



GSA Public Buildings Service

Client Enrichment Series

Water Quality Management in GSA Buildings

Thursday, February 15th, 2024



Water Quality Management in GSA Buildings

*The presentation will start
at 1:00pm EST*

Please Note

Phones are automatically muted during the presentation.

Submit your questions via the Q&A pod and our team will answer as many questions as possible during the presentation.

Questions will be responded to in writing in a formal Q&A document, posted along with the slide deck and session recording, on our website, <https://www.gsa.gov/ces>

Introductions



Courtney Springer

Assistant Commissioner
GSA Public Buildings Service
Office of Facilities Management (OFM)



Brad Short

National Industrial Hygiene Program Manager
GSA Public Buildings Service
Office of Facilities Management (OFM)



Chris Edens

Epidemiologist | Legionella and Atypical
Pathogens Team
HHS Centers for Disease Control and Prevention



Troy Ritter

Captain, US Public Health Service
HHS Centers for Disease Control and Prevention
Food, Water & Environmental Health Services Branch

Agenda

- 01** Partnership with PBS
Customer Agencies
- 02** GSA Approach to
Water Quality Management
- 03** CDC Presentations
on Water Quality
- 04** GSA Communications Strategy



01

**Partnership with PBS
Customer Agencies**

GSA's Partnership Efforts

Regulatory Agencies & Industry Experts

- **Centers for Disease Control and Prevention (CDC)**
- **Occupational Health and Safety Administration (OSHA)**
- **Michigan Department of Public Health**
- **Detroit Department of Public Health**
- **California Department of General Services**
- **California Department of Public Health**
- **IWC Innovations**
- **The Council for State and Territorial Epidemiologists (CSTE) - Legionnaires' Disease Surveillance Work Group**

GSA's Partnership Efforts

Customer Agencies

- **GSA is committed to expanding partnerships within the Federal family and industry experts.**
- **We aspire to set a positive example and inspire other industries and property owners to embrace similar initiatives while upholding the highest standards of water quality management.**
- **We need your assistance sharing GSA messaging broadly within your agencies.**
- **Your feedback is highly valued.**

02

**GSA Approach to Water
Quality Management**

At GSA, maintaining water quality in our offices is pivotal for a healthy work environment. The safety of federal employees, the public and contractors working in federal buildings is GSA's highest priority.

- The extensive water testing and water quality management actions the agency has previously taken and is in the process of expanding surpass any established regulations.
- Our goal is to proactively identify issues and adjust water management practices to correct conditions conducive to bacteria growth or the release of metals.

GSA Flushing Efforts

- **Flushing is a common and effective control measure in managing water quality**
- **Early in the pandemic GSA recognized the impact on water quality due to reduced occupancy**
- **Mandated weekly flushing for all facilities with reduced occupancy**
- **Until water quality is verified through testing, GSA will be leveraging our O&M contractors to conduct additional flushing measures to address immediate tenant concerns and prioritize the health and safety of all individuals involved**

Why Change?

- Established in 2016, the GSA Order on Drinking Water Quality Management has served as a cornerstone in maintaining drinking water standards within PBS.

- The Centers for Disease Control and Prevention (CDC) has tracked cases of Legionnaires Disease since the 1990s. From 2000 to 2018, the number of cases has increased 9-fold. They did observe a significant decrease in cases during the COVID-19 pandemic but cases have started to rise again.
- GSA is actively addressing 19 Legionella issues nationwide, and, in response to OIG Audit and Alerts Memorandums, OFM has made substantial updates to the GSA Order.
- This update represents a more proactive approach to water management. The objective is to ensure consistent implementation across regions and to incorporate the latest industry advancements and health insights.

Why the Change?

- Fifteen (15) federally owned and four (4) leased facilities under GSA's custody and control have been impacted by water stagnation issues. Of those, fourteen (14) have received the "all clear"



Guidance to Maintain or Restore Water Quality

— In FY24, an initial drinking water quality testing will be required for all active and occupied federally owned facilities that are over 1,000 SF with drinking water systems.

