

## LEGIONNAIRES' DISEASE

In July 2004, New Jersey Public Housing Authority Joint Insurance Fund (NJPHA-JIF) member, the Paterson Housing Authority, confronted an outbreak of Legionnaires' disease. This bulletin is provided to give NJPHA-JIF members insight on how this problem may impact their operations.

Legionnaires' disease (LD) acquired its name from the media reference given to a mysterious pneumonia-like illness that afflicted numerous attendees of an American Legion convention in Philadelphia at the Bellevue-Stratford Hotel during July of 1976. An outbreak of illnesses occurred, with a recorded 221 cases of a strange respiratory illness contracted by convention attendees and by some hotel pedestrians. Symptoms included high fever, chills, muscle pain, headache and eventual development of a dry cough with difficulty in breathing. Investigation of the outbreak by the Centers for Disease Control and Prevention (CDC) led to the eventual discovery of the causative agent, a bacterium, subsequently named *Legionella pneumophila* (*pneumophila* is Greek for lung-loving). It