



OSHA TECHNICAL MANUAL (OTM)

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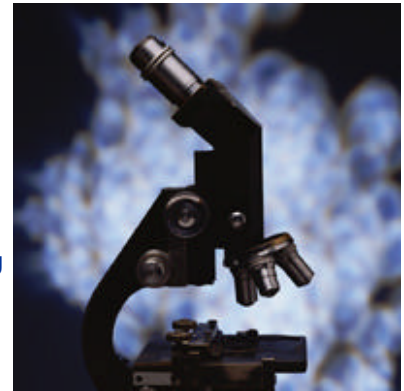
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Facts and Frequently Asked Questions

Legionellosis is a common name for one of the several illnesses caused by Legionnaires' disease bacteria (LDB). Legionnaires' disease is an infection of the lungs that is a form of pneumonia. A person can develop Legionnaires' disease by inhaling water mist contaminated with LDB. LDB are widely present at low levels in the environment: in lakes, streams, and ponds.

At low levels of contamination, the chance of getting Legionnaires' disease from a water source is very slight. The problem arises when high concentrations of the organism grow in water systems. Water heaters, cooling towers, and warm, stagnant water can provide ideal conditions for the growth of the organism.

Scientists have learned much about the disease and about LDB since it was first discovered in 1976. The following questions and answers will help you learn more of what is currently known about Legionnaires' disease.



Q. What are the symptoms of Legionnaires' disease?

A. Early symptoms of the illness are much like the flu. After a short time (in some cases a day or two), more severe pneumonia-like symptoms may appear. Not all individuals with Legionnaires' disease experience the same symptoms. Some may have only flu-like symptoms, but to others the disease can be fatal.

Early flu-like symptoms:

- Slight fever
- Headache
- Aching joints and muscles
- Lack of energy, tiredness
- Loss of appetite

Common pneumonia-like symptoms:

- High fever (102° to 105°F, or 39° to 41°C)
- Cough (dry at first, later producing phlegm)
- Difficulty in breathing or shortness of breath
- Chills
- Chest pains

Q. How common is Legionnaires' disease?

A. It is estimated that in the United States there are between 10,000 and 50,000 cases each year. Most of them sporadic cases not associate with outbreaks.

Q. How does a person get Legionnaires' disease?

A. A person must be exposed to water contaminated with LDB. This exposure may happen by inhaling aerosolized LDB or drinking water contaminated with LDB. Aspiration may occur when choking or spontaneously during the drinking, ingesting, swallowing process and allows oral fluids or particles to by-pass natural gag reflexes and enter into the respiratory tract and lungs instead of the esophagus and stomach.

Q. How soon after being exposed will a person develop symptoms of the disease?

A. If infection occurs, disease symptoms usually appear within 2 to 10 days.

Q. Are some people at a higher risk of developing Legionnaires' disease?

A. Yes, some people have lower resistance to disease and are more likely to develop Legionnaires' disease. Some of the factors that can increase the risk of getting the disease include:

- Organ transplants (kidney, heart, etc.)
 - Age (older persons are more likely to get disease)
 - Heavy smoking
 - Weakened immune system (cancer patients, HIV-infected individuals)
 - Underlying medical problem (respiratory disease, diabetes, cancer, renal dialysis, etc.)
 - Certain drug therapies (corticosteroids)
 - Heavy consumption of alcoholic beverages
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Q. Is Legionnaires' disease spread from person to person?

A. To date, there is no evidence in the literature that shows the spread of the disease from person-to-person contact.

Q. What causes Legionnaires disease?

A. Legionnaires' disease most often is caused by inhaling water contaminated with rod-shaped bacteria called *Legionella pneumophila*. There are over 30 different species of *Legionella*, many of which can cause disease. *Legionella pneumophila* is the most common species that causes disease.

Q. Does everyone who inhales LDB into the lungs develop Legionnaires' disease?

A. No. Most people have resistance to the disease. In outbreaks, fewer than 5 out of 100 people exposed to water contaminated with LDB typically develop Legionnaires' disease.

Q. Is Legionnaires' disease easy to diagnose?

A. No. The pneumonia caused by LDB is not easy to distinguish from other forms of pneumonia. A number of diagnostic tests allow a physician to identify the disease. These tests can be performed on a sample of sputum, lung tissue collected by biopsy, blood, or urine.

Q. How is Legionnaires' disease treated?

A. Early treatment reduces the severity and improves chances for recovery. The drugs of choice belong to a class of antibiotics called macrolides. They include azithromycin, erythromycin, and clarithromycin. In many instances physicians may prescribe antibiotics before determining that the illness is Legionnaires' disease because macrolides are effective in treating a number of types of pneumonia.