- **Active federally owned facilities must implement the PBS Guidance to Maintain or Restore Water Quality. This requirement applies in a facility that meets the following criteria:**
 - Buildings over 50,000 sqft. with one or more water booster pumps (both conditions must apply); *or*
 - Buildings over six stories in height.
- **In addition, multiple buildings already have an ASHRAE 188 & 514 water management program implemented for the potable water system.**
- **Finally, buildings with Child Care Centers, Health Care Units and showers will also get weekly flushing by the O&M vendor in those areas.**



Water Testing



Drinking water testing will be used to implement a risk-based National Water Management Strategy



1,400

**Owned
Facilities**



6,000

**Leased
Facilities**

Water Testing

Lead

Copper

Legionella

Total Coliform
(E. Coli)



State and local thresholds vary.

Water Testing Schedule

Owned Testing

All Buildings (1,400+)

- Begin execution

03/01/24

- Drinking water testing complete

09/30/24

Delegated Testing

Delegated Facilities (100+)

- Delegated agency training

Completed

- End of the 90-day review period

03/25/24

- Begin execution

03/26/24

- Drinking water testing complete

09/30/24

Non-potable Systems



O&M contracts will be modified to include the following:

At facilities with cooling towers, legionella testing will be required monthly during the operating season.

1

Monthly legionella testing for ornamental fountains, misters, or humidifiers during the operating season.

2

Q&A



Courtney Springer

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03

**CDC Presentations on Water
Quality**



Legionnaires' Disease in the United States

Chris Edens, PhD

Centers for Disease Control and Prevention

GSA Client Enrichment Series

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February 15, 2024

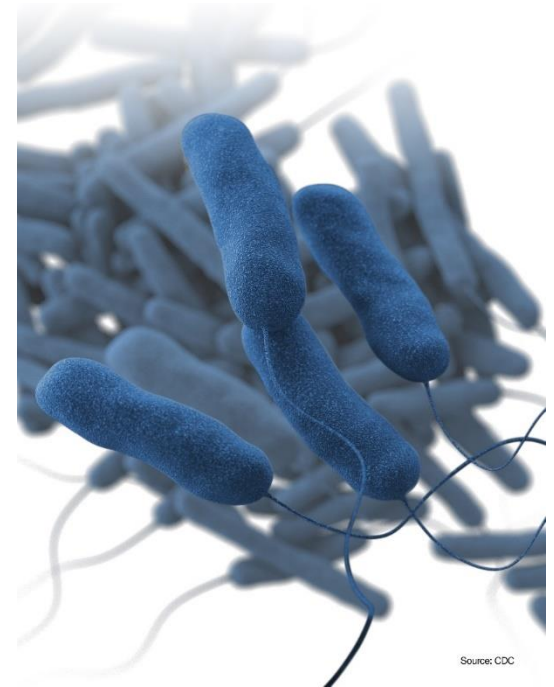


U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

Legionella

- Gram-negative bacillus
- Intracellular parasite of free-living protozoa primarily found in freshwater
- More than 60 species
- *L. pneumophila*: ~90% of reported U.S. cases¹

¹ Fields BS et al. *Clin Microbiol Rev.* 2002;15(3):506–26.



Source: CDC

Legionnaires' Disease

- First described following an American Legion convention in Philadelphia in 1976
- Infection with *Legionella* bacteria
- Acute onset of lower respiratory illness 2-14 days after exposure
- Characterized by severe pneumonia and usually requires hospitalization
 - Deadly for 1 in 10 people infected
 - Deadly for 1 in 4 who get it from a healthcare facility
- Other types of legionellosis:
 - Pontiac fever: milder respiratory illness that self-resolves
 - Extrapulmonary: rare, e.g., endocarditis or wound infection



From *Legionella* to Legionnaires' disease

Internal and external factors can lead to *Legionella* growth in building water systems



Legionella grows best in large, complex water systems that are not adequately maintained

