

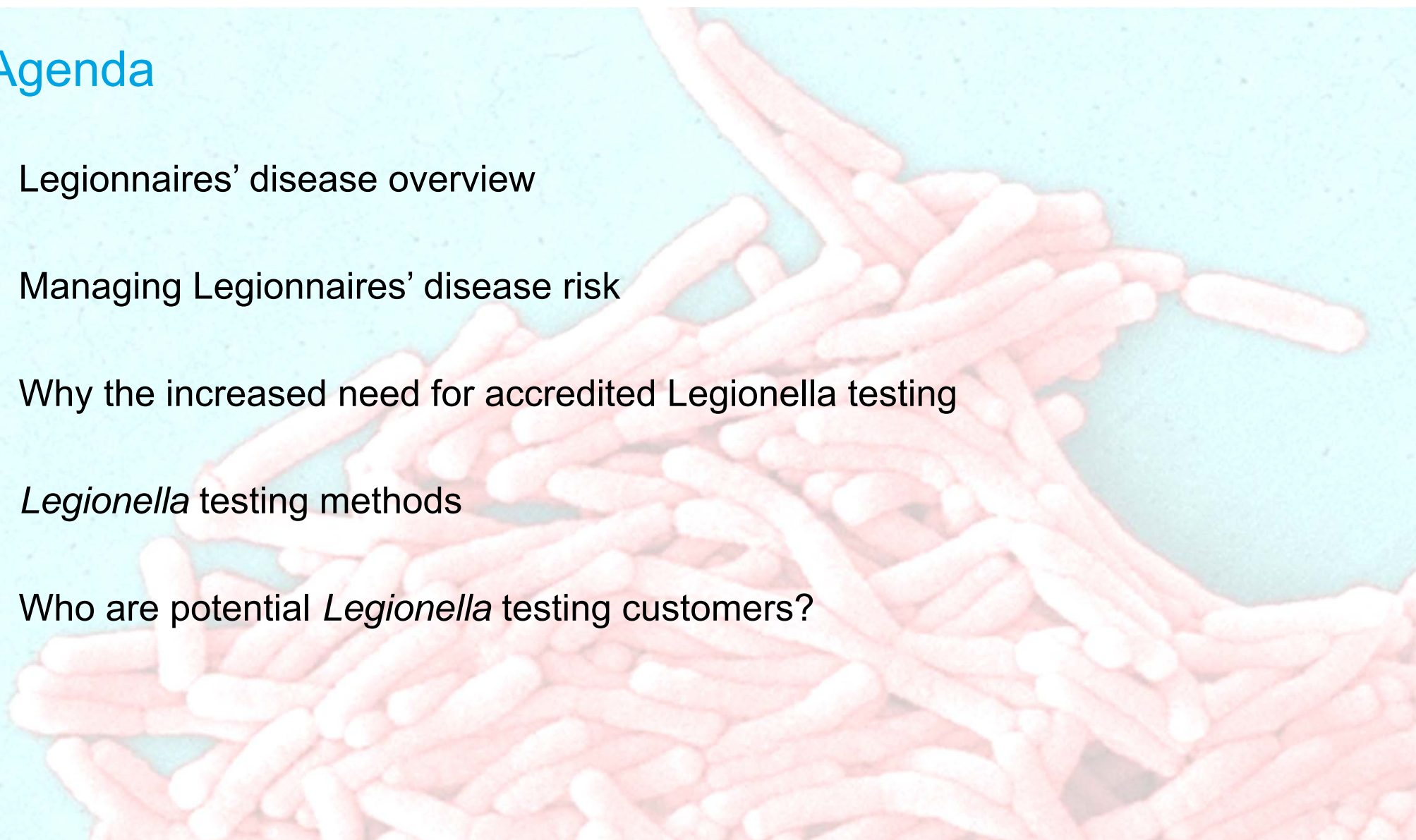


IDEXX

Legionella testing:
How to positively effect your laboratory operations

Agenda

- Legionnaires' disease overview
- Managing Legionnaires' disease risk
- Why the increased need for accredited Legionella testing
- *Legionella* testing methods
- Who are potential *Legionella* testing customers?





