



January 31, 2022

The Honorable Kumar Barve, Chair
The Honorable Dana Stein, Vice Chair
House Environment & Transportation Committee
Room 251 House Office Building
6 Bladen Street
Annapolis, MD 21401

Re: [HB 248](#) - Legionnaires' Disease Prevention Act

Dear Chairman Barve, Vice Chair Stein and Distinguished Committee Members: Good afternoon, and thank you for introducing HB248 – Legionnaires’ Disease Protection Act. I appreciate the opportunity to provide written testimony for the proposed legislation.

My name is Lisa Ragain. I am a Principal Water Resources Planner with over 25 years of experience in public health drinking water quality. I have worked on drinking water and public health in non governmental organizations (NGOs) universities, utilities and with local, city and federal government agencies.

I have been working on waterborne infectious diseases since 1993, starting with *Cryptosporidium*, the cause of the largest waterborne disease outbreak in the history of the United States. This work evolved into working on the microbial pathogens sections of the 1996 Safe Drinking Water Act (SDWA) reauthorization. Subsequently I continued on implementation these sections of through my work on Quantitative Microbial Risk Assessment at the George Washington School of Public Health. In addition I served as a member of several U.S. Environmental Protection Agencies (EPA) rule making workgroups. During my time as a consultant and at COG I’ve worked with several agencies on addressing and communication *Legionella* outbreaks. My work continues to be collaboration with local and state governments, drinking water utilities that supply and regulatory authorities. My CV is attached.

My current role at the Metropolitan Washington Council of Governments encompasses the water and public health sectors for in our 24 member jurisdictions, thirteen of which are in Maryland¹, One function of my position is improving public health by raising awareness of building water systems responsibilities, management and education for the many parties from local government to public health agencies and consumers. Many of our members, businesses and residents are not aware of the risks in building water systems to include multifamily residences, hospitals, office buildings, convention centers, elder care facilities, schools, and other buildings often owned and managed by state and local governments. I am also certified to train building water management planning.

I have been working actively working with EPA, CDC and academic institution to: 1) develop of criteria for building water management planning for *L. pneumophila* control to protect public health from

¹ Charles, Frederick, Montgomery and Prince Georges Counties and the Cities of Bowie, Gaithersburg, College Park, Frederick, Greenbelt, Hyattsville, Laurel, Rockville and Takoma Park

water exposure leading to Legionnaires' disease; 2) conduct training for developers, facility managers to implement building water management plans, and 3) developing communications materials for building owners and operators and water utilities to educate customers on managing *L. pneumophila* in building water systems.

Legionnaires Disease is the leading cause of waterborne disease in the United States (see figure 1). Cases rose 800% since 2000. In 2014 Maryland ranked 11th in the nation for cases of Legionnaires and identified 1,801 cases of Legionnaires diseases from 2010-2019 see figure 32 and 3). It must be acknowledged Maryland has one of the strongest legionella HB248 is an important step forward to manage Legionnaires' disease

Why, if Legionella is responsible for the largest portion of waterborne disease is it not regulated by federal and state agencies? While *Legionella* has been on the EPA Contaminant Candidate List (CCL) since the late 1990s. EPA determined at the time they did not have the authority to regulate plumbing in buildings. Only in the last decade has enough research and data collection moved the CDC, EPA and other agencies to take a strong stance and move forward to management through a regulatory framework.

Legionella exposure occurs in buildings and associated water systems such as, cooling towers, decorative fountains and shower heads. Legionnaires' disease is transmitted by inhaling water mist (aerosols) with *Legionella pneumophila* bacteria. *L. pneumophila* to colonize (attach to) components in a building water system and amplify (grow). Building water systems may serve as sources for outbreaks and sporadic cases.

L. pneumophila amplification occurs in biofilms. Biofilms naturally occur and are found on any surface exposed to microorganisms and water. Healthy biofilms are a delicate balance consisting of bacteria, protozoa and fungi species and debris. One example is the microbiome in the human gastrointestinal system a.k.a. the gut.

