



## Alliance to Prevent Legionnaires' Disease

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Good afternoon. My name is Daryn Cline and I am with The Alliance to Prevent Legionnaires' Disease. The Alliance is a non-profit health organization advocating for a comprehensive approach to disease prevention.

On behalf of the Alliance, I'd like to thank the National Academy of Sciences for taking on this tremendous initiative and all of you for committing your time and expertise to advancing the discussion about how we can minimize *Legionella* bacteria from source to consumption.

I want to welcome and echo many points we've heard today, many in line with the Alliance mission which is:

“to reduce the occurrence of Legionnaires' disease by promoting public research and education .... and to help implement best practices and policy for its prevention.”

“We urge the Committee to frame the legionella challenge -- as your Statement of Task suggests as a systemic one that addresses waterborne bacterial risk throughout the water distribution system.”

We are concerned that there has been insufficient focus on what can be done to reduce the risk of *Legionella* bacteria going into buildings and homes from the public water supply.

The Alliance would like this committee to consider the following studies:

- An EPA study discovered *Legionella* in 67% of water storage tank sediments<sup>1</sup>
- *Legionella* Pneumophila was in 33% of them and
- *Legionella* Pneumophila Serogroup 1 was in 28% of the drinking water supply tanks.

In another EPA study on tap water<sup>2</sup>:

- 47% of taps were positive for *Legionella* Pneumophila Serogroup 1 in at least one sampling event and
- 27% of samples were positive for *Legionella* Pneumophila DNA (similar to the 33% in storage tank sediments)
- 20% of samples were positive for *Legionella* Pneumophila Serogroup 1 (similar to 28% in storage tank sediments).

Not surprisingly, the recent CDC study on equipment supplied with potable drinking water released last December found<sup>3</sup>:

- *Legionella* DNA isolated from 40% of equipment (78/196 samples)
- *Legionella* Pneumophila isolated from 27% (53/196 samples)
- *Legionella* Pneumophila serogroup 1 was isolated from 20% (40/196 samples)

You see the pattern, *Legionella* and its species at various concentrations, are in our drinking water distribution system outside and inside the building. No more studies are required at the expense of the taxpayer to find out where it is, how much and what type.

Let's find a solution, let's all share the responsibility and stop passing all the responsibility and costs onto building owners who cannot be expected to fully handle the task especially when there are factors and variables outside of their control. Therefore, the Alliance would like to see the committee address the following issues and answer questions.

### **CDC**

#### *Sporadic vs. Outbreak LD Case Response*

- Given that 96% of LD cases are individual and sporadic, how important is environmental investigation of sporadic cases in gaining understanding of the disease?

#### *Intrusion of Legionella*

- What impact does distribution system water quality, including Legionella growth in the biofilm, have on LD rates?
- To what degree do events like water main breaks, other pressure loss events, flooding or construction impact the increased intrusion of Legionella bacteria into buildings and homes?

#### *Bacterial Pneumonia and Aspiration*

- What are the risks associated with drinking water that contains any level of Legionella bacteria?
- The American Lung Association states that "pneumonia bacteria, including *Legionella*, can live in healthy throats, multiply and work their way into the lungs." Maybe the Sloan Foundation can fund this study?

### **EPA, Office of Groundwater and Drinking Water**

#### *Filtration*

- Is Legionnaires' disease considered a waterborne disease?
- What level of waterborne bacteria including *Legionella* is acceptable to the EPA for municipalities that seek a filtration waiver?
- Given the findings in recent studies which link water source to increased levels of Legionella, does the EPA recommend water filtration for water treatment plants and source water that service areas with high rates of Legionnaires' disease, like New York City, which does not filter its water, but has the highest LD rates in the nation?

#### *Water Treatment*

- There are studies that show Legionella bacteria thrive with high levels of Total Organic Carbon (TOC) and Assimilable Organic Carbon (AOC). Does the EPA recommend TOC/AOC removal for all water treatment plants?

### **General Statements on Legionnaires' Disease**

- Data on exposure source is drawn almost exclusively from outbreaks
- The aspiration route of transmission, if included at all, is an afterthought
- The specifics of Human Exposure are poorly understood
- Infectious dose level is completely unknown
- Test methods are not consistent, or accurate, qPCR vs Culture

An overarching recommendation we would make to the Committee is to put proper attention on sporadic cases of Legionnaires' Disease. Too often, because of the political pressures, outbreaks drive rushed public health policy decisions.

The publication this week of the Flint drives home the point that more research, monitoring, and ultimately investments are needed for source and distribution water in order to lower waterborne disease rates.

We are not proscriptive in what the optimal solutions might be, and look forward to ideas this committee develops.

Finally, we recognize and support ongoing efforts to implement effective water management plans for premise plumbing. Many of our members actively participate in the ASHRAE 188 Committee and reviewed the CDC Water Management Toolkit and we happily offer our expertise to this Committee.

Thank you!

1 Lu, J., Struewing, I., Yelton, S., & Ashbolt, N. (2015). Molecular survey of occurrence and quantity of *Legionella* spp., *Mycobacterium* spp., *Pseudomonas aeruginosa* and amoeba hosts in municipal drinking water storage tank sediments. *Journal of applied microbiology*, 119(1), 278-288.

2 Donohue, M. J., O'Connell, K., Vesper, S. J., Mistry, J. H., King, D., Kostich, M., & Pfaller, S. (2014). Widespread molecular detection of *Legionella pneumophila* serogroup 1 in cold water taps across the United States. *Environmental science & technology*, 48(6), 3145-3152.

3 Anna C. Llewellyn, Claressa E. Lucas, Sarah E. Roberts, Ellen W. Brown, Bina S. Nayak, Brian H. Raphael, Jonas M. Winchell (2017) Distribution of *Legionella* and bacterial community composition among regionally diverse US cooling towers PLOS One Published: December 20, 2017 <https://doi.org/10.1371/journal.pone.0189937>