Legionnaires' disease overview

What is *Legionella pneumophila*?

A waterborne pathogen...



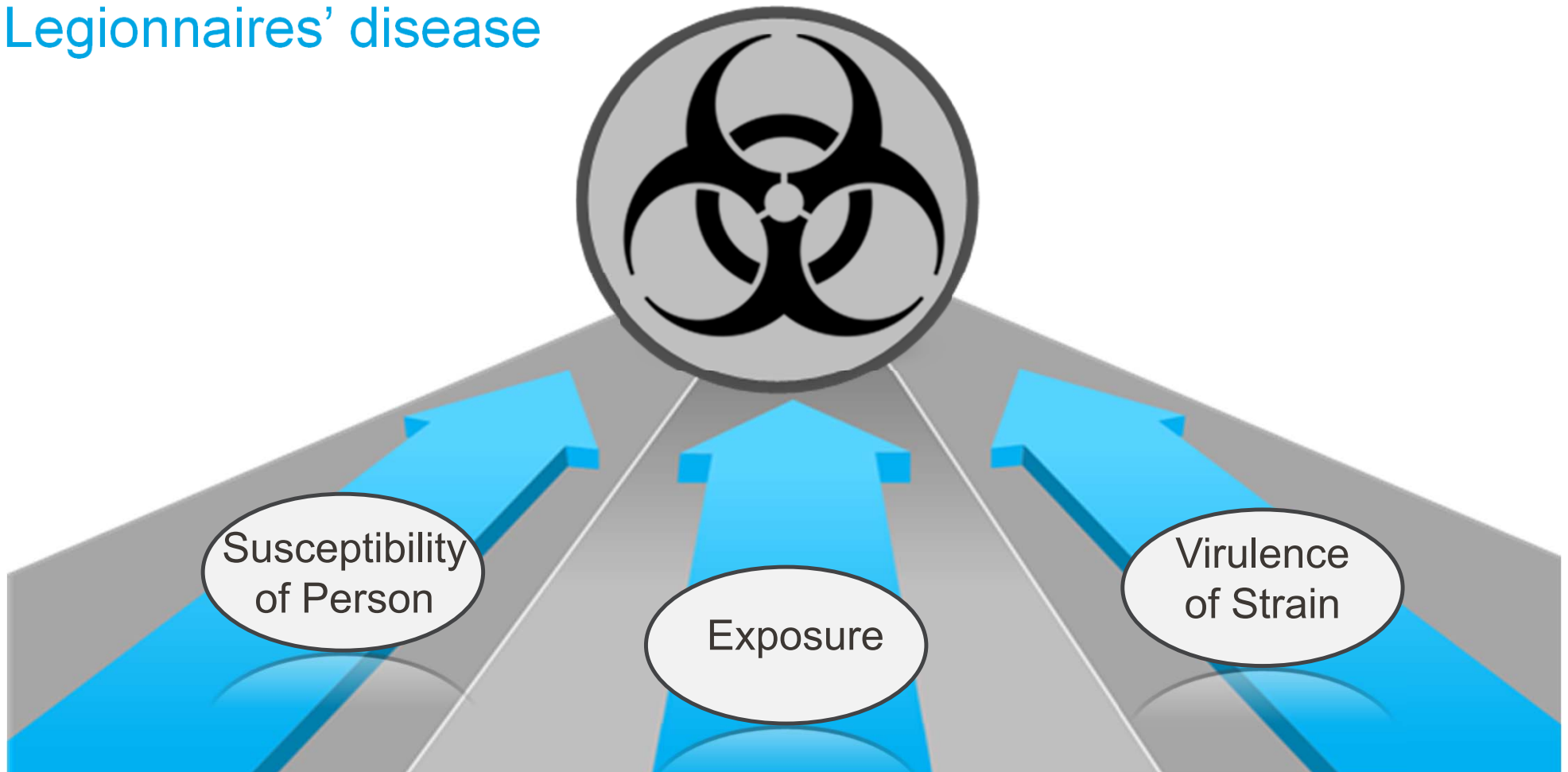
...that can proliferate in building water systems...



