



## Alliance to Prevent Legionnaires' Disease

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### Following Data & Science Recommendations for Legionnaires' Disease Prevention

On August 30, 2022, the Los Angeles County Board of Supervisors passed a Motion for Evaluating Strategies to Prevent Legionnaires' Disease and Improve Disease Surveillance and Response. Upon review, the Motion appears to be focused only on Legionnaires' disease outbreaks which according to the federal Centers for Disease Control and Prevention (CDC) accounts for only 4% of all Legionnaires' disease cases. Further, the Motion calls for strategies targeting a very narrow list of water-using equipment (cooling towers and drinking/decorative fountains) for managing and preventing Legionnaires' disease including requiring a registry for cooling tower locations. It fails to call for a comprehensive review of our broader water system- which introduces *legionella* bacteria into our homes, facilities and workplaces and at policies that have been put in place or are pending to address Legionnaires' holistically. effectively tackle this waterborne disease to prevent the suffering and death caused by Legionnaires' disease in LA County.

Below is an outline of a range of studies demonstrating the link of the public water distribution system and home-based *legionella* presence and exposure as part of our evolving understanding of this disease. These support the need to address Legionnaires' comprehensively, which this Motion fails to do

#### Legionella in our Public Water Systems

*“Nationally, we continue to see an increase in Legionella disease outbreaks, not from cooling tower exposure but from exposures within premise plumbing. Are water systems providing a continual “seeding” of Legionella bacteria and the bacteria getting into premise plumbing...?”*

- R. Ellingboe, Supervisor- Drinking Water Protections Section, Environmental Health Division at Minnesota Department of Health in 2/9/16 letter to US Environmental Protection Agency

*“Maintenance of an adequate disinfectant residual (treatment) throughout the water distribution system plays a key role in controlling the growth of pathogens and biofilms and is a treatment technique that serve as one of the final barriers to protect public health. Lack of an adequate residual may increase the likelihood that disease-causing organisms such as E. Coli and Legionella are present.”*

- Pennsylvania Environmental Quality Board, [Disinfection Requirements Rule](#), 2/20/16

- *Legionella* exists in the source water and public water distribution system which “seed” homes, facilities and buildings with the bacteria. It is far more effective to properly manage, treat and monitor water in the public distribution system at the most proximal source than it is to try to address these pathogens after they have already entered premise plumbing. This can be done through proper monitoring, management and treatment of water with disinfectant at the water treatment facility and throughout the water distribution system so an effective disinfectant residual is maintained in the water entering our homes and buildings.
- Recent outbreaks around the country including [Flint, Michigan](#), [Quincy, Illinois](#) and [Saratoga Springs, NY](#) demonstrate that systemic issues directly impact rates of Legionnaires’ disease.
- Many studies and papers describe the role of the public water distribution system in introducing legionella into our homes and buildings and the need to properly address it upstream including:
  - *“Proactive examination of water quality data and close cooperation between public health authorities, environmental protection authorities and water utilities can be invaluable for protecting the public from Legionella, as well as preventing future problems...the evidence is clear that minimizing growth of Legionella in public water utilities through proper maintenance and sustained disinfectant residuals throughout all sections of the water utility will lead to a less conducive environment for growth in the system and the buildings the system serves.” - [A review of legionnaires’ disease and public water systems – Scientific considerations, uncertainties and recommendations](#), (2022, Jessie A. Gleason, Perry D. Cohn-current and retired NJ DOH officials),*
  - *“Drinking water is an important medium to transmit legionella (*L. pneumophila*). From 2011 to 2012, 21 disease outbreaks caused by *L. pneumophila* in drinking water were reported, contributed to 66% of the total reported disease outbreaks associated with drinking water in United States. Therefore, controlling the transmission of *L. pneumophila* in drinking water is a key to preventing the disease outbreaks of legionellosis. *L. pneumophila* can transmit and persist in drinking water distribution system (DWDS) with the aid of biofilms” –[The Role of Biofilms in Legionella Pneumophila Transmission in Drinking Water Distribution System](#), (2016, Yun Shen)*
  - *“This study detected Legionella, *L. pneumophila* in two South Australian potable water distribution systems... [and] confirms the presence of opportunistic pathogens Legionella spp., *L. pneumophila* in both a chlorine and a chloramine disinfected potable water distribution system... at a dead-end and when the disinfection residual was not maintained, the pathogens were able to significantly increase in concentration. The potential for dead-ends in pipes to promote growth warrants more attention in efforts to control Legionella, *L. pneumophila* within these environments This study demonstrates the ability of Legionella spp., *L. pneumophila* to survive the potable water disinfection process and highlights the need for greater measures to control these organisms along the distribution pipeline and at point of use.” - [Detection of Legionella, \*L. pneumophila\* and Mycobacterium Avium Complex \(MAC\) along Potable Water Distribution Pipelines](#), (2014, Whiley et al.)*

- *“This study proved that pathogenic bacteria entering water distribution systems can survive in biofilms for at least several weeks, even under conditions of high-shear turbulent flow, and may be a risk to water consumers. Legionella, L. pneumophila survived in biofilms for more than 2 to 4 weeks.”* - [Survival of Mycobacterium avium, Legionella pneumophila, Escherichia coli, and Caliciviruses in Drinking Water-Associated Biofilms Grown under High-Shear Turbulent Flow](#), (2007, Lehtola et al.)

