NEW AND FUTURE LEGIONELLA RELATED WATER SYSTEM REQUIREMENTS

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NOV. 16, 2016

TOPICS BEING COVERED

- What is Legionella/Legionnaire's Disease?
- NY’s Cooling Tower Regulations
- Potable Water
- Liability

LEGIONELLA AND LEGIONNAIRES' DISEASE

"It is estimated that over 25,000 cases of [Legionnaires' disease] occur each year and cause more than 4,000 deaths."

US Occupational Safety & Health Administration

"66% of the disease outbreaks related to drinking water that have been reported were attributed to *Legionella* and **all occurred as a result of colonization of water systems in buildings**."

CDC, 2015
Waterborne Disease Outbreak Surveillance Report

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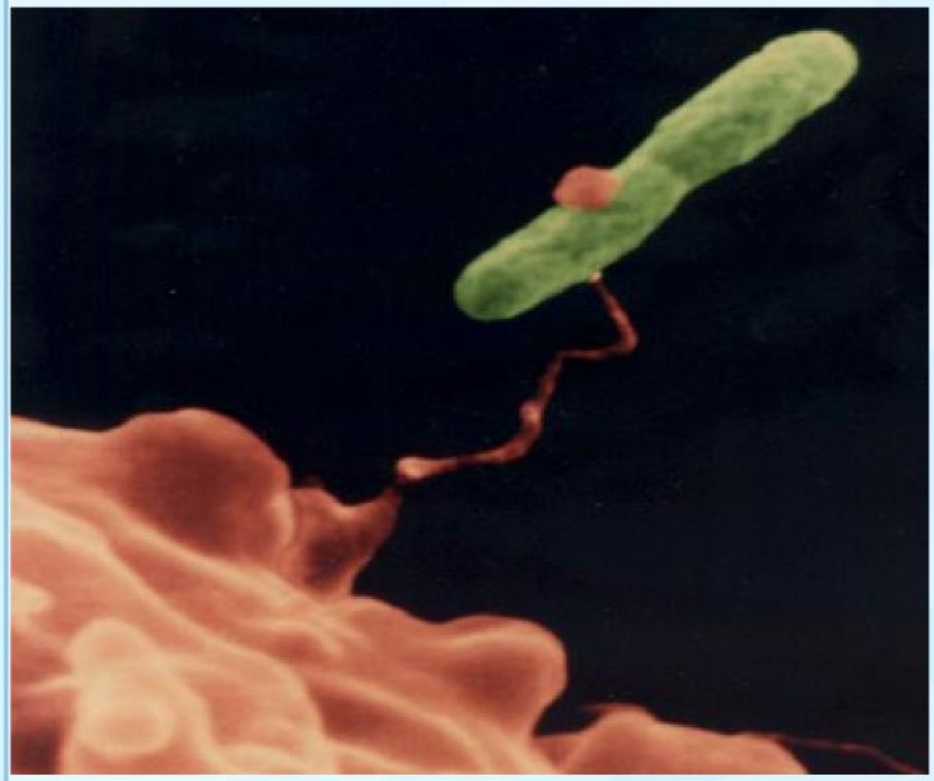
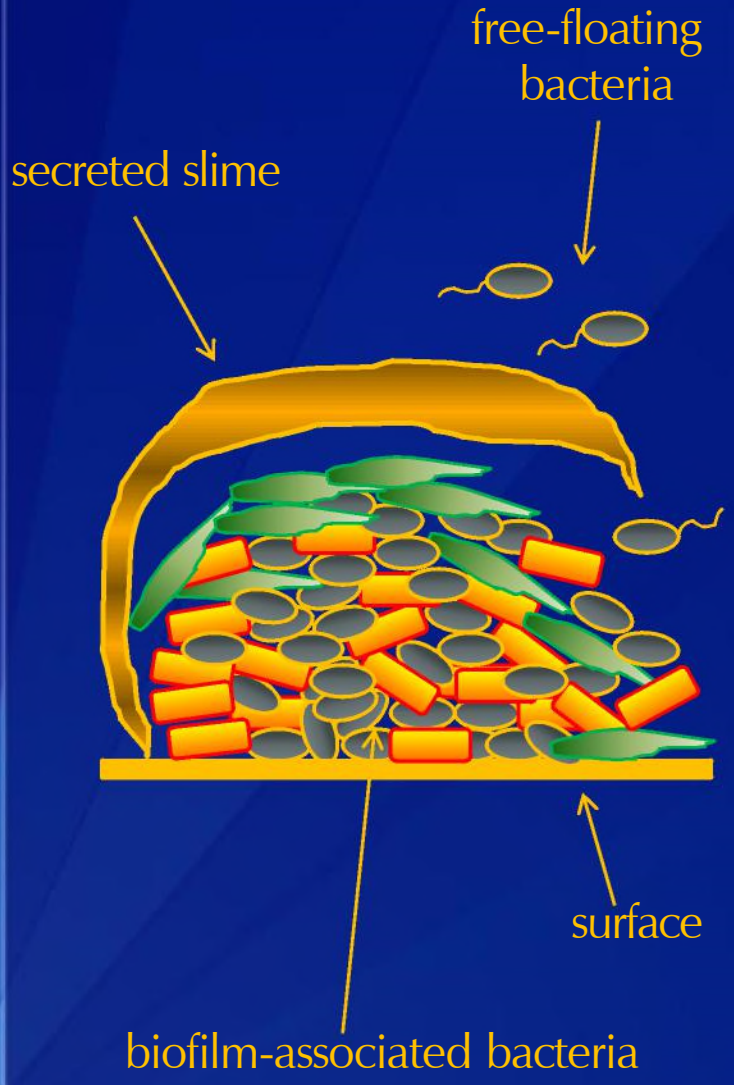
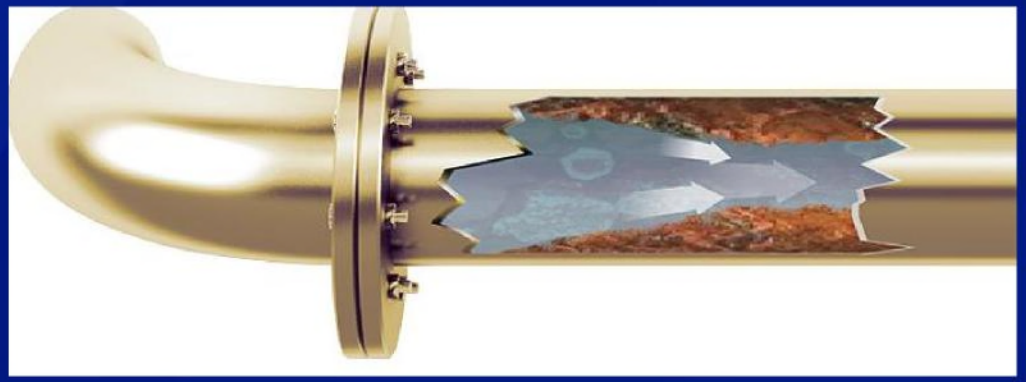