...and cause Legionnaires' disease.

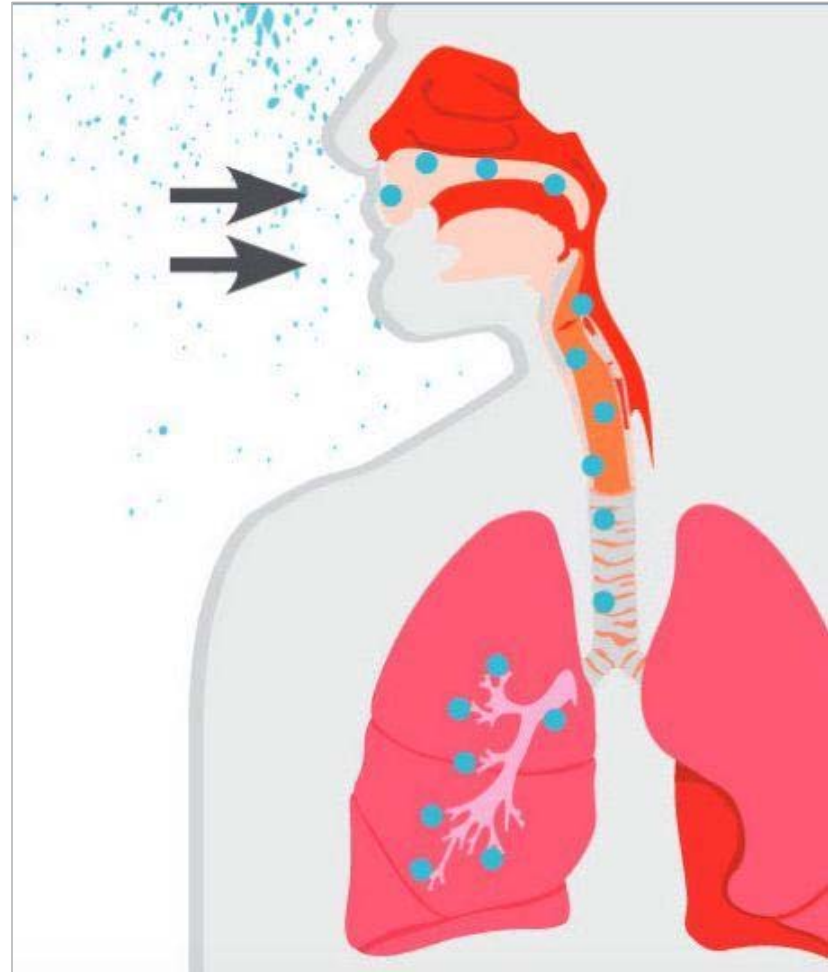


Certain risk factors must be present to contract Legionnaires' disease



Legionnaires' disease is a public health risk

- Severe form of pneumonia
- Same risk groups as COVID-19
- Fatal in 10-33% of cases
- Contracted from inhaling water droplets contaminated with *Legionella pneumophila* bacteria
 - NOT Transmitted person to person
- Incidence of Legionnaires' disease has increased 800% since 2000