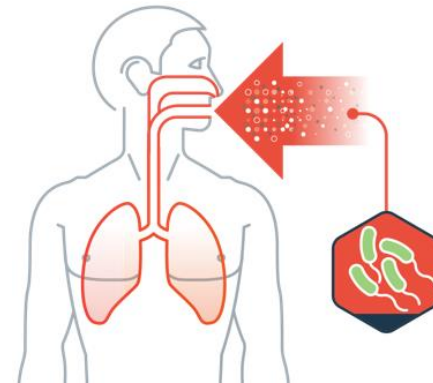


From *Legionella* to Legionnaires' disease, con't

Water containing *Legionella* is aerosolized through devices



Susceptible people contract Legionnaires' disease by **inhaling** aerosolized water droplets or by **aspiration** of drinking water containing the bacteria



Risk factors for Legionnaires' disease

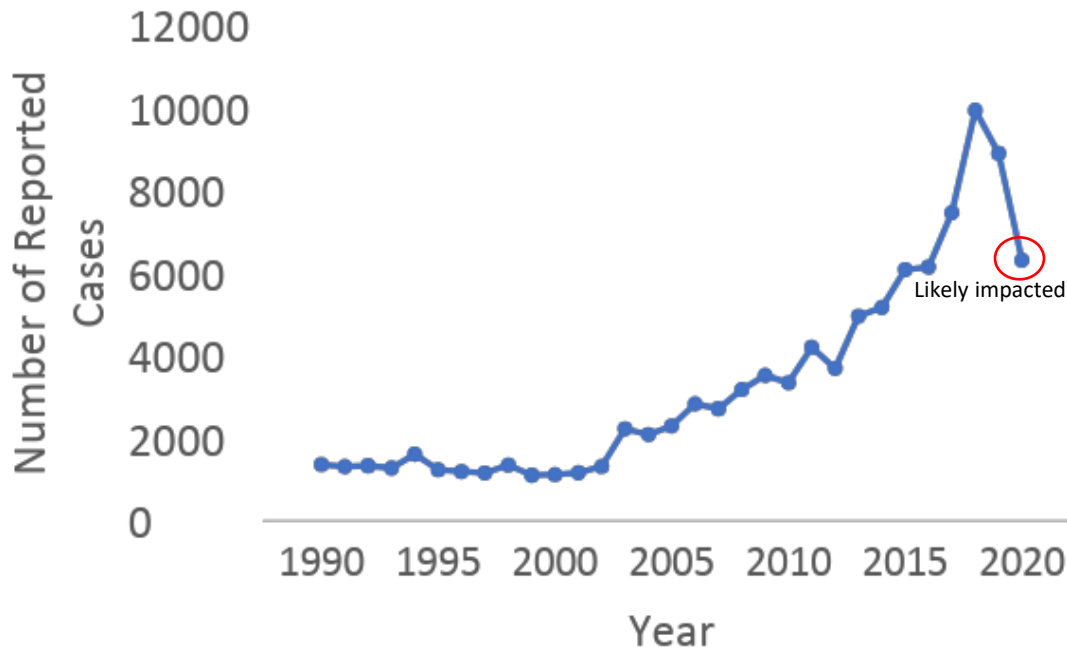
- Age ≥ 50 years
- Smoking (current or historical)
- Chronic lung disease (i.e., COPD or emphysema)
- Immune system disorders due to disease or medication
- Systemic malignancy
- Underlying illness (i.e., diabetes, renal failure, or hepatic failure)

LD Testing

- **Urinary Antigen Test (UAT)** is rapid and detects *L. pneumophila* serogroup 1, the most common cause of disease
- **Nucleic Acid Amplification Test (NAAT)** performed on lower respiratory specimens (e.g., sputum) or pathologic specimens not conducive to culture (e.g., formalin-fixed lung tissue)
- **Culture** performed on lower respiratory specimens (e.g., sputum) detects all species and serogroups and allows for comparison of clinical and environmental isolates during outbreak investigations



Increasing LD Incidence in the US



Likely impacted by COVID-19 pandemic



Legionnaires' disease is likely underdiagnosed (possibly by 50%)

Questions?

