

Legionella and Legionnaires' Disease

MARCH 28, 2023



Where are *Legionella* bacteria found?

Legionella is a type of bacterium found naturally in freshwater environments (e.g., lakes, streams), but often in very low amounts. It can become a health concern when it grows and spreads in human-made water systems such as hot tubs, building premise plumbing, and cooling towers (structures that contain water and a fan as part of centralized air-cooling systems for building or industrial processes). *Legionella* can live and multiply in the water system unless proper steps are taken to prevent the growth of the bacteria.

How does *Legionella* bacteria get into a house or building?

Homes and buildings may receive water from a public water system that is required to provide water that meets certain quality and safety standards for drinking purposes. Even when the public water system is working correctly, the water it provides is not sterile. That means it could still have a small amount of bacteria in it. When these bacteria get into the pipes inside a home or building, they can grow and multiply if the conditions are right. For example, this can happen if the temperature of the hot water within the home is kept below 120 degrees Fahrenheit.

What is Legionnaires' disease?

Legionnaires' disease is a severe type of pneumonia (lung infection) caused by bacteria called *Legionella*. Legionnaires' disease can be treated with antibiotics, however most people require care in a hospital.

How do you get Legionnaires' disease?

Legionella bacteria can enter the lungs when a person breathes in aerosolized water (e.g., small droplets of water in the air) containing *Legionella*. Aerosolized water can come from showerheads, faucets, hot tubs, humidifiers, and decorative fountains. Less commonly, people who have swallowing difficulties (e.g., weak/impaired swallowing) can become sick by aspirating water that contains *Legionella* bacteria. This happens when water accidentally "goes down the wrong pipe" and enters the lungs while drinking. Legionnaires' disease is not spread from contact with a sick person.

Who is at risk for Legionnaires' disease?

Most healthy people exposed to *Legionella* bacteria do not get sick. People at increased risk of getting sick are:

- People 50 years or older
- Current or former smokers
- People with a chronic lung disease (like chronic obstructive pulmonary disease or emphysema)
- People with weak immune systems or who take drugs that weaken the immune system (like after a transplant operation or chemotherapy)
- People with cancer
- People with underlying illnesses such as diabetes, kidney failure, or liver failure

The risk of developing Legionnaires' disease increases with age, especially for individuals with chronic or underlying health conditions.

What are the symptoms of Legionnaires' disease?

When *Legionella* enters the lungs, it can cause a severe type of pneumonia (i.e., lung infection) called Legionnaires' disease. Symptoms of Legionnaires' disease occur within 2-14 days after being exposed to *Legionella* bacteria and can include fever, cough, shortness of breath, chest pain, headache, and muscle aches. Legionnaires' disease can be treated with antibiotics; however, most people require treatment in a hospital. Without proper treatment, Legionnaires' disease can be deadly. If you develop symptoms of Legionnaires' disease, please seek attention from a healthcare provider immediately.

How is someone diagnosed with Legionnaires' disease?

Doctors use chest x-rays or physical exams to check for pneumonia. Your doctor may also order tests on a sample of urine and sputum (phlegm) samples to see if your lung infection is caused by *Legionella* bacteria.

Can Legionnaires' disease be treated?

Yes, the disease can be treated with antibiotics, however, most people require care in a hospital.

Is Trenton Water Works under investigation for Legionella?

The New Jersey Department of Health (NJDOH) has investigated several cases of Legionnaires' disease among residents served by Trenton Water Works (TWW). Additionally, *Legionella* bacteria was detected in cold water samples collected from different areas of the water distribution system. No other common link among cases were identified. NJDOH could not rule out the public water system managed by Trenton Water Works as a possible source of exposure for those cases and the larger community. *Legionella* testing and evaluation of environmental conditions within the water system is ongoing.

Can I drink water from my tap if I receive water from Trenton Water Works?

You cannot get Legionnaires' disease by drinking water. The bacteria need to enter the lungs to cause infection. However, people who have swallowing difficulties can become sick if water with *Legionella* bacteria in it accidentally goes into the lungs ("goes down the wrong pipe"). If you have health conditions that make swallowing difficult, you may want to consider drinking bottled water instead.