Where *Legionella* live

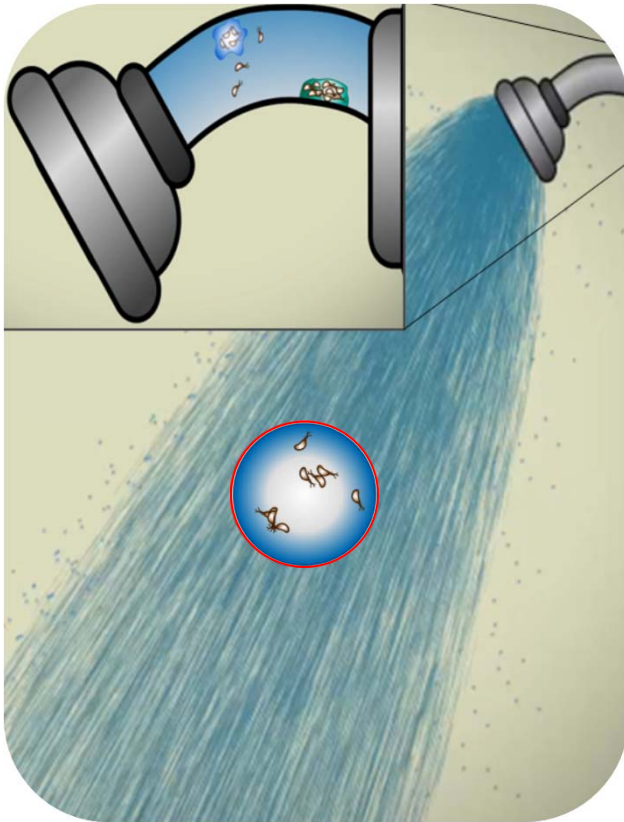
Potable Water



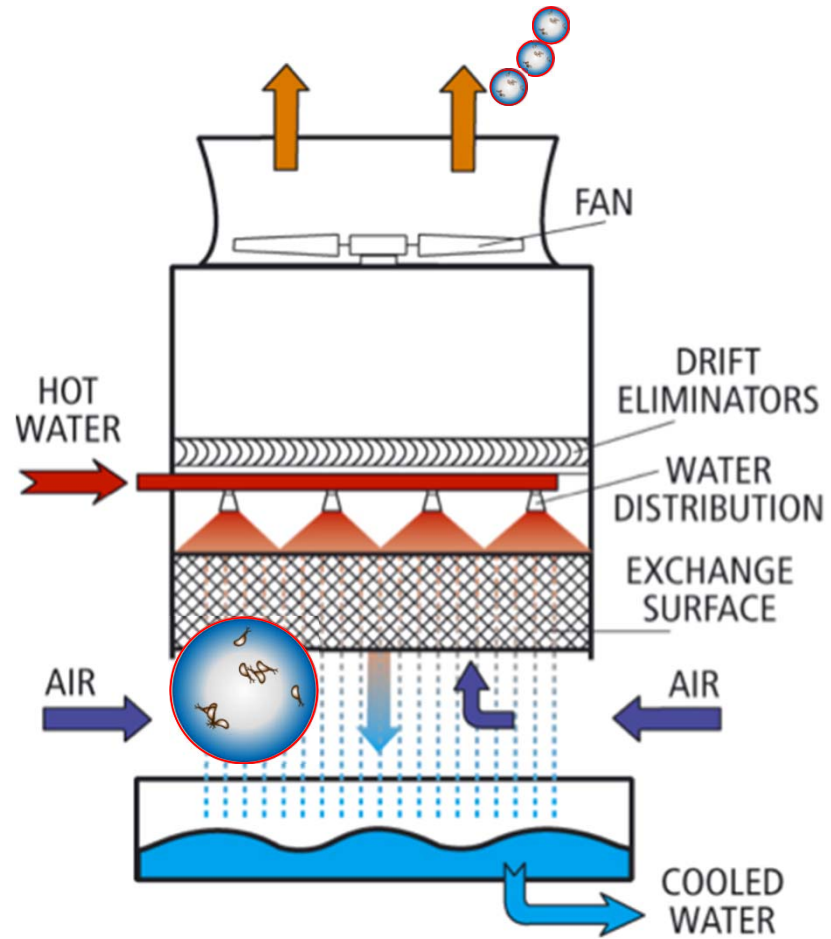
Nonpotable Water



Infectivity – Aerosolization is the key to infectivity



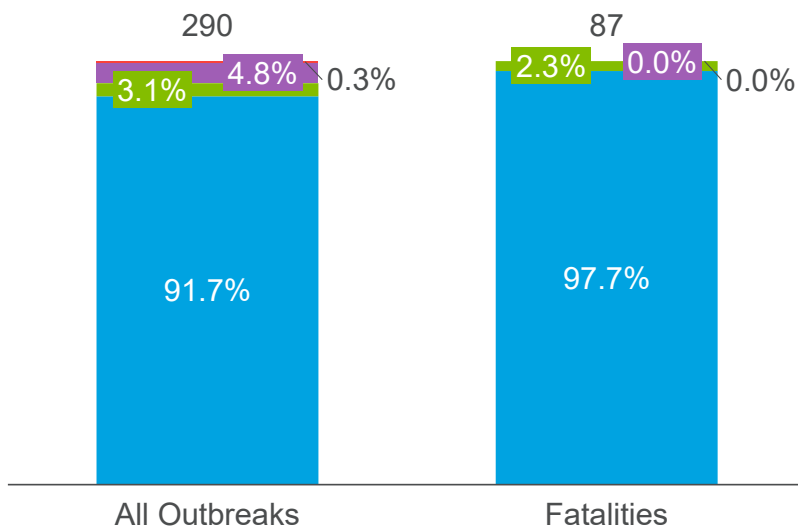
Shower aerosol



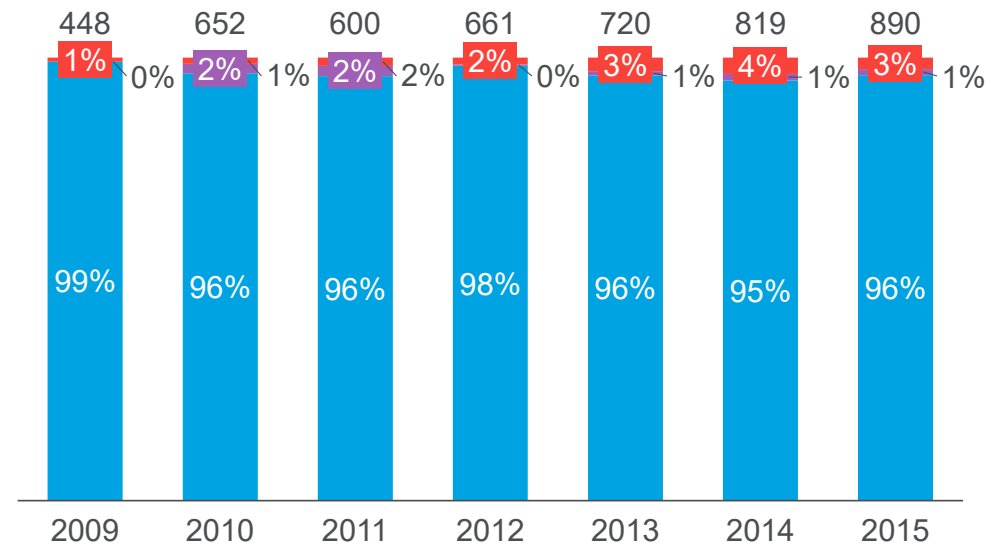
Cooling tower aerosol

Legionella pneumophila is responsible for the overwhelming majority of disease

CDC National Outbreak Reporting System
Etiology of *Legionella* outbreaks, 2009-2017



ECDC Legionnaires' Disease Surveillance Report
Culture Confirmed Cases, 2009-2015



■ *Legionella pneumophila*
■ Unknown *Legionella* species
■ *Legionella pneumophila* and other
 ■ Other *Legionella* species

The good news: Most Legionnaires' cases can be prevented

9 in 10

**CDC investigations
show almost all
outbreaks were
caused by problems
preventable with
more effective
water management.**

Adapted from CDC *vital*Signs June 2017
<https://www.cdc.gov/vitalsigns/pdf/2017-06-vitalsigns.pdf>