Chris Edens, PhD
Epidemiologist

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Water Management Program Overview

Dr. Troy Ritter,

Environmental Health Officer

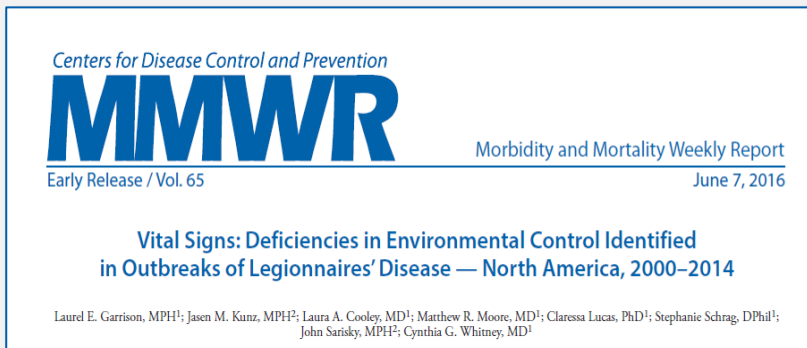
CAPT, U.S. Public Health Service

Water Food and Environmental Health
Services Branch



Review Of Building-Associated Outbreaks of Legionnaires' Disease

- Inadequate water management programs can increase the risk of LD



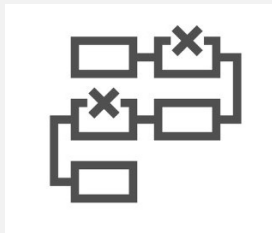
CDC investigations show 9 out of 10 outbreaks were caused by problems preventable with more effective water management

¹ Garrison LE et al. *MMWR*. 2016;65(22):557–61.

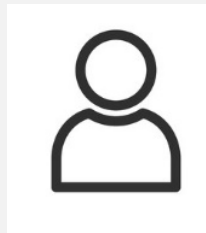
² Clopper BR et al. *Microorganisms*. 2021;9(1):89.

Environmental Deficiencies are Linked to LD Transmission

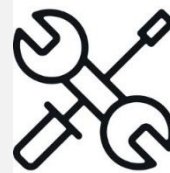
Approximately 90% of building-associated outbreaks are due to a preventable environmental deficiency



