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New Onsite Legionella Test Enables Cooling Tower Monitoring in Minutes

IDEA Campus Energy 2021
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Presented by:

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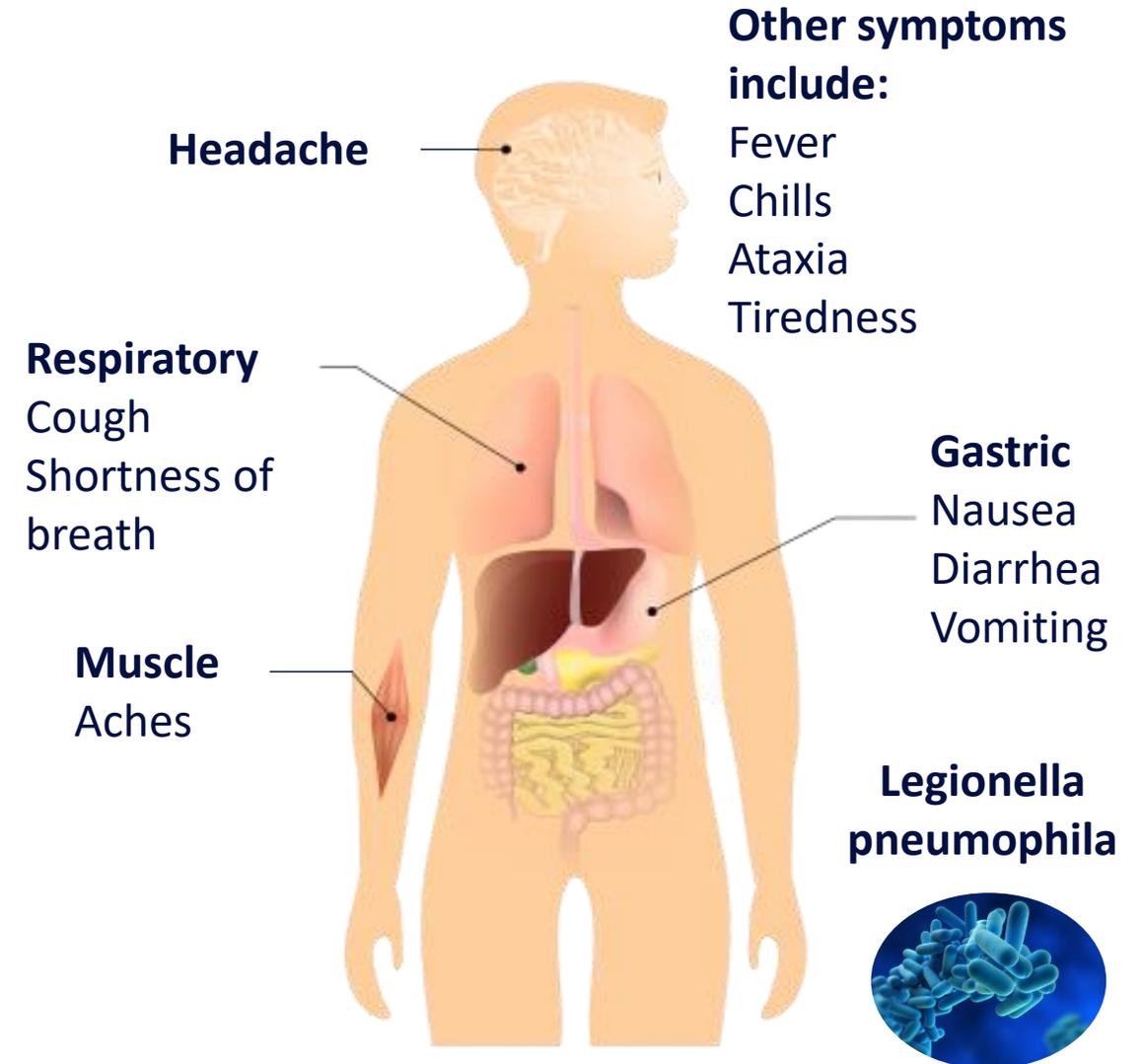
Q&A Will Not Be Answered Live

**Please submit questions in the Q&A box.
The presenters will respond to questions off-line.**

What is Legionella?

