

# Legionella sampling in single-family residences in New Jersey



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The New Jersey Department of Health implemented the Legionella Home Sampling Project to estimate the background occurrence of Legionella in single-family residences; identify household factors and water quality parameters associated with Legionella detection; and empower homeowners with information and best practices for maintaining a healthy household water system.

## The “What”

In response to the increasing number of reported cases of Legionnaires' disease (LD) in the United States, the New Jersey Department of Health (NJDOH) recognized the need for improved surveillance and understanding of this water-borne illness. LD has emerged as a significant public health concern, ranking among the costliest water-borne diseases and causing a considerable number of deaths.

While most LD outbreaks are associated with complex water systems in buildings such as hotels and health care facilities, most cases are classified as sporadic, lacking a known epidemiological link or outbreak source. In New Jersey, approximately 90 percent of LD cases fall into the sporadic occurrence category. Due to resource limitations and the diverse range of potential water sources in homes and

communities, initiating a full outbreak investigation for each sporadic case is not feasible.

Recognizing the underexplored role of smaller premise plumbing settings, including single-family residences, as potential sources of *Legionella* exposure, NJDOH implemented the Legionella Home Sampling Project using Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) funding. The goals were to estimate the background occurrence of *Legionella* in single-family residences; identify household factors and water quality parameters associated with *Legionella* detection; and empower homeowners with information and best practices for maintaining a healthy household water system.

To achieve these objectives, NJDOH recruits homeowners and conducts household assessments with each resident. Water samples are collected and undergo laboratory testing to determine *Legionella* presence and concentration levels. Homeowners receive personalized result letters detailing the findings from the environmental sampling and providing recommendations for maintaining a safe and healthy household water system.

## The “So What”

In July 2020, the team launched a comprehensive participant recruitment effort. Recruitment included recently diagnosed LD cases and interested volunteers throughout the state. To expand project awareness and foster collaboration, the project team established partnerships with local health departments, making them additional



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points of contact for residents in their jurisdictions. The project has achieved significant milestones and continues to adapt and expand its reach. The project team has conducted environmental sampling for *Legionella* in a total of 160 homes.

To streamline data collection and management, a comprehensive database was developed to store project-related information such as participant contact details, environmental assessments, and laboratory results. This database facilitated efficient querying and the generation of sampling plan reports. ELC funding enabled a collaboration between the project team and a CDC ELITE member laboratory. The laboratory was responsible for collecting environmental samples for *Legionella*, measuring water quality parameters, and performing analyses on the submitted samples.

The impact of the Legionella Home Sampling Project is evident in the enhanced knowledge and awareness among homeowners, local health departments, and the public at large. By promoting cross-sector collaboration and leveraging modern technology, the project has strengthened the public health response to LD and contributed to a safer and healthier environment for all New Jersey residents.

### The “Now What”

NJDOH remains committed to providing essential services to homeowners diagnosed with Legionnaires' disease. Environmental *Legionella* testing will continue to be offered, accompanied by real-time result interpretation and water management guidance. Recognizing the importance of inclusivity, NJDOH plans to expand the inclusion criteria for home sampling, ensuring that vulnerable populations also have access to these crucial services.

To further enhance the project's capabilities, NJDOH intends to expand the partnership with its public health laboratory for conducting *Legionella* culture analysis for all home sampling efforts. This collaboration will strengthen the diagnostic capabilities and accuracy of the project, enabling more comprehensive analysis of *Legionella* in residential water systems. NJDOH will work closely with local health departments to raise awareness about sampling opportunities, provide homeowners with valuable resources for water management, and establish channels of communication for reporting sporadic cases of LD that meet the project's sampling criteria.

The impact of the Legionella Home Sampling Project extends beyond the immediate project itself. By harnessing modern technology and data-driven decision-making, the project has improved systems and data quality for all epidemiology and laboratory surveillance activities. The project has strengthened partnerships between public health entities, enhancing collaboration and fostering a more coordinated response to public health threats.

The long-term sustainability of epidemiology and laboratory activities is at risk if funding decreases, or long-term sustainable funding is not available. To ensure the continued success of these critical activities, additional funding is necessary. Moreover, alongside financial support, there is a need for other essential resources to support modernized and ongoing epidemiology and laboratory activities. This includes advanced laboratory equipment, enhanced data management systems, and continuous training and professional development opportunities for public health professionals.

Key contributors to this project include Jessie Gleason, Rebecca Greeley, and Kathleen Ross, New Jersey Department of Health.