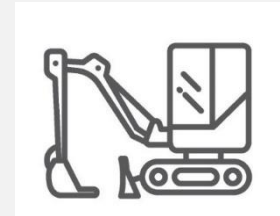
**Process
Failure**



**Human
Error**



**Equipment
Repair**

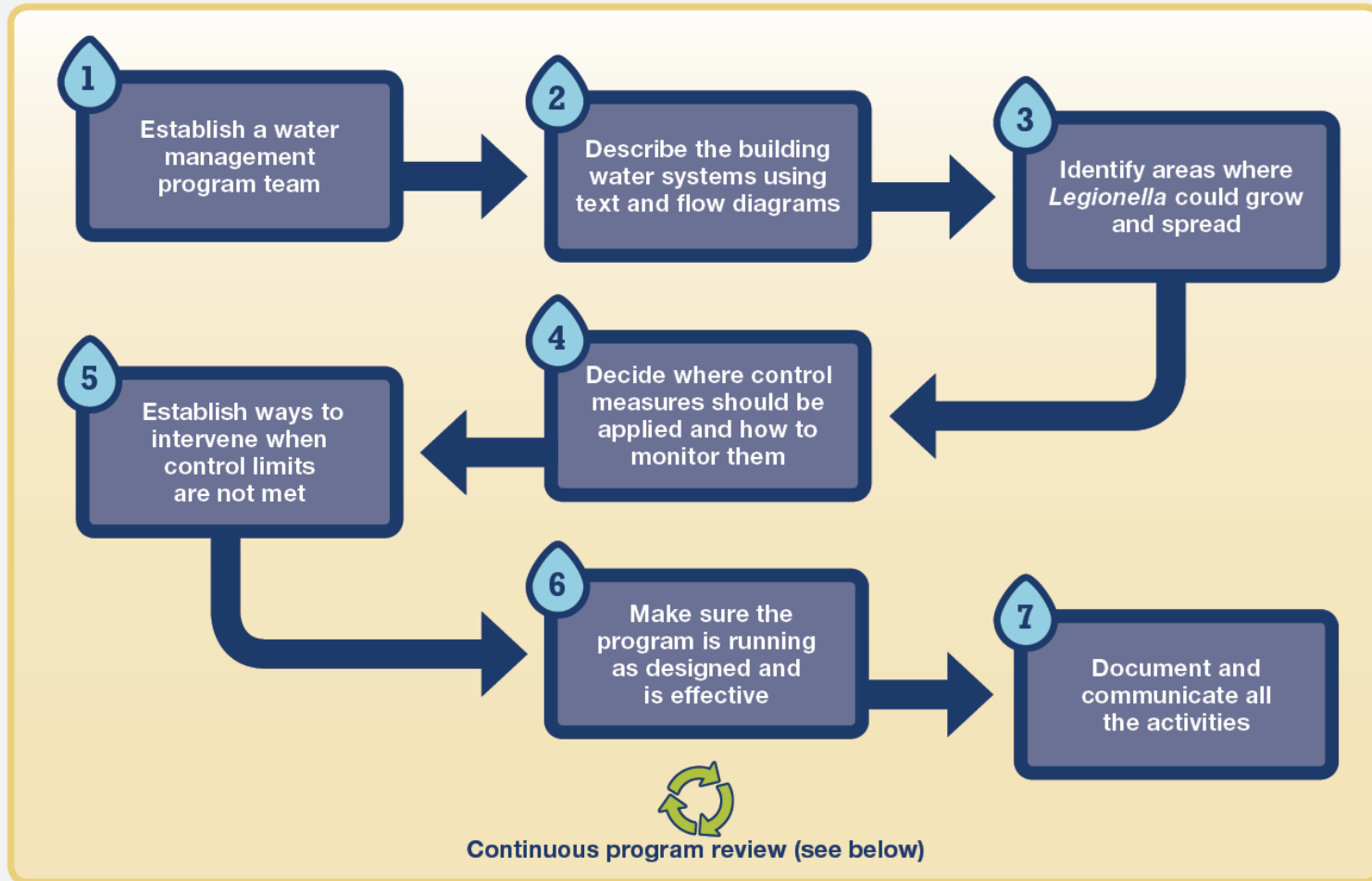


**Unmanaged
External Change**

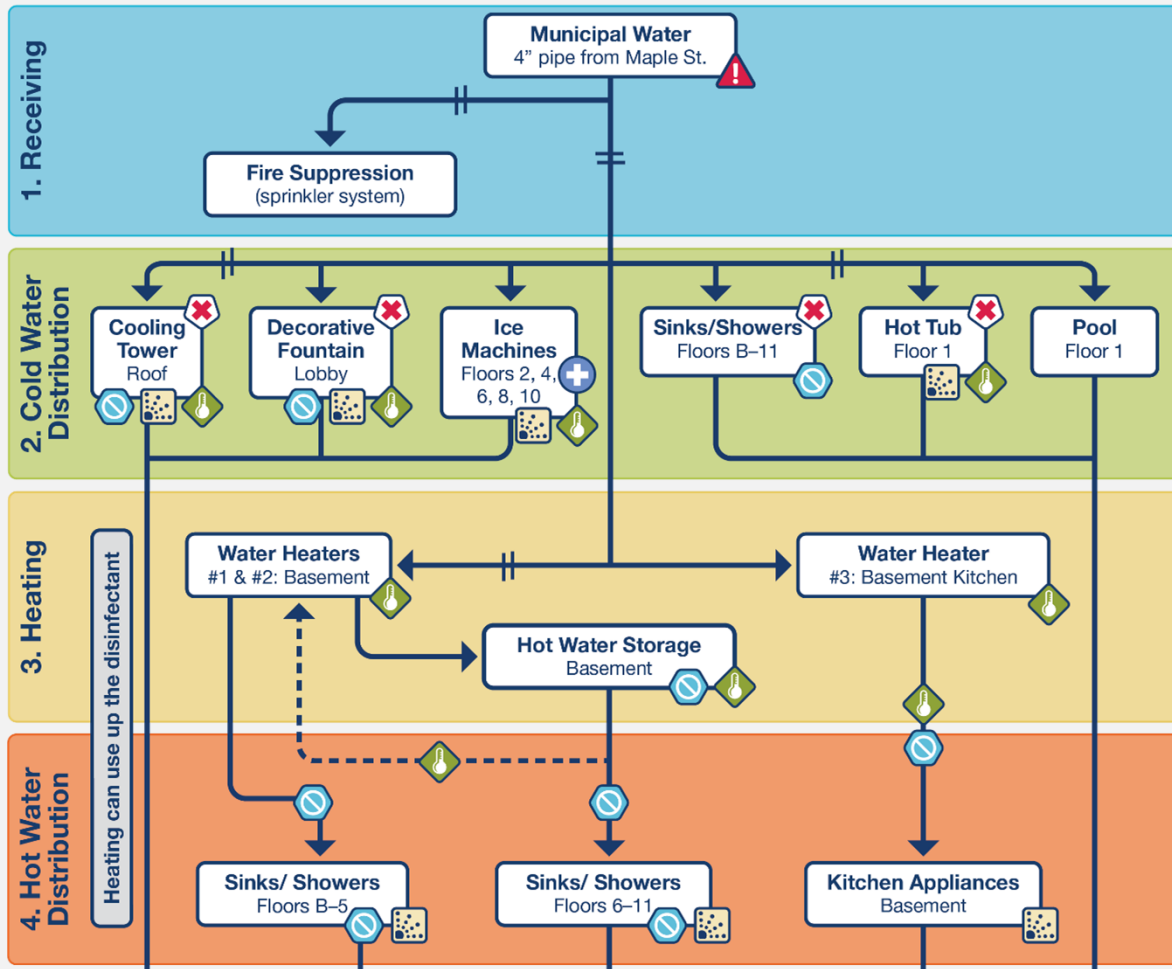
¹ Garrison LE et al. *MMWR*. 2016;65(22):557–61.