Legionella

- Gram negative, aerobic rod
- More than 60 species
- Natural in freshwater
- Fastidious on artificial media
- *L. pneumophila* sg1 (Lp1) most common pathogen

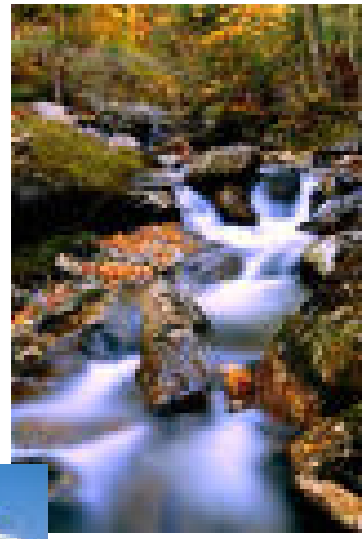
Legionella are biofilm associated





COMMON "HABITATS" FOR *LEGIONELLA*

- Lakes and streams
- Cooling towers, evaporative condensers, and fluid coolers
- Humidifiers / Air conditioning systems
- Shower heads and faucets
- Hot water systems
- Grocery store misters
- Spas, whirlpools & fountians
- Dental water lines
- Metalworking fluids
- Swimming pools

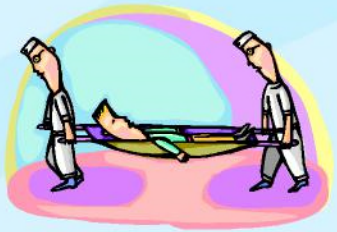


Legionella **in water mists can cause disease**

Events leading to Legionnaires' disease

Supply Water

Susceptible Host



Amplification Aerosolization

- Temperature
- Stagnation
- Scale and sediment
- Protozoa
- Biofilm
- Absence of disinfectant

- Showerheads
- Cooling towers
- Decorative fountains
- Whirlpool spas

Transmission

COOLING TOWERS

Legionnaires' disease

20% of Legionnaires' disease outbreaks (50% of cases) investigated by CDC are caused by inhalation of *Legionella*-contaminated water droplets from cooling towers

Severe pneumonia; 10-40% mortality

COOLING TOWERS

Microbial Transmission

Drift – the mist from cooling towers – transmits small, pathogen-contaminated water droplets that can be inhaled into the deep regions of the lungs causing serious lung infections, such as Legionnaires' disease

NY'S NEW COOLING TOWER (CT) REGULATIONS – THINGS CT OWNERS SHOULD HAVE ALREADY DONE

10 NYCRR Part 4

- Register existing CTs on State's electronic system
  - New CTs must be registered before use
  - Registrations updated when ownership changes
- Updated written M*aintenance Plan* in place and being implemented
  - Sept. 1, 2016 deadline
  - Routine sampling
  - Sampling under specified circumstances
- Certify that *Maintenance Plan* and regulations being complied with (by Nov. 1 each year)

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NY'S NEW COOLING TOWER REGULATIONS – OTHER ONGOING REQUIREMENTS

Sampling & Testing

- Leg. Cultures w/i 2 weeks of seasonal startup or after maintenance
- Leg. Cultures every 90 days or less thereafter
- Leg. Cultures if ordered by local or State DOH
- Bacterial sampling every 30 days or less
- Use NYSDOH approved Lab (ELITE)

Inspections

- Every 90 days or less
- Prior to seasonal start-up
- After maintenance

Response & Reporting

- Respond "appropriately" to any elevate Leg. Results. See App 4A.
- Notify local DOH w/I 24 hours Leg. > 1,000 CFU per ml

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ADDITIONAL REQUIREMENTS FOR HOSPITALS AND RESIDENTIAL HEALTH CARE FACILITIES

- Updated *Environmental Assessment* was due by Sept. 1, 2016
  - Evaluate complete bldg and water systems, id sampling locations
- Implement a *Sampling & Management Plan* by **Dec. 1, 2016** for potable water systems
  - Routine Leg. Culture
  - Immediate Leg. Culture under specified conditions
    - If NYSDOH determines ≥ 1 cases of Legionellosis may be associated
  - Leg. Cul. every 90 days or less for 1st year, then annually
  - If stem cell or organ transplant patients continue at 90 days or less
  - Use an approved lab

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PENALTIES FOR REGULATORY VIOLATION

NY Public Health Law Sec. 12

Civil Penalties

- Up to $2,000
- Subsequent violation up to $5,000
- Up to $10,000 if violation leads to a serious threat to the health or safety

Criminal

- Willful = misdemeanor
- Imprisonment for up to a year and/or
- $10,000 (drops to $2,000 on April 1, 2017)

WHAT IS THE MAJOR SOURCE AND MODE OF LEGIONELLA DISEASE TRANSMISSION?

"Cooling Towers -- Inhaled Aerosols"

Right?

LD Transmission Theory

Source: Building (potable) water distribution systems (***not cooling towers***)

Mode: "**Aspiration**" of potable water from the mouth into the lungs ***(not aerosols)***

Cooling towers are **NOT** considered the **primary source** for *Legionella* bacteria; Potable water is!

Source: http://legionella.org/about-the-disease/what-is-legionnaires-disease/how-is-the-disease-contracted/

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PLUMBING IS THE CULPRIT!