Can I shower if I receive water from Trenton Water Works?

Currently, there is no recommendation for healthy individuals to limit showering. If you are severely immunocompromised and receive water from Trenton Water Works, your healthcare provider may recommend that you consider installing a specialty biological 0.2-micron filter on your showerhead that complies with industry standards (ASTM F838) to filter out any *Legionella* bacteria that may be present in your home water system. Alternatively, you may want to consider taking a bath instead of a shower to limit. Please note, when filling up the bathtub, it is important to fill the tub slowly to reduce splashing and water mist and minimize your time in the bathroom while the tub is filling. A conversation with your healthcare provider may help you assess your personal level of risk based on underlying health conditions and co-morbidities

Will my home water filter remove *Legionella*?

Many homes have carbon filters installed either at their sink or in their refrigerator. These filters are not effective at removing *Legionella* bacteria from the water. Carbon filters can promote *Legionella* growth because they can reduce the amount of chlorine in the water. If you have carbon filters installed in your home, please ensure you are maintaining them according to the manufacturer's instructions.

More information about household water treatments is available on [**Centers for Disease Control and Prevention's Guide to Water Treatment Technologies for Household Use**](#) and [**Choosing Home Water Filters and Other Water Treatment Systems**](#) webpages.

Can I use my home air conditioning unit?

Home air conditioning (A/C) units do not use water to cool the air, so these home units do not aerosolize water and are not a risk for exposure to *Legionella*. Car or window air conditioners are also not a concern.

Are there any activities involving water that I should avoid?

Any individual at increased risk for Legionnaires' disease should consider avoiding high-risk activities such as spending time in or near a hot tub, decorative fountain, misters, or power washing, which generates increased amounts of aerosols (small droplets of water in the air) or mist.

Is there anything I can do to get rid of or minimize *Legionella* in my house if I receive water from Trenton Water Works?

The **New Jersey Department of Health** recommends residents follow best practices (see below) to reduce the potential for *Legionella* bacteria growth in their plumbing systems and devices that use water. More information for residents is available on NJDOH's [**Legionella website**](#) and the [**Centers for Disease Control and Prevention's Preventing Waterborne Germs at Home**](#) webpage.

- **Avoid high-risk activities.** If you are at an increased risk for Legionnaires' disease, consider avoiding hot tubs, decorative fountains, power washing, or similar activities, which may generate increased amounts of aerosols or mist. A conversation with your healthcare provider may help you assess your level of risk based on underlying health conditions and co-morbidities. Your healthcare provider may recommend that you consider installing specialty biological 0.2-micron filters on your showerhead if you are severely immunocompromised and receive water from [**Trenton Water Works**](#).
- **Maintain in-home medical equipment.** If using medical equipment that requires water for use or cleaning, such as non-steam generating humidifiers, CPAP or BiPAP machines, nasal irrigation devices such as Neti Pots, and attachments for nebulizers, follow manufacturer's instructions for use and maintenance, including using sterile water instead of tap water in the device.
- **Clean and/or replace your showerheads and faucet aerators (screens) per the manufacturer's instructions whenever buildup is visible.** This is particularly important if you haven't cleaned your showerheads or faucet aerators recently. Cleaning might require removing the showerhead and hose and soaking in a solution (such as white vinegar or bleach) to remove build up. If using chemicals, follow the instructions on the back of the bottle for safe use.
- **Keep your water heater set to a minimum of 120 degrees Fahrenheit.** This temperature will reduce *Legionella* growth and avoid the potential for scalding (hot water burns). Setting the water heater to a higher temperature may better control *Legionella* growth, especially if you have household members at increased risk for Legionnaires' disease. However, if the temperature is greater than 120 degrees Fahrenheit, take extra precautions to mix cold and hot water at the faucet and shower to avoid scalding. If you have household members at increased risk of scalding, such as young children or older adults, you may consider installing a thermostatic mixing valve. A mixing valve allows your water to be stored at a higher temperature within your water heater to help kill bacteria while eliminating concerns about water being too hot at sinks or showers. If you decide to install a mixing valve, follow the manufacturer's instructions for routine cleaning and maintenance to avoid bacteria growth within the valve. Consider consulting with a licensed plumbing professional to ensure you follow your local codes and ordinances for home plumbing repairs.
- **After cleaning showerheads and faucet aerators and increasing the water heater's temperature, thoroughly flush the water at each tap (e.g., sink, showerhead) for 20 minutes.** Try to minimize exposure to splashing and mist generation, for example, by leaving the room while the water is running.

