

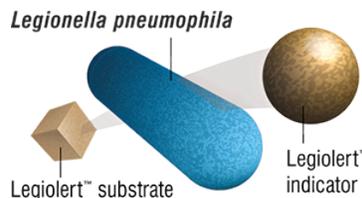
# LEGIONELLA DETECTION AND IDENTIFICATION AT DELAWARE PUBLIC HEALTH LABORATORY



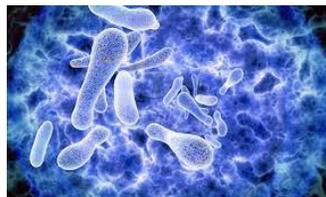
DELAWARE HEALTH  
AND SOCIAL SERVICES  
Division of Public Health



At DPHL, multiple testing avenues are available for Legionella identification and diagnosis. For clinical samples, DPHL is CLIA validated to perform urine antigen testing to determine presence of Legionella bacterium molecules in a patient's urine, which would indicate that the patient has been infected with Legionella if the patient is also presenting with pneumonia. Additionally, respiratory samples from patients can be cultured and grown at DPHL utilizing various Buffered Charcoal Yeast Extract (BCYE) agars. Upon visualizing growth that is consistent with Legionella species, these suspect isolates are analyzed utilizing a MALDI-TOF (Matrix- assisted laser desorption/ionization time of flight mass spectrometry) instrument, which can determine the exact species of Legionella, most commonly *Legionella pneumophila*.



The Legiolert method, that is based on a bacterial enzyme detection technology, is used for the detection of *Legionella pneumophila* in environmental potable and non-potable samples such as drinking water (kitchen sink, bath tub etc.) , hot tubs or cooling towers. The sample is incubated for 7 days using the Quanti-Tray method for Most Probable Number (MPN) enumeration. After incubation, any brown color and/or turbidity indicates a positive and minimizes subjective result interpretation. Positive environmental samples are cultured and confirmed utilizing the MALDI-TOF instrument and BCYE agars.



A digital PCR method for environmental samples to detect Legionella species, *Legionella pneumophila*, and *Legionella longbeachae* is currently being implemented so that the detection turn-around time can be sooner than 7 days. These results will be used as preliminary results during an outbreak and a surveillance tool to be utilized with the other lab testing methods. A PCR method will also lead to the utilization of whole genome sequencing, to detect potential pathogens by monitoring Legionella outbreaks in Delaware. This sequencing data will allow our epidemiologists to perform contact tracing on a national level as well as assess community spread in essential congregate settings like schools, colleges, and hospitals.