Water pipes and plumbing also grow biofilms which include not only bacteria, protozoa and fungi, but also, protozoa, debris, and corrosion products. As biofilm forms it adheres surfaces and allows it to exist as an ecosystem that develops its own characteristics, which can include resistance to drinking water disinfectants. Biofilms that we encounter regularly include films or slimes on shower fixtures.

Control of *Legionella* and other biofilm waterborne pathogens to reduce exposure and prevent disease is exerted through water management planning and implementation of those plans. **Water management planning** is essential to control *L. pneumophila* in building water systems and reduction of risk Legionnaires' disease. Water quality can degrade rapidly when it enters a building for many reasons. The building by its nature is a unique ecosystem, vastly different from the pipes and tanks and conditions in the public water supply. Microorganisms that are part of the natural flora, such as *L. pneumophila*, may be present in low and intermittent levels, and can colonize and become established in biofilms in the building. Unless there is a program to actively manage water quality in the building, amplification of these bacteria and dissemination through aerosols can occur and lead to infection in susceptible hosts. Legionnaires' disease occurs when building water quality is not actively managed through water management planning.



The standard used in the US to development of building water management plans is The “ANSI/ASHRAE 188 - Legionellosis: Risk Management for Building Water Systems” (ANSI/ASHRAE, 2018). By its definition, the standard recognizes that building water systems are the source of *Legionella* exposure and Legionnaires’ disease. ASHRAE 188 provides guidance on how to identify and control hazards to minimize risks through managing both chemical and physical conditions in a building water system to minimize *Legionella* growth. HB248 references ANSI/ASHRAE 188 as a standard for development and implementation of a building water management plan. ASHRAE developed a second document, ASHRAE Guideline 12-2020 Managing the Risk of Legionellosis Associated with Building Water Systems, that provides additional information on the scientific considerations and practices for the prevention of Legionellosis and can be used for implementing ANSI/ASHRAE 188.

Key developments in *Legionella* management include:

- 2016 CDC issued guidance on “Developing a Water Management Program to Reduce Legionella Growth & Spread in Buildings: A Practical Guide to Implementing Industry Standards” using ANSI/ASHRAE 188 and ASHRAE Guideline 12 to guide hospitals and health care facilities in developing and implementing water management plans for *Legionella* control.
- 2017 the Centers of Medicare and Medicaid Services (CSM) published the “Requirement to Reduce Legionella Risk in Healthcare Facility Water Systems to Prevent Cases and Outbreaks of Legionnaires’ Disease (LD)” (CMS, 2017). CMS requires reference ANSI/ASHRAE 188 and the CDC toolkit.
- 2017 European Technical Guidelines for the Prevention, Control, and Investigation of Infections Caused by *Legionella* species (2017).
- 2020 CDC issued Reopening Buildings After Prolonged Shutdown or Reduced Operation, Atlanta, GA. <https://www.cdc.gov/nceh/ehs/water/legionella/building-water-system.html>.

Testing building water for *Legionella pneumophila* is necessary to manage building water quality to prevent LegWater Management Plan validation is required in ANSI/ASHRAE 188. Industry best practice shows that the only way to fully understand building water quality in terms of *L. pneumophila* occurrence and concentration is to sample the water and test for *L. pneumophila*. Nearly 98% of Legionnaires’ disease cases in the US are caused by *L. pneumophila* and this species should be the focus of water management plan validation testing.

Due to COVID -19 many building are shut down or have lower use. This has profound negative effects on building water quality and potential *Legionella*. State and local governments are responsible for many of these buildings and building water management plans are an important component to reopening.

Building water management plans have additional benefits beyond preventing Legionnaires’ disease. Water quality, metal and chemical exposure usage and emergency management and resilience are all improved with creating and implementing a water management plan.



I appreciate the opportunity to testify on behalf of HB248. This bill will make Maryland and its jurisdictions leaders in improving building water quality. As a water and public health professional I am pleased to see this bill address building water quality and Legionnaires' disease as it can be prevented by implementing building water management practices. Understanding building water quality, testing water with focus testing on *L. pneumophila* as it is the primary species responsible for Legionnaires' disease, and to use communication materials developed by scientists, public health practitioners and communication professionals to educate building owners, managers and consumers on the risks, responsibilities and management of building water systems to prevent Legionnaires' disease.