Managing Legionnaires' disease risk

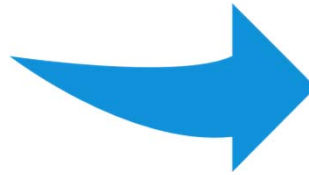
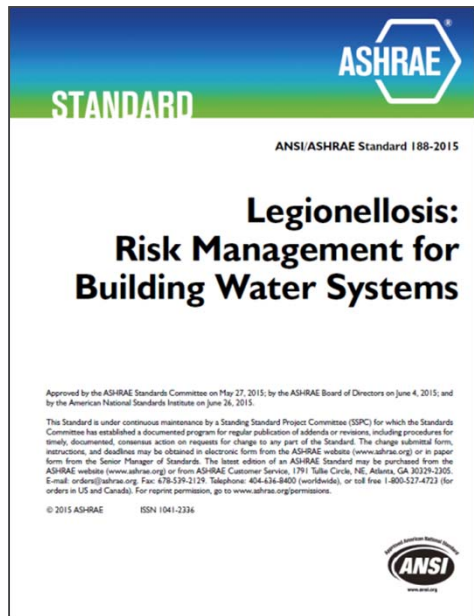
Many organizations focus on managing *L. pneumophila*



World Health Organization



ASHRAE 188:2018 Standard and the CDC Tool Kit: Tools to create WSM plans



ASHRAE 188

- First North American standard
- Only ANSI Accredited Standard
- Consensus view of the best practices for managing Legionnaires' risk in building water systems
- Recommended Water Safety Plan
- Testing specific section

CDC Toolkit

- Yes/No Worksheet for risky building areas
- Walk through of *Legionella* mgmt. program
- Example problem scenarios
- Healthcare-specific guidance

Water Management Plan (WMP) ASHRAE 7 step program

WATER MANAGEMENT PLANNING STEPS



ROLES & RESPONSIBILITIES



DESCRIBE THE SYSTEM



IDENTIFY RISK AREAS



DETERMINE CONTROLS



MONITORING & CORRECTIVE
ACTIONS



VERIFY & VALIDATE
THE PLAN



DOCUMENT

Testing is increasing due to increased water management plan programs

- ASHRAE Guideline 12:2020 and pending updates to Standard 188 will list **accredited lab use** for water management program Validation testing
- Accreditation Scope addition for *Legionella* is not available in most states since EPA does not include *Legionella* testing nor an MCL in any regulatory programs
- Labs in TNI-based states CAN add *Legionella* testing through select states, such as Florida, New Hampshire and others
- **KEY POINT:**
 - If you have TNI-based accreditation, you can add *Legionella* testing and offer this testing to support water management and re-opening guidance



Legionella testing methods

qPCR for *L. pneumophila* and Legionella species

Some laboratories use qPCR, or molecular detection of *Legionella*, to screen samples that should be cultured. In a case or an outbreak, you will need to retain the **live culture** for future testing, so PCR is a tool, *but not a substitute* for culture.