- **Conduct routine flushing.** Unused sinks and shower taps can increase the risk of *Legionella* growth in other areas of the home. Let your faucets and showers run for at least three minutes when they have been out of use for over a week. Minimize exposure to splashing and mist generation, for example, by leaving the room while the water is running. Additionally, consider flushing your water following any water disruption to your home, such as low pressure or discoloration, resulting from a water main break or nearby hydrant flushing.

- **Follow the manufacturer's instructions for maintaining your water heater and expansion tank, including periodic flushing, draining, and sediment removal.** If the manufacturer's instructions are unavailable, seek advice from a licensed professional.

- **Clean and/or replace all water filters per the manufacturer's instructions.** Properly maintain all whole-house (e.g., water softeners) and point-of-use filters (e.g., built-in refrigerator filters).

- **Drain garden hoses and winterize hose bibs.** Detach and drain the hose, shut the water valve off inside the home, and drain the pipe when not used for the season.

- **Follow the manufacturer's instructions for maintaining your hot tub.** Ensure disinfectant levels (e.g., chlorine) and maintenance activities (e.g., cleaning, scrubbing, replacing the filter and water) are followed. For more information, review the **Centers for Disease Control and Prevention (CDC) [recommendations for residential hot tub owners](#)**.

- **Operate and maintain your indoor and outdoor decorative fountains according to manufacturer's instructions to limit your exposure to *Legionella*.** Household members at increased risk for Legionnaires' disease should avoid exposure to decorative fountains. Find minimum cleaning recommendations in the CDC's [Legionella Control Toolkit](#) if the manufacturer's cleaning and maintenance instructions are unavailable.

- **Remove, shorten, or regularly flush existing dead legs.** Plumbing renovations can lead to the creation of dead legs, a section of capped pipe that contains water but has no flow (or is infrequently used). For future renovations, ensure your plumber avoids creating dead legs.

I own or manage a building that receives water from Trenton Water Works. Is there anything I can do to get rid of or minimize *Legionella* in building's water?

- **Complete this quick yes/no [worksheet](#) to determine if your building, or certain devices in your building, need a Water Management Program.** Resources to help you develop a **Water Management Program** and for *Legionella* control in common sources of exposure are available at the [New Jersey Department of Health's *Legionella* website](#).

- **Store hot water at temperatures above 140 degrees Fahrenheit and ensure hot water in circulation does not fall below 120 degrees Fahrenheit** (or at the highest temperature allowable by local regulations and codes). Install thermostatic mixing valves as close to fixtures to prevent scalding while permitting circulating hot water temperatures above 120 degrees Fahrenheit.

- **Clean and maintain water system components.** These components include devices such as thermostatic mixing valves, aerators, showerheads, hoses, filters, water heaters, storage tanks, and expansion tanks, regularly per manufacturer instructions.

