On-site Legionella qPCR test detects Legionella contamination missed by culture

Introduction

- In a 14-year study of Legionella outbreaks, the CDC found that the most common sources of infection were potable water and cooling towers. For example, the CDC found pathogenic strains of *Legionella pneumophila* growing in 27% of cooling towers across the United States.[1]
- In Canada, the MD 15161 standard from Public Services & Procurement Canada (PSPC) requires monthly Legionella culture testing of cooling towers. Despite this standard, Legionella outbreaks continue to occur in government buildings.
- A major problem is the CDC found that ELITE-certified labs undercounted Legionella by an average of 17-fold and results differed between labs by 6-fold.[2] In another example, a study of PSPC cooling towers found that Legionella degraded in 72% of water samples shipped to the lab. This resulted in culture failing to detect Legionella contamination at levels >1,000 bacteria/mL (>100× the acceptable limit).[3]
- To solve this problem, Spartan Bioscience has developed the first on-site qPCR test that provides results in 45 minutes. The test is the 2018 winner of the HVAC industry's top product innovation award, as judged by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

Case Study

- Norkem Inc. is a chemical manufacturer and consulting company that specializes in water treatment of over 1,500 locations across Canada.
- One of Norkem's clients received negative results from their regular *Legionella pneumophila* culture plate count of their cooling tower.
- At the same time as the culture plate count sample, Norkem performed an on-site Spartan test and found Legionella above the acceptable limit.
- Norkem immediately reacted to the test result, disinfected the tower and verified the disinfection with another Spartan test.

Conclusion

- Monthly culture testing alone can miss Legionella contamination in buildings.[3]
- It is important to regularly test water sources for Legionella because the bacteria can grow to outbreak levels in as few as 7 days.[4,5,6]

"Spartan's on-site test helps our clients prevent the risk of Legionella outbreaks."

- Peter Bozel, CEO

NORKEM INC.
COMMERCIAL & INDUSTRIAL WATER TREATMENT

References

1. Garrison LE et al. (2016). *Morb Mortal Wkly Rep.* 65(22): 576-584.
2. Lucas CE, Taylor TH, Fields BS. (2011). *Water Res.* 45(15): 4428–4436.
3. Ahmed S et al. (2019). *Journal of Water and Health.* 17(2): 237–253.
4. Ristroph JD, Hedlund K, Allen RG. (1980). *Journal of Clinical Microbiology*. 11(1): 19–21.
5. French Ministry of the Environment. (2006). *ARIA*. No. 19456.
6. Marshall AG, Bellucci EC. (1986). *Hospitality Review*. 1(4): Article 2.
7. Norkem Inc. Website: norkemwatertreatment.com