Legionnaires' disease

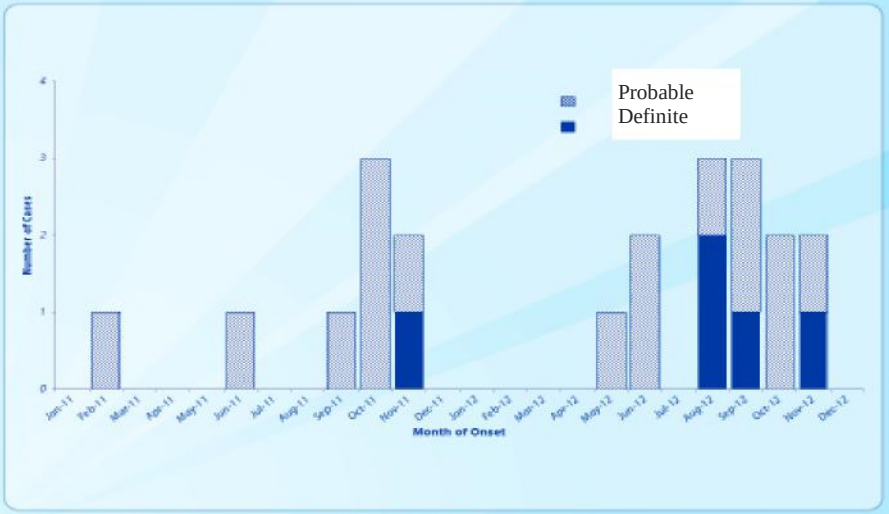
80% of Legionnaires' disease outbreaks (50% of cases) investigated by CDC are caused by inhalation of *Legionella*-contaminated water droplets from plumbing in buildings

Severe pneumonia; 10-40% mortality

Epidemic curves of legionellosis outbreaks

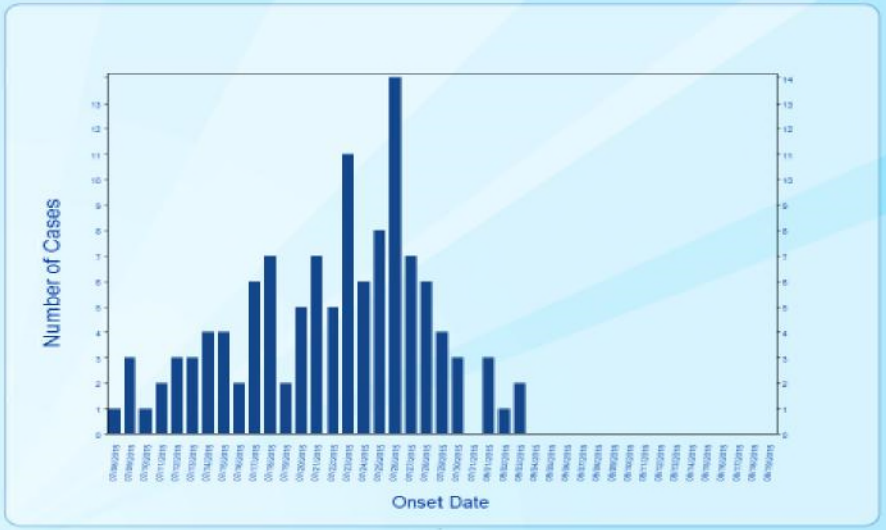
Potable water[1]

- Longer period of time
- Continuing source



Cooling tower[2]