Q. How did Legionnaires' disease get its name?

A. Legionnaires' disease got its name from the first outbreak in which the organism was identified as the cause. This outbreak occurred in 1976, in a Philadelphia hotel where the Pennsylvania American Legion was having a convention. Over 200 Legionnaires and visitors at this convention developed pneumonia, and some died. From lung tissue, a newly discovered bacterium was found to be the cause of the pneumonia and was named *Legionella pneumophila*.

Q. Is Legionnaire's disease a new disease?

A. No. Legionnaires' disease was first recognized in 1976. Unsolved pneumonia outbreaks that occurred before then are now known to have been Legionnaires' disease. One year later, CDC identified the causative agents (species of LDB). Scientists are still studying this disease to learn more about it.

Q. Are LDB widespread in the environment?

A. Yes, studies have shown that these bacteria can be found in both natural and manmade water systems. Natural water sources including streams, rivers, freshwater ponds and lakes, and mud can contain the organism in low levels.

Q. Could I get the disease from natural water sources?

A. It is unlikely. In the natural environment the very low levels of this organism in water probably cannot cause disease.

Q. What water conditions are best for growth of the organism?

A. Warm, stagnant water provides ideal conditions for growth. At temperatures between 20°C-50°C (68°-122°F) the organism can multiply. Temperatures of 32°C-40°C (90°-105°F) are ideal for growth. Rust (iron), scale, and the presence of other microorganisms can also promote the growth of LDB.

Q. What common types of water are of greatest concern?

A. Water mist from cooling towers or evaporative condensers, evaporative coolers (swamp coolers), humidifiers, misters, showers, faucets, and whirlpool baths can be contaminated with LDB and if inhaled or aspirated into the lungs can cause the disease.

Q. Can Legionnaires' disease be prevented?

A. Yes. Avoiding water conditions that allow the organism to grow to high levels is the best means of prevention. Specific preventive steps include:

- Regularly maintain and clean cooling towers and evaporative condensers to prevent growth of LDB. This should include twice-yearly cleaning and periodic use of chlorine or other effective biocide.
 - Maintain domestic water heaters at 60°C (140°F). The temperature of the water should be 50°C (122°F) or higher at the faucet.
 - Avoid conditions that allow water to stagnate. Large water-storage tanks exposed to sunlight can produce warm conditions favorable to high levels of LDB. Frequent flushing of unused water lines will help alleviate stagnation.
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Q. Do you recommend that I operate my home water heater at 60°C (140°F)?

A. Probably not if you have small children or infirm elderly persons who could be at serious risk of being scalded by the hot water. However, if you have people living with you who are at high risk of contracting the disease, then operating the water heater at a minimum temperature of 60°C (140°F) is probably a good idea.

Consider installing a scald-prevention device.

Q. What can be done if a water system is already contaminated or is suspected of being contaminated?

A. Special cleaning procedures and water treatment can reduce LDB in water systems. In many cases, these procedures involve the use of chlorine-producing chemicals or high water temperatures. Seek professional assistance before attempting to clean a contaminated water system.

Q. Can my home water heater also be a source of LDB contamination?

A. Yes, but evidence indicates that smaller water systems such as those used in homes are not as likely to be infected with LDB as larger systems in workplaces and public buildings.

Q. Can LDB cause other diseases?

A. Yes. In addition to Legionnaires' disease, the same bacteria also can cause a flu-like disease called Pontiac fever.

Q. How does Pontiac fever differ from Legionnaires' disease?

A. Unlike Legionnaires disease, which can be a serious and deadly form of pneumonia, Pontiac fever produces flu-like symptoms that may include fever, headache, tiredness, loss of appetite, muscle and joint pain, chills, nausea, and a dry cough. Full recovery occurs in 2 to 5 days without antibiotics. No deaths have been reported from Pontiac fever.

Q. Are there other differences between Legionnaires' disease and Pontiac fever?

A. Yes. Unlike Legionnaires' disease, which occurs in only a small percentage of people who are exposed, Pontiac fever will occur in approximately 90 percent of those exposed. In addition, the time between exposure to the organism and appearance of the disease (called the incubation period) is generally shorter for Pontiac fever than for Legionnaires' disease. Symptoms of Pontiac fever can appear within one to three days after exposure. Pontiac fever has been associated with exposure to non-viable LDB and may be a hypersensitivity response to bacterial or other antigens rather than an infection.

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