- Legionella is a bacteria that can contaminate water sources such as HVAC cooling towers, showers, and fountains.
- Legionnaires' disease kills more people in the United States than any other reported waterborne disease.¹

The time between the patient's exposure to the bacterium and the onset of illness is 2 to 10 days.



Understanding Legionella

800%
Increase in the number of reported Legionnaires' disease cases in the United States since 2000.¹



52,000 – 70,000
Estimated number of Legionnaires' disease cases in the US.²



10%
Fatality rate of Legionnaires' patients³. In healthcare-associated cases, the fatality rate is 25%.⁴



Legionnaires' disease is on the rise.

1. Reported cases of notifiable diseases, by region and area – United States and U.S. territories, 2016.

2. National Academies of Sciences, Engineering, and Medicine. 2020. Management of Legionella in Water Systems. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25474>.

3. Dooling KL, Toews KA, Hicks LA, et al. Active Bacterial Core surveillance for legionellosis—United States, 2011–2013. *MMWR Morb Mortal Wkly Rep.* 2015;64(42):1190–3.

4. Soda E, Barskey A, Shah P, et al. Vital Signs: Health care-associated Legionnaires' disease surveillance data from 20 states and a large metropolitan area — United States, 2015. *MMWR Morb Mortal Wkly Rep.* 2017; 66(22);584–9.

Prolonged shutdown increases Legionella risk in building water systems



- Businesses around the world shut down or reduced operations for extended periods due to the COVID-19 pandemic.
- Stagnant water systems create an ideal environment for Legionella bacteria to grow.
- As the economy slowly opens up, many idled water systems will be brought back into service.
- Having a complete program to monitor, treat, and record Legionella will be a critical component to restart operations safely.

How can you reduce risk?



Mitigation Guidelines developed by the Cooling Tower Institute (CTI), OSHA, CDC, ASHRAE, UK HSE, UK BACS, and the health services in Japan, Australia, Singapore, Taiwan, and others:

- Maintain clean systems.
- Limit exposure of personnel to cooling systems.
- Ensure systems that are shut down for a period of time are treated before being returned to service.
- Have a clear water management plan that addresses:
 - Biological activity
 - Monitoring and testing

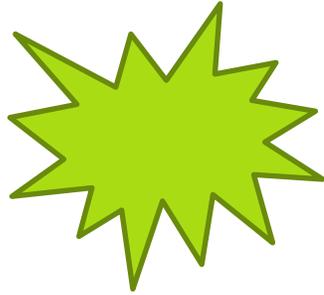
Treatment

- Oxidizing biocides or halogen containing chemicals.
- Augment or substitute with non-oxidizing biocides as needed.
- Both biocide treatments are effectively augmented with the use of biodispersants.



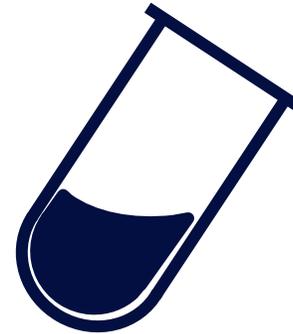
Biological monitoring tools

ATP Testing



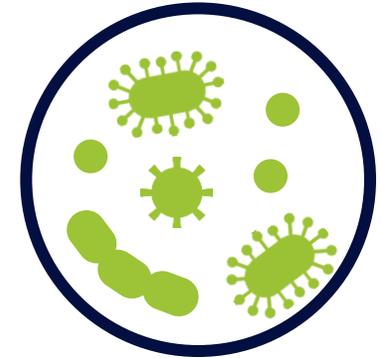
- Total activity
- 15 minutes

Dipslides & Petrifilms



- Semi-selective
- 24 to 72 hours

Laboratory Culture



- Species selective
- Up to 14 days

Historical gap in rapid, species-selective methods

Solution: Spartan Cube[†] Legionella DNA test



**Portable Legionella DNA test.
Accurate results in only 45 minutes.**



**Water sample tested immediately
on-site (no bacterial degradation
during shipping).**

**Legionella DNA amplified using
proprietary qPCR that preferentially
captures live bacteria.**

Benefits to the industry



Reduce Legionella risk

- Regular treatment and monitoring by combining appropriate chemical treatment with fast, accurate Legionella testing.
- Low seasonal cost, per facility, to protect the health of building occupants, students and employees.