- **Flush hot and cold water at all use points (faucets, showers, drinking fountains) at least weekly** to replace the water standing in the pipes. Healthcare settings and facilities that house vulnerable populations should flush at least twice weekly.
- **Remove dead legs or, where unavoidable, make them as short as possible.** Where a dead leg (a section of pipe capped off with little or no water flow) cannot be avoided, flush regularly to prevent water stagnation, which may require the installation of a drain valve.
- **Monitor water quality parameters such as temperature, disinfectant residuals, and pH regularly.** Adjust the frequency of monitoring based on the stability of values. For example, increase the frequency of monitoring if there is a high degree of measurement variability. Pay particular attention to water quality parameters following a water disruption event, such as low pressure or discoloration, resulting from a water main break or nearby hydrant flushing.
- **Safely operate and regularly maintain cooling towers to protect staff, visitors, and the adjacent community from exposure to *Legionella*.** Use a **Water Management Program** to establish, track, and improve operation and maintenance activities.
- **Follow recommendations from the New Jersey Department of Health when reopening your facility following a prolonged shutdown or reduced operation due to the COVID-19 Pandemic.** Recommendations are available at <https://bit.ly/3CG2s8S>.

I'm immunocompromised. Should I be taking additional steps to protect myself?

Any individual at increased risk for Legionnaires' disease should consider avoiding high-risk activities such as spending time in or near hot tubs, decorative fountains, and misters. Additionally, those at increased risk for Legionnaires' disease should avoid power washing, which generates increased amounts of aerosols (small droplets of water in the air) or mist. Have a conversation with your healthcare provider to determine whether you should take a bath instead of showering or install biological 0.2-micron filters that complies with industry standards (ASTM F838) on your showerhead.

I receive water from TWW and am concerned about my health, but I am unable to implement all of the recommendations. What are my risks?

Even if exposed to *Legionella*, healthy people typically do not become sick with Legionnaires' disease. When exposed to *Legionella* bacteria, the risk of becoming sick with Legionnaires' disease depends on several factors, including the type of *Legionella* species present and your own underlying health conditions. It is unknown whether individuals with *Legionella* bacteria detected in their home are more likely to develop Legionnaires' disease, however, there is no "safe" amount of *Legionella*. Therefore, health officials are urging residents to implement best practices to limit *Legionella* bacteria growth and transmission in their household water systems.

Although many of these recommendations are easy to implement and at little to zero cost, we understand some of these recommendations could be challenging (e.g., removing dead legs, flushing and draining water heaters). At minimum, it is important take steps to reduce your exposure to devices that produce increased amounts of aerosols, such as hot tubs, decorative fountains, and power washers. If you need to use other types of devices that require water, such as non-steam generating humidifiers, CPAP and BiPAP machines, and Neti Pots, be sure to follow manufacturer's instructions for use and maintenance. This often includes using sterile water instead of tap water.

Should I get my water tested for *Legionella*?

Currently, there is no recommendation for homeowners to get their water tested for *Legionella*. Instead, all residents are encouraged to take steps to reduce the potential risk of *Legionella* growth in their household water system by following **best practices for household plumbing**. If you decide to test the water inside your home for *Legionella* bacteria, it is important to use a **laboratory that specializes in this type of testing**.

Legionella bacteria testing can be performed by some commercial laboratories. It is important to note that the way water samples are collected, shipped, and analyzed can affect the results. Finding *Legionella* bacteria in your home does not mean you will develop Legionnaires' disease. In fact, most healthy people exposed to *Legionella* bacteria do not become ill.

If *Legionella* is in my home, will I get sick?

Most healthy people exposed to *Legionella* bacteria will not develop Legionnaires' disease. However, if you have symptoms of Legionnaires' disease you should see your healthcare provider for further evaluation. Legionnaires' disease is treatable with antibiotics following a diagnosis.

Why did NJDOH sample homes for *Legionella* last summer in Hamilton, Trenton, Ewing, Lawrence, and Hopewell?

Health officials were investigating potential sources of *Legionella* contributing to the higher burden of Legionnaires' disease cases in Hamilton Township. As part of these ongoing efforts, local and state health officials recruited 20 homeowners from Hamilton Township to voluntarily have their homes tested for *Legionella* in July 2022. Water samples collected from more than half the homes served by TWW identified the presence of *Legionella*, including in samples of the cold water entering the homes.

Based on these results, there was concern that *Legionella* bacteria may be present in other areas of the TWW distribution system outside of Hamilton Township. For this reason, in September 2022, NJDOH recruited 30 volunteers from municipalities served by Trenton Water Works to have their homes tested for *Legionella*. This sampling primarily focused on homes from Trenton, Ewing, and parts of Lawrence and Hopewell Township served by TWW.