Please do not hesitate to contact me If you have any questions.

Sincerely,



Lisa Ragain, MAT
Principal Water Resources Planner
Metropolitan Washington Council of Governments

References

ANSI/ASHRAE. 2018. ANSI/ASHRAE 188 - Legionellosis: Risk Management for Building Water Systems. Atlanta, GA. ASHRAE. www.techstreet.com/ashrae/products/1897561.

CDC. (2017). Developing a water management program to reduce Legionella growth and spread in buildings: a practical guide to implementing industry standards. Atlanta, GA.. <https://www.cdc.gov/legionella/maintenance/wmp-toolkit.html>.

CDC. (2020). Reopening Buildings After Prolonged Shutdown or Reduced Operation, Atlanta, GA. <https://www.cdc.gov/nceh/ehs/water/legionella/building-water-system.html>

Embrey, MA, Parkin R, John M Balbus (2002). Handbook of CCL Microbes in Drinking Water, American Water Works Association, Denver CO.

European Technical Guidelines for the Prevention, Control and Investigation of Infections Caused by *Legionella* species. 2017.

Lee, S. (2018). An overview of the European technical guidelines for the prevention, control and investigation of infections caused by Legionella species. Perspectives in Public Health, 138(5), 241-247. https://www.esamid.org/fileadmin/src/media/PDFs/3Research_Projects/ESGLI_ESGLI_European_Technical_Guidelines_for_the_Prevention_Control_and_Investigation_of_Infections_Caused_by_Legionella_species_June_2017.pdf.

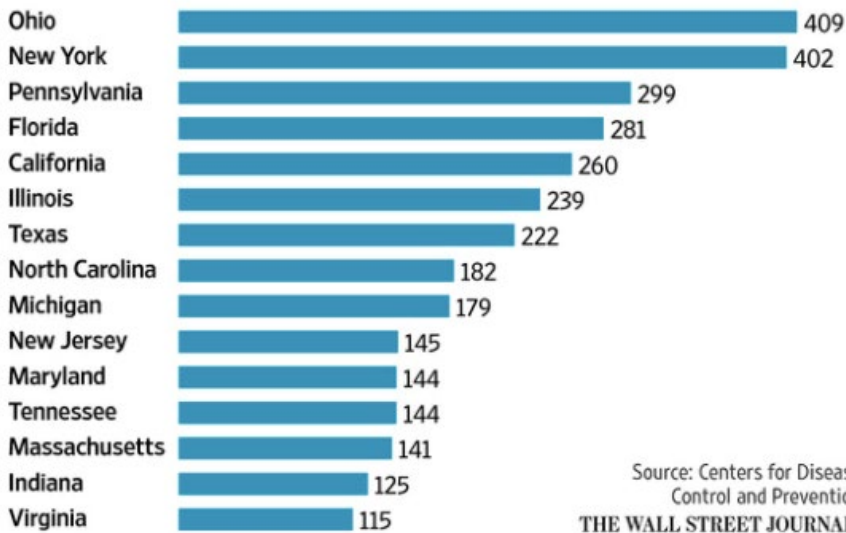
Legionnaires' disease is on the rise in the United States
2000-2018



Figure 1. CDC
Nationally
Notifiable
Disease
Surveillance
System

Figure 2. CDC and the Wall Street Journal, 2015

States with the highest number of cases of the disease in 2014



Source: Centers for Disease
Control and Prevention
THE WALL STREET JOURNAL.



Figure 3. Maryland Legionnaires' Disease Cases 2010 - 2019,

Source Maryland Department of Health, [Cases of Selected Notifiable Conditions Reported in Maryland](#), accessed January 30, 2022

Maryland Legionellosis Cases by Year	
2019	273
2018	361
2017	187
2016	142
2015	153
2014	144
2013	162
2012	123
2011	143
2010	113