Cost savings

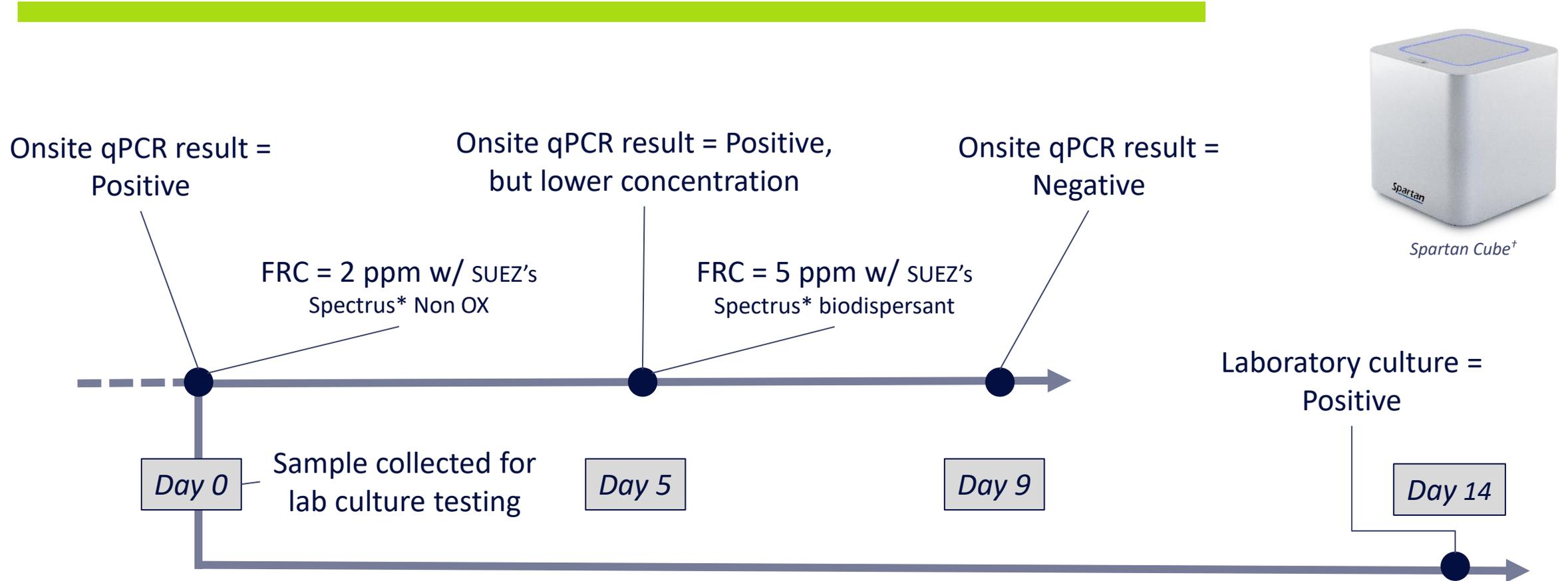
- Avoid expensive facility closures, lawsuits, and negative publicity from Legionella outbreaks.
- Quickly determine the effectiveness of remediation procedures and stay ahead of the curve of compliance testing.

Case study: Legionella risk mitigated with rapid, onsite testing



- An HVAC cooling tower was in reduced use due to the COVID-19 pandemic.
- The cooling water was treated with a standard program during this period, including continuous halogenation of 0.5 – 1.0 ppm.
- The HVAC cooling tower prepared for increased utilization following the COVID-19 lock-down.
- Before returning to full operation:
 - Samples were sent to a CDC ELITE certified lab for culture-based testing and
 - Spartan onsite quantitative Polymerase Chain Reaction (qPCR) Legionella test was conducted.

Case study continued



Risk mitigated 5 days before traditional testing identified the initial contamination

- **The speed of the testing was evident in this example. Within a few hours, the SUEZ team was able to perform initial remediation activities.**
- **Rapid retests were also performed, enabling secondary disinfection and validation without waiting weeks to determine if remediation efforts were successful.**
- **The ability to perform tests onsite with Spartan's qPCR technology delivers accurate results by eliminating shipping-related changes in bacterial concentration prior to analysis.**
- **This case study demonstrates how rapid and accurate onsite testing combined with industry-leading biocides can help to minimize Legionella risk for customers.**

Thank you

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