Similar to the findings from Hamilton Township, approximately 80% of homes sampled in other municipalities had at least one *Legionella* detection in their hot water. In addition, more than half of the sampled homes had *Legionella* detected in the cold water entering the home. These data suggests that *Legionella* growth may be present throughout the TWW distribution system and there is concern that homes and buildings served by TWW may have *Legionella* present in the water they are receiving.

Is it possible that *Legionella* could be a concern in certain neighborhoods supplied by TWW but not in other neighborhoods that are serviced by TWW?

It may be possible that water quality can vary in different parts of the TWW distribution system. State officials are working with TWW to better understand sources of *Legionella* and other areas that may be impacted. However, at this time, health officials are recommending that all customers of TWW follow recommendations to reduce the potential risk of *Legionella* growth in their homes and buildings.

Why am I just hearing about this investigation now?

There have been previous communications with the public on this investigation, through press releases done in 2020 and 2022. Be sure to follow your Local Health Department on social media to regularly hear about updates in your local community.

How do I know if Legionnaires' disease is a problem in my community?

Each year about 250-350 cases of Legionnaires' disease are reported in New Jersey. In accordance with N.J.A.C. 8:57, Reportable Communicable Diseases, a healthcare provider is required to report all cases of Legionnaires' disease to public health authorities with 24 hours of diagnosis. Local Health Departments are responsible for investigating cases of Legionnaires' disease occurring in their jurisdiction.

Every reported case of disease is interviewed by your Local Health Department. These interviews provide health officials with information on locations individuals visited before they got sick. It is often difficult to determine where an individual became infected given that they may have been exposed at home or at any location visited in the 14 days prior to becoming ill.

When two or more people diagnosed with Legionnaires' disease report visiting the same location prior to becoming ill, such as a hotel or healthcare facility, then health officials will investigate that facility to determine if there are any potential sources of *Legionella* bacteria. If *Legionella* is identified, then health officials will work with the property owner or manager to ensure that control measures are put into place to stop the additional spread of *Legionella*.

When a community cluster is identified, where a number of cases are reported in a relatively short period of time or in a small area, investigators will conduct detailed interviews with the ill individuals to determine if they visited a common location, such as a specific building, or walked by the same decorative fountain. Health officials will also look for cooling towers in the area (which can spread droplet of water in the air over several miles) or other common sources such as a water utility company.

When there is evidence of ongoing risk to individuals or the community, your Local Health Department and NJDOH will develop education materials for affected individuals. Sometimes this is issued in the form of a press release and/or social media posts. Please reach out to your Local Health Department for any questions regarding Legionnaires' disease in your community. You can find your Local Health Department by visiting the following website:

<https://www.state.nj.us/health/lh/community/>.

Does the NJDOH have any recommendations for healthcare providers?

NJDOH is requesting that healthcare providers consider the diagnosis of Legionnaires' disease in patients presenting with clinical features of pneumonia, fever, and cough. When testing for Legionnaires' disease, please be aware that both urinary antigen assay AND culture of respiratory secretions on selective media are the preferred diagnostic tests. Best practice is to obtain both the respiratory culture and the urinary antigen test concurrently. Note that serological assays can be nonspecific and are not recommended in most situations.

Reporting

Health care providers and administrators are required to report cases of legionellosis (Legionnaires' disease and Pontiac fever) to the Local Health Department where the patient resides within 24 hours of diagnosis (N.J.A.C. 8:57 - 1.4). If the patient residence is unknown, report to your own Local Health Department. Contact information is available at localhealth.nj.gov.

Timely identification and reporting of cases of legionellosis is important, as this allows public health officials to quickly identify and stop potential clusters and outbreaks by linking new cases to previously reported ones.

What are the roles of the Local Health Department, NJDOH, CDC, NJDEP, and EPA?