- Explosive
- Point-source



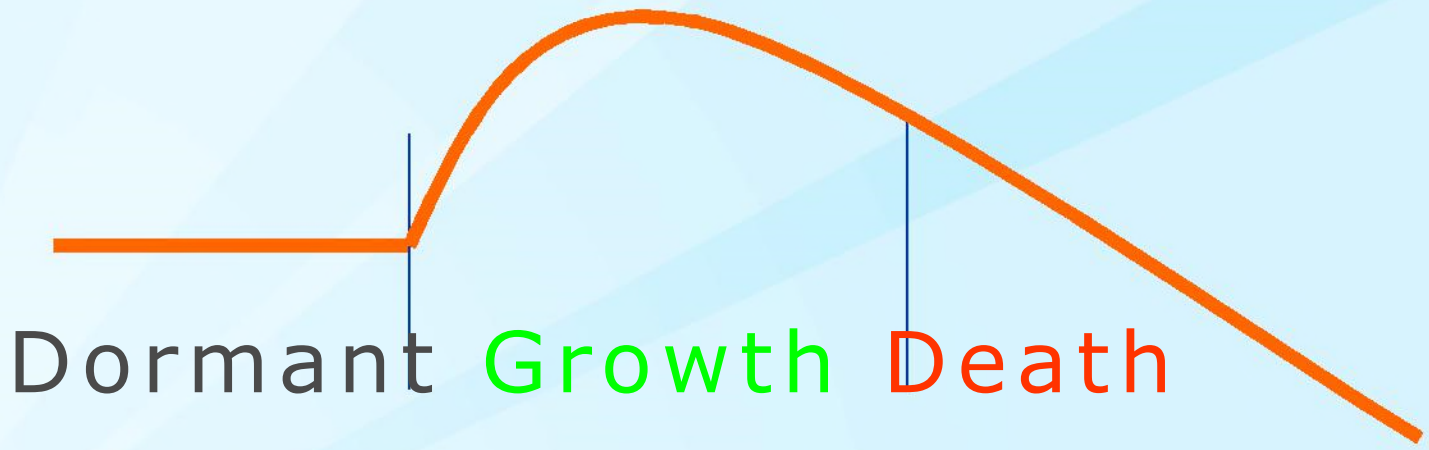
1. Demirjian A. et al. Clin Infect Dis. 2015; 60(11): 1596-1602http://cid.oxfordjournals.org/content/60/11/1596.full.pdf+html
2. New York City, South Bronx, 2015

Favorable conditions for *Legionella* in a building water system:

- Temperature 77º - 108ºF
- Stagnation
- Scale and sediments
- Protozoa
- Lack of residual disinfectant

Temperature range of *Legionella* growth

°Fahrenheit 77 95 108 131



LIABILITIES AND LAW SUITS – EXAMPLES*

- In most cases if link to disease is pretty clear, it's a matter of allocating liability
  - $225,000 to $5.2M
  - Typically, negligence claims (failure to…"
- Insurance coverage
  - "Pollution Exclusion" may apply – depending on state law and whether there are deviations from the "standard".
  - "Bacterial and Fungi Exclusion" may apply
    - Potable water, including spas, may be excepted from the exclusion.
  - Medical Malpractice
  - Design Professional Liability Insurance

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** Most of these cases are at the lower court level and hence aren't necessarily controlling*

LIABILITIES AND LAW SUITS – EXAMPLES*

- Hotels, Spas, Cruise Ships, Gyms
- Employers may be found liable
  - Evidence sufficient to support determination that
    - LD contracted at work.
      - Power washer at pig farm
      - Wastewater Treatment Plant
      - Worker near CT at an Arsenal
      - Foundry (CT)
    - Permanent and total disability occurred (Workers Comp)
    - Public walking near CT can also bring suit
    - Building Owner does not owe a “duty to foresee” advent of Legionella in building’s water system. (NJ)

QUESTIONS? OR TO BRAINSTORM

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USEFUL GUIDANCE AND OTHER INFORMATION

(Key Sections of the NY Regs. and Regulatory Impact Statement In the On-line Hand Out)

NIXON PEABODY

Additional Treatment by Building Owner

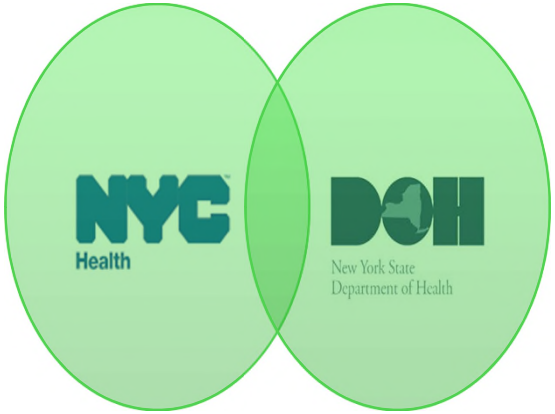
Supplemental disinfection: Regulatory considerations

Safe Drinking Water Act

EPA has argued that most buildings, including hospitals, hotels, schools and office buildings, are regulated under *SDWA* **if they treat** domestic hot or cold water in a way that adds regulated constituents.

