exceeding every 90 days while in use. All inspections shall be performed by a: New York State licensed professional engineer; certified industrial hygienist; certified water technologist; or environmental consultant with training and experience performing inspections in accordance with current standard industry protocols including, but not limited to ASHRAE 188- 2015



New ASHRAE Standard

- Approved June 30, 2015
- Establishes minimum risk management requirements for building water systems
- Designed for those involved in design, construction, installation, commissioning, operation, maintenance, and service of centralized building water systems and components of human occupied buildings



ASHRAE 188-2015 (cont'd)

Program Elements

- Program Team
- Building Survey
- Control Locations
- Verification
- Validation



ASHRAE 188-2015 (cont'd)

Specific Requirements for

- Building Designers
- Building Operators
- Health Care Facilities



ASHRAE 188-2015 (cont'd)

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ASHRAE 188-2015 (cont'd)

Building Risk Factor

AND

System Risk Factor



ASHRAE 188-2015 (cont'd)

Building Risk Factors

- Multi-Housing with centralized hot water
- Over 10 stories in height
- House occupants over 65 years old

Requires specific actions for all water systems



ASHRAE 188-2015 (cont'd)

System Risk Factors

- Cooling Towers or Evaporative Condensers
- Whirlpools or Spas
- Fountains
- Misters, Air Washes, Humidifiers, etc.

Requires specific actions for each system



ASHRAE 188-2015 (cont'd)

Principles of a Water Management Program

1. Analysis of Building Water Systems
2. Control Locations
3. Control Limits
4. Monitoring
5. Corrective Actions
6. Confirmation of Program Implementation
7. Documentation



ASHRAE 188-2015

- Is not law
- Is not a code
- Is a best practice



ASHRAE 188-2015

- Is not law - **YET**
- Is not a code - **YET**
- Is a best practice



OSHA Guidance

- No Current Standard
- Published Best Practices for Maintenance
- <https://www.osha.gov/dts/osta/otm/legionnaires/sources.html>



So ... we leave you with this

- What is your campus doing?
- Are your applicable systems being monitoring?
- Additional regulations likely coming.



Credits

- Centers for Disease Control
- AIHA
- ASHRAE
- OSHA