Local Health Departments are responsible for investigating reportable diseases in their jurisdiction. Data collected from these investigations are shared with NJDOH which conducts statewide surveillance to identify the possible need for outbreak investigations. Local Health Departments typically take the lead role in an outbreak investigation, however, NJDOH will assume the lead role if an outbreak is affecting multiple jurisdictions.

State public health officials typically invite the CDC to assist with an investigation when they need additional expertise, capacity, or resources. The CDC *Legionella* team has been consulted throughout this investigation and provides guidance and suggestions using the best available science.

The **New Jersey Department of Environment Protection** (NJDEP) oversees public water systems in New Jersey to ensure adequate, safe, and reliable drinking water. They enforce the federal and state Safe Drinking Water Acts and will work with water utilities to reach compliance when there are violations. They will also assist water utilities in understanding and mitigating impacts from emerging contaminants. The Environmental Protection Agency's (EPA) non-regulatory science staff are providing NJDEP with technical guidance.

What actions are being taken to fix this problem?

In accordance with its October 12, 2022, **Unilateral Administrative Order**, which provides NJDEP direct operational oversight authority, NJDEP has been working with TWW to implement strategies to optimize operation of the treatment plant and the distribution system. To address *Legionella* in its water system, TWW will initiate a low-velocity flushing program throughout its service area in early April 2023 to increase the water circulation throughout the distribution system, and to increase and maintain chlorine levels. Low-velocity flushing restricts the hydrant flow to such levels that the sediment within the pipes is not disturbed or scoured. TWW employees will be working throughout TWW's service area to sample or flush hydrants using specific assemblies that will keep hydrant flows at the necessary velocities. It is not expected that customers will experience noticeable water quality changes, such as discoloration, in their home or business throughout the duration of the program. TWW will also notify customers when flushing activities are occurring in their service areas.

Who can I reach out to if I have questions?

For more information about Legionnaires' disease, please visit NJDOH's website at:

[**https://www.nj.gov/health/cd/topics/legion.shtml**](https://www.nj.gov/health/cd/topics/legion.shtml). If you have questions about *Legionella* or Legionnaires' disease, please reach out to your Local Health Department. If you have questions regarding your water quality, please reach out to TWW's **Office of Communications and Community Relations** at **(609) 989-3033**, Monday to Friday, 8:30 a.m. to 4:30 p.m. TWW is not open on federal and municipal holidays.

To review updates on TWW's *Legionella* mitigation, visit [**trentonwaterworks.org/legionella**](http://trentonwaterworks.org/legionella).

If you have questions about TWW's *Legionella* mitigation work, please call TWW's **Office of Communications and Community Relations** at **(609) 989-3033**, Monday to Friday, 8:30 a.m. to 4:30 p.m.

TWW communicates with its customers and service-area consumers in various ways: direct mail, conventional media outlets, advertising, Facebook, and municipal government websites for regular communications.

During an emergency, the water utility utilizes its Reverse 911 system, **TWW-Connects** (CodeRed), and coordinates communications and messaging, as needed, with service-area officials, OEM personnel, state government officials, and regulators, guided by its Emergency Response Plan (ERP).



How to Reach TWW

TWW's regular business hours are Monday to Friday, 8:30 a.m. to 4:30 p.m. TWW is not open on federal and municipal holidays. **We are at your service.**

- For account-related questions, call **1-866-TWW-BLUE**. Please listen carefully to the prompts. Spanish-speaking customer service representatives are available.
- **Unable to pay your water or sewer bills?** Call **2-1-1** or visit [**waterassistance.nj.gov**](http://waterassistance.nj.gov).
- For water emergencies, such as service leaks, water main breaks, and damaged fire hydrants, call (609) 989-3222. You can reach our **Meter Shop** at (609) 989-3225.
- To sign up for TWW's Reverse 911 system, [**click here**](#). TWW utilizes its Reverse 911 system to communicate with customers and service-area residents during water emergencies.
- To learn more about your rights as a utility customer, [**click here**](#).
- To reach TWW's **Office of Communications and Community Relations**, call (609) 989-3033.