Culture testing methods for water → the gold standard

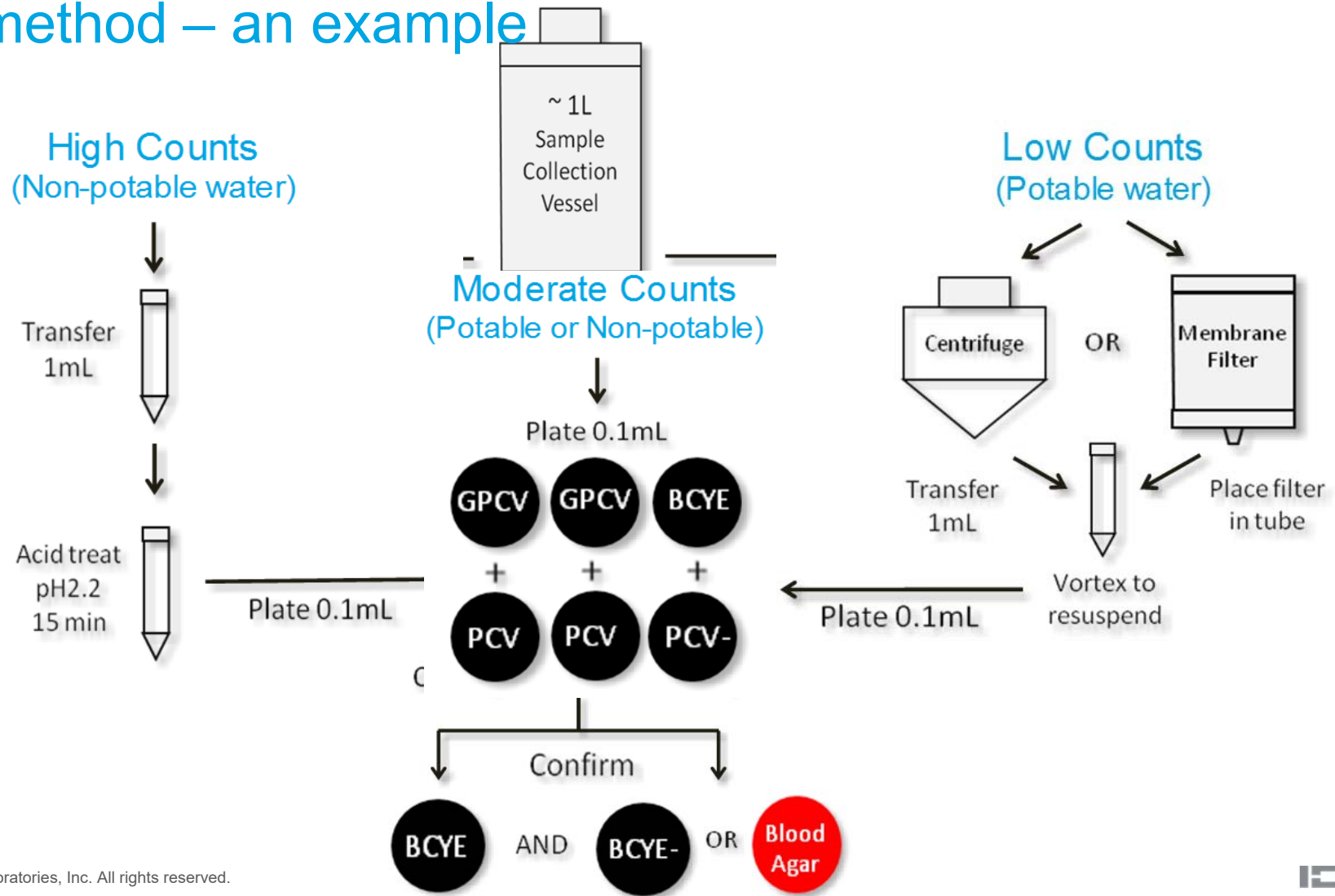
Liquid Culture
Reports in MPN



Solid media Culture
Reports in CFU

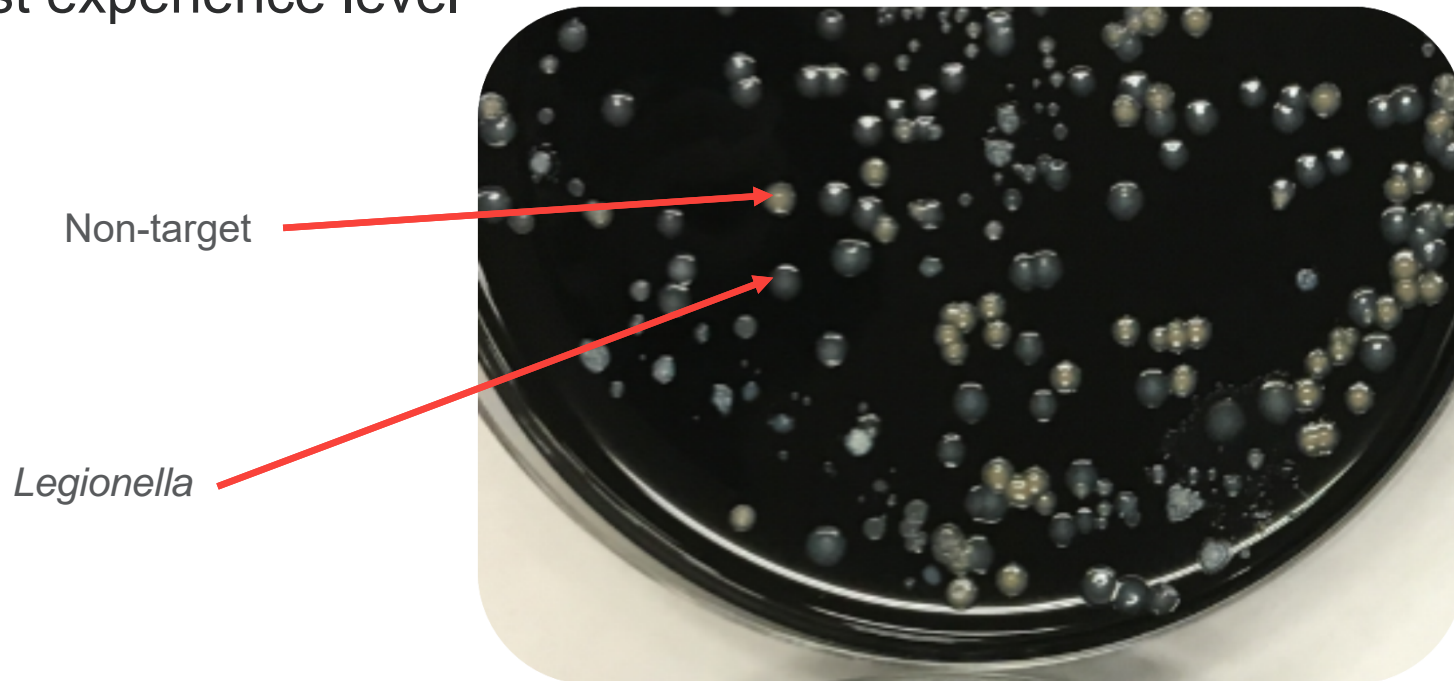


CDC method – an example



Spread-plate methods are not easy to interpret nor reproduce

- Subjectivity of colony interpretation
- Interference of non-*Legionella* organisms
- Loss of organisms due to harsh pre-treatments
- Analyst experience level



Legiolert™ liquid culture method

- 7-day *Legionella pneumophila* culture test
- Finds all serotypes of *L. pneumophila*
- Easy adoption, simple training
- Highly validated by 3rd party global organizations, including AFNOR and ISO
- Perform latex agglutination directly from positive wells
- Isolate/retain strains from positive wells
- Accredited PT and QC kits available
- Multiple peer-reviewed publications and trials





Who are potential *Legionella* testing customers?

Those looking for accredited Legionella testing labs

- Water treaters, many of whom are already in large buildings to treat water
- Water management plan providers and consultants
- Healthcare facilities: hospitals, nursing/convalescent homes, adult daycares
- Schools and Universities
- State health labs
- Drinking water utilities
- Hotels
- High tourism sites and water parks
- Large and/or complex buildings

Resources

- Water treaters and water management plan providers: www.AWT.org
- Learn about the standard and guideline www.ASHRAE.org
- IDEXX Currents article: The lab's role in water safety:
<https://www.idexxcurrents.com/en/latest/understanding-your-lab-s-role-in-a-water-safety-plan/>
- US Centers for Disease Control and Prevention (CDC):
<https://www.cdc.gov/legionella/about/prevention.html>
- State and Territorial public health offices:
<https://www.cdc.gov/publichealthgateway/healthdirectories/healthdepartments.html>

Summary

- *Legionella pneumophila* is the causative agent of Legionnaires' disease and it is significantly rising
- Water management planning can reduce the risk of Legionnaires' disease, especially as buildings reopen after COVID closures
- Effective water management plans follow a prescribed set of steps, such as those in ASHRAE Standard 188
- Plan Validation culture testing is to be done at accredited labs
- Liquid vs. Solid culture has many benefits to the lab and your customers
- Resources to find people looking to test for *Legionella pneumophila*



Questions & Discussion