

**Comments on *Legionella* and Legionnaires' Disease with Respect
to Disinfectant Residual and Public Health Protection**

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- *Legionella* is the most well-known of a group of organisms known as opportunistic pathogens
- Common environmental microbe found in soil and water
- *Legionella* can be found in treated drinking waters that meet all federal and State standards
- Legionnaires' disease (LD) is the #1 waterborne disease (WBD) in the US (US CDC)
- LD results from water quality degradation in building water systems in the premise plumbing
- LD is the result of a 'perfect storm'
 - *Legionella* enter in low numbers from tap water, intrusion from main breaks, cross connections, backflow
 - The bacteria colonize on pipe and other solid surfaces and grow in biofilms to high levels in premise plumbing
 - The bacteria are released into the air in microscopic droplets
 - Susceptible hosts breathe in the droplets
 - Host immune response is unable to prevent infection
 - Pontiac fever (mild flu like illness, not fatal)
 - LD (pneumonia, may lead to death)
- LD is preventable (WHO, US CDC)
- Effects of drinking water treatment, including disinfection, cannot control *Legionella* because the bacteria reproduce in premise plumbing
- Disinfection is very effective at controlling fecal pathogens in water (*Salmonella*, *Campylobacter*, viruses)
- Control of *Legionella* and LD happens in the building, not in the drinking water distribution system
- World Health Organization
 - Legionella and Prevention of Legionellosis, 2007
 - Water Safety in Buildings, 2010
- National effort ongoing on many fronts to address this issue of premise plumbing water quality
 - "The two most commonly identified deficiencies leading to drinking water-associated outbreaks were *Legionella* in building plumbing systems (66%) and untreated groundwater (13%)". – US CDC, August 2015

- ASHRAE – American Society of Heating Refrigeration and Air-conditioning Engineers
 - ASHRAE Guideline 12-2000 - Minimizing the Risk of Legionellosis Associated with Building Water Systems
 - Revision recently adopted called Standard 188, Prevention of Legionellosis Associated with Building Water Systems
- National Sanitation Foundation (NSF)
 - NSF Standard 444 - Prevention of Injury and Disease Associated with Building Water Quality, due for ballot in summer 2017
 - 2-day training course on HACCP
- US CDC
 - "The two most commonly identified deficiencies leading to drinking water–associated outbreaks were *Legionella* in building plumbing systems (66%) and untreated groundwater (13%).“ – CDC, August 2015
 - CDC’s current consensus recommendation is that buildings apply HACCP-based water safety management programs for the prevention of disease from waterborne opportunistic pathogens” – Claressa Lucas, Ph.D.
- EPA Funding
 - Impacts of Water Conservation on Water Quality in Premise Plumbing and Water Distribution Systems. \$4 million
- Water Research Foundation
 - Held 2 workshops on research needs for premise plumbing
 - Released RFP on *Legionella* communication re: premise plumbing
- Increasing the disinfectant residual will not control LD or improve public health because the control point is in the building plumbing, not the drinking water distribution system