² Clopper BR et al. *Microorganisms*. 2021;9(1):89.

Water Management Programs are Important



Identify Potential *Legionella* Hot Spots



-  Temperature Permissive
-  Stagnation
-  No Disinfectant
-  Conditions for Bacteria Spread
-  Special Considerations for Healthcare Facilities
-  External Hazards (eg., construction, main break)

Water Management Program Requirements

- **Industry standard**

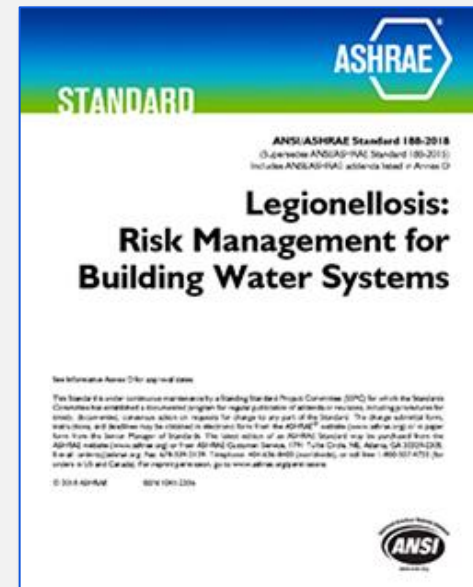
- ASHRAE
 - ASHRAE Standard 188 (2015, 2018)
 - ASHRAE Guideline 12-2020

- **Health care**

- VHA Directive 1061 (2021)
- CMS requirement (2018)