### **Home-Based Exposure to Legionnaires**

*“Your report virtually ignores strong evidence suggesting that the potable water of the apartments and homes of the infected individuals were likely the actual source; this scenario is commonplace and has been confirmed in numerous medical investigations worldwide.”*

- Dr. Victor L. Yu, Professor of Medicine Emeritus, University of Pittsburgh, in response to NYC enactment of Local Law 77 of 2015.
- According the [U.S. Environmental Protection Agency](#), “the average American family uses more than 300 gallons of water per day at home. Roughly 70 percent of this use occurs indoors.” This accounts for the vast majority of human exposure and direct interaction with water through showers, baths, faucets, humidifiers, toilets, hoses, etc. In addition, those who are most susceptible to this disease (the elderly, immune-compromised, and individuals with underlying conditions and respiratory infections) are often home-bound or spend significantly more time in the home.
- A recent review of available literature of sporadic cases define “definite” and “probable” sources of sporadic cases which verify source of sporadic Legionnaires’ cases through molecular linkage and/or human and environmental isolates. Definite and probable sources included potable water from single family homes and apartment buildings, potable water used in humidifiers, home spas, and potable water from other sites (i.e. dental office, etc.) [Environmental sources of community-acquired legionnaires' disease: A review](#) (2018 Orkis et al.)
- An [EPA study](#) based in Cincinnati found that 49% of household taps tested positive for *legionella*. This finding continues to be reaffirmed in jurisdictions that have tested homes for the presence of legionella bacteria.
- Following a spate of cases in New Jersey, the state [Department of Health](#) reported that “*legionella* bacteria was identified in water samples collected from more than half of 30 homes within several municipalities” served by the same water utility. This finding follows the release of an investigation of homes in a nearby township several months earlier which similarly found legionella bacteria in more than 50% of the sampled homes.
- In 2021, the Michigan Department of Health announced the discovery of 107 sporadic Legionnaires’ cases across several counties in the Detroit area occurring between July 1 and July 14, 2021. The [Michigan Department of Health](#) noted “recent weather trends including rain, flooding and warmer weather may be playing a role in the rise of reported legionellosis cases this summer.” Upset conditions can release *legionella* from piping and biofilm, and push it into homes and facilities where humans can be exposed and become ill.

## **Addressing 100% of Legionnaires' Cases to Prevent Disease**

*“Thoughtful model state level legislation that comprehensively addresses the entirety of a water system, not solely where waterborne pathogens are ultimately detected, should be produced by a multi-stakeholder effort”*

*“While important...water management plans do not relieve utilities of responsibility to ensure that the water entering homes and buildings is optimal.”*

- Final Report on the [National Summit on Waterborne Disease 2019](#)
- **We need to focus on all cases of Legionnaires' disease to prevent it.** With 96% of all Legionnaires' cases being sporadic and unrelated to an outbreak, there must be a much stronger focus around ensuring that the water received by homes as well as buildings is *legionella*-free. Focusing remediation efforts only on certain buildings and equipment while ignoring *legionella* in the public water system (as the LA Motion does) only deflects responsibility, gives a false sense of security and delays the adoption of effective solutions.
- In recent years, strong actions have been taken in states like Illinois enacting regulations to effectively address waterborne pathogens like *legionella* in the distribution system to starve and kill it before it reaches our homes and buildings. Legislation is also pending in New Jersey which has already passed the State Senate and addresses *legionella* comprehensively. These are models that States and municipalities should follow.

## **Recommended Policies**

In May 2019, in an effort to address growing concerns about the rise in Legionnaires' cases and waterborne disease, leading voices representing public health, the scientific community, water treatment experts, impacted populations, and representatives from the U.S. EPA joined together at the National Summit on Waterborne Disease. Delegates from these organizations discussed a core set of [recommendations](#) to address the increase in the presence of waterborne pathogens.

These recommendations include:

- Better education of the public and policymakers on how waterborne pathogens spread—beginning at the water source, often as a result of, or exacerbated by, aging infrastructure – is vital to explain the link between infrastructure and public health;
- A significant investment in water infrastructure should be a central tenet of a national infrastructure initiative;
- Improved outreach and education to susceptible populations, which will allow at-risk Americans to be better prepared to safeguard themselves from exposure;
- Timely communication and information sharing across relevant leaders and stakeholder industries would allow for the dissemination of fact-based information; and
- Thoughtful model state level legislation that comprehensively addresses the entirety of a water system, not solely where waterborne pathogens are ultimately detected, should be produced by a multi-stakeholder effort.

In line with these recommendations and the wealth of evidence demonstrating the connection between the public water distribution system and home-based legionella presence and exposure,

the Alliance to Prevent Legionnaires' Disease recommends the following policies to effectively prevent both sporadic and outbreaks of Legionnaires' disease.

- Require a legionella management plan for water utilities that considers the following:
  - Minimum disinfectant residual levels
  - Reduction of Assimilable Organic Carbons (AOCs)/Total Organic Carbons (TOCs)
  - Nitrification action plans
  - Eliminate water stagnation
  - Establish water quality performance and compliance metrics
  - Public notification of water disruption events
- Comprehensive investigations and reporting of all Legionnaires' cases
- Public awareness and education on home risk mitigation
- Training and encouraging the use of ASHRAE Standard 188 by applicable end users
- Require communication plans between utilities & large end users
- Legionnaires' Prevention public awareness campaigns

We would encourage policy makers to look at enacted [regulations](#) in Illinois and pending legislation which passed the Senate in New Jersey ([Senate Bill 1006](#)) in December 2022 for sound and comprehensive policies to address Legionnaires' disease. We would welcome the opportunity to work with the Los Angeles Board of Supervisors to pursue similar policies to protect residents in LA.

The Alliance to Prevent Legionnaires' Disease (APLD) is a nonprofit public health advocacy group dedicated to reducing the occurrence of Legionnaires' disease by promoting public research, education, best practices for water management, and advocating for comprehensive policies to combat and investigate this preventable disease