OVERLAPPING REGULATIONS STILL HAVE SOME "GAPS"

New York City and New York State regulatory requirements have some provisions that are different and some areas where coverage overlaps. The regulations are silent on some practical aspects of cooling tower management that are addressed in detail by NSF Standard 453-2015.

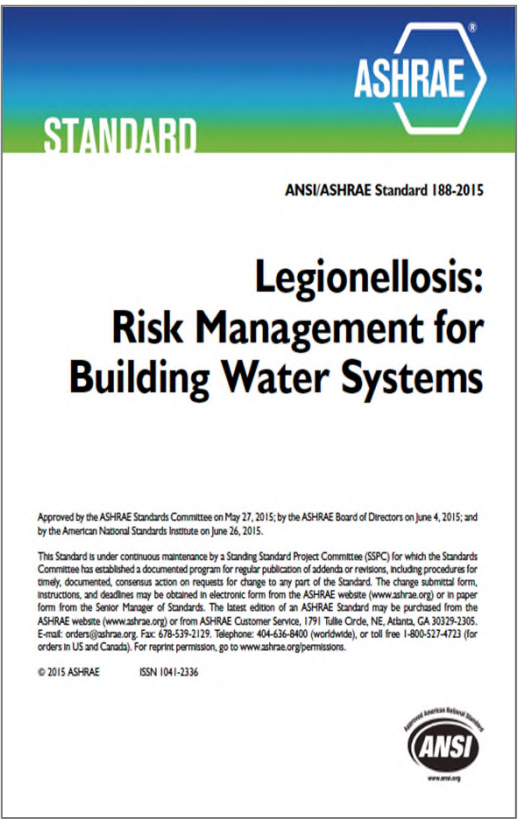


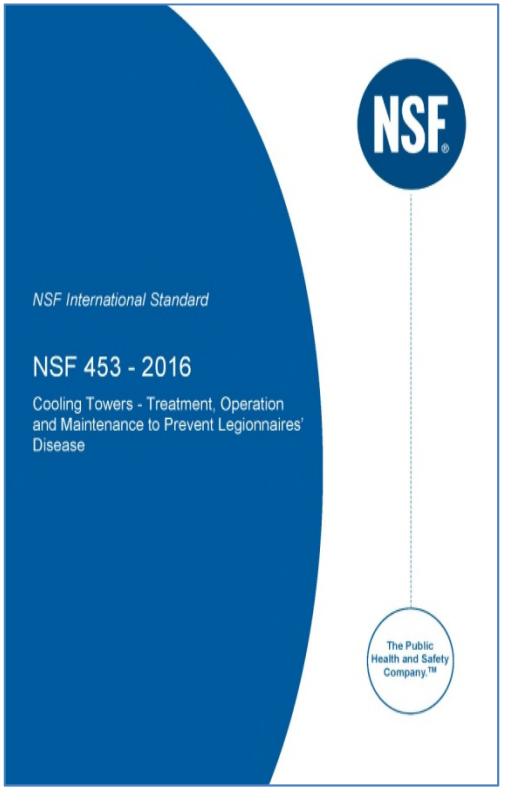
Non Regulatory Standards & Guidelines

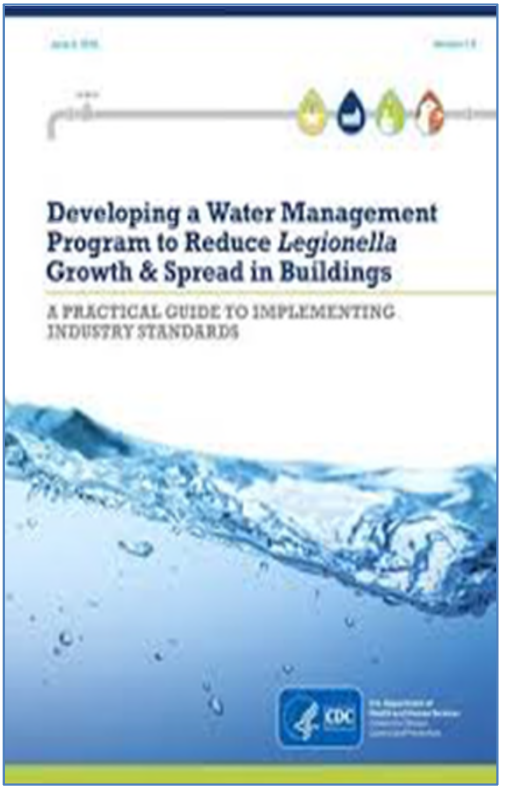
ANSI/ASHRAE Standard 188-2015

NSF Standard 453-2016

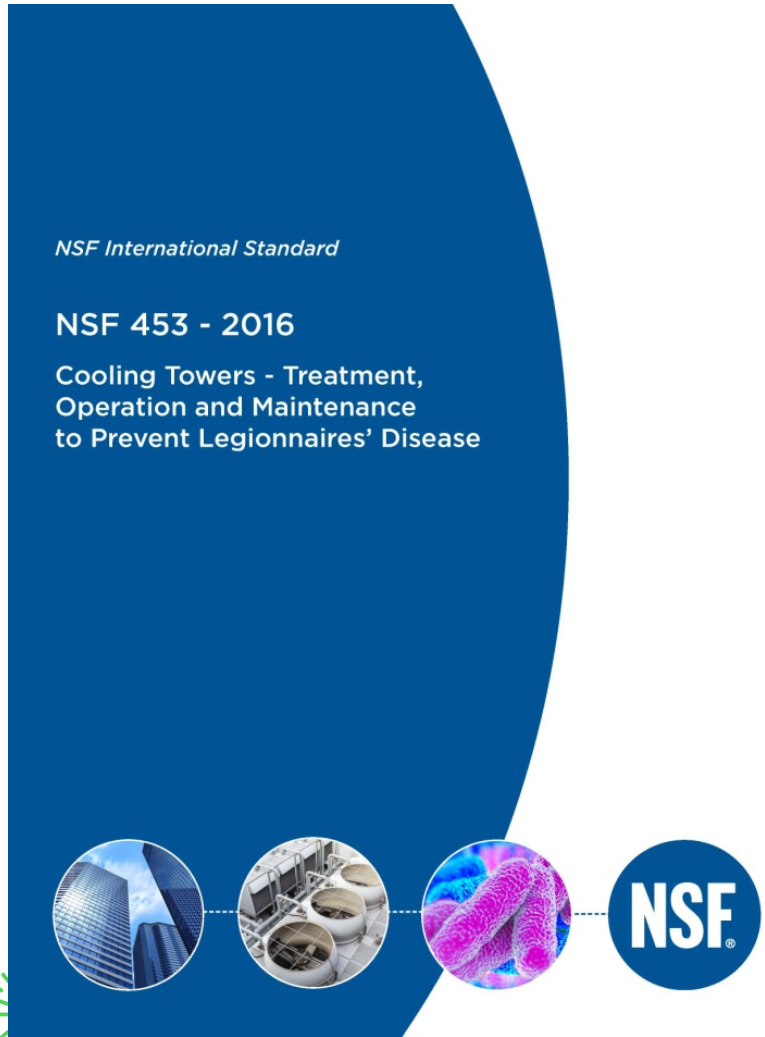
CDC Toolkit







New NSF Standard About to be Circulated in Draft



NSF Standard 453-2016 [DRAFT] was reviewed by an independent panel of leading subject-matter experts and regulators, including USEPA, NYSDOH and IDPH. It will soon be published for public review.

NSF Standard 453-2016 [DRAFT] is consistent with the structure and methodology of ANSI/ASHRAE 188-2015.

NSF WILL BE OFFERING INDEPENDENT, CREDIBLE CONFIRMATION

Independent, third-party auditing by NSF confirms that your cooling tower program meets New York City *and* New York State regulatory requirements and employs industry best practices in NSF Standard 453-2016.

NSF COOLING TOWER AUDIT SERVICES

- Training
- Documentation and recordkeeping support
- Quarterly desk audits
- Annual site audit
- Annual certification
  - ✓ §4-1.8 of Part 4 to Title 10 NYCCR
  - ✓ §8-07 of Chapter 8 of Title 24 of the Rules of the City of New York

Sources of Slides and Other Information

- CDC Presentations (see blue backgrounds below)
- Richard Moll, Rochester Midland Co.
- Aaron Rosenblatt, Gordon & Rosenblatt

Legionella and Public Health

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E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

http://www.cdc.gov/legionella/index.html

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