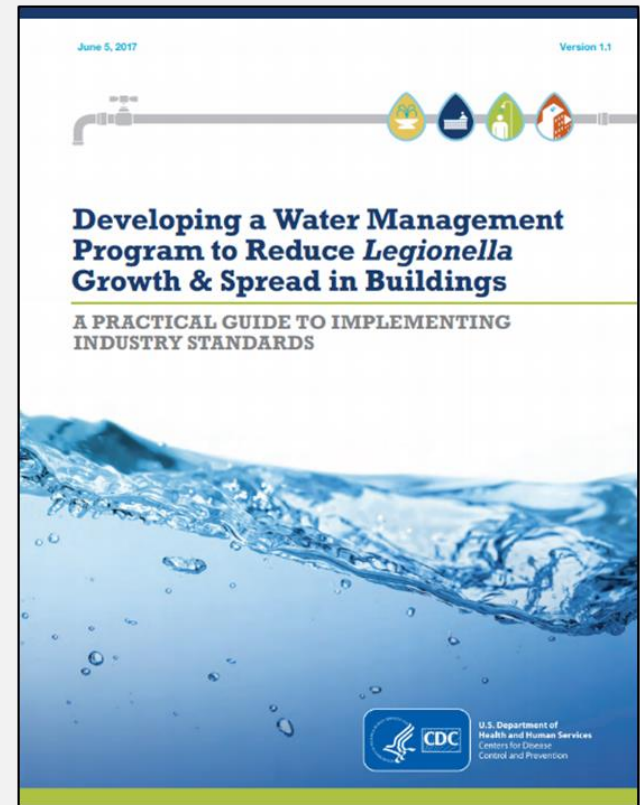
- **Regulations**

- New York City, New York State (2016)



CDC's *Legionella* Water Management Program Toolkit

- **Translates ASHRAE Standard 188 into plain language for wider audiences**
 - Public health professionals
 - Building managers
 - Healthcare facilities
- **Is a step-by-step guide to creating a water management program**
 - Control measures and corrective actions
 - Healthcare-specific guidance



Other CDC Tools for Controlling *Legionella*

- **Toolkit for Controlling *Legionella* in Common Sources of Exposure**
- **Sampling Procedure and Potential Sampling Sites Protocol for *Legionella***
- **Environmental Investigation Videos**
- ***Legionella* Environmental Assessment Form and Marking Guide**
- **Preventing Legionnaires' Disease: A Training on *Legionella* Water Management Programs**

What is copper?

- **Copper is a metal found throughout the environment including air, water, and soil.**
- **Copper is an essential part of the diet in small amounts.**
- **Ingesting too much or too little copper can lead to illness and/or disease.**
- **Ingesting a high amount of copper can cause vomiting, nausea, abdominal pain, and/or diarrhea.**
- **Ingesting higher than recommended amounts of copper every day and over time can lead to severe illness, such as kidney and liver damage.**

What is lead?

- **Lead is a metal found throughout the environment including air, water, and soil.**
- **The nervous system is the main target for lead poisoning in children and adults, but it can affect almost every organ in the body.**
- **Long-term exposure can result in decreased learning, memory, and attention, and weakness in fingers, wrists, or ankles.**
- **Lead exposure can cause low iron in the blood, damage to the kidneys, and increases in blood pressure, particularly in middle-aged and older individuals.**
 - Exposure to high lead levels can severely damage the brain and kidneys and can cause death.
- **Exposure to high levels of lead may cause miscarriages in women, or damage to reproductive organs in men.**

Factors Affecting Lead and Copper in a Building Water System

- **the acidity or alkalinity of the water**
- **the types and amounts of minerals in the water**
- **the amount of lead and copper that water comes into contact with**
- **the water temperature**
- **the amount of wear in the pipes**
- **how long the water stays in pipes, and**
- **the presence of protective scales or coatings in the pipes**

Thank You!

Troy Ritter
Tir4@cdc.gov

For more information, contact NCEH
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TTY: 1-888-232-6348 www.cdc.gov
Follow us on Twitter @CDCEnvironment

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04

**GSA Communications
Strategy**

GSA Communications Strategy Components

— GSA Water Quality Management Website

- GSA Water Quality Website (www.gsa.gov/waterquality)

— GSA Water Quality Management Fact Sheet

- Water Quality Management Fact Sheet

— Next Steps

GSA will provide customer agency leadership with a list of all spaces that will be tested and general timeline. (Week of 2/20)

Testing to be coordinated and communicated at a local level. GSA developing a national test schedule resource for customers.

Website updates and additional CES events forthcoming.

Close Out Q&A



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Thank You

Join us for these upcoming
Client Enrichment Series
events...

RWA Policy and Process Fundamentals


Thursday, February 22nd
1pm-3pm eastern

[See “Recent Presentations”](#)

Green Leasing Requirements

Thursday, March 21st
2pm-3pm eastern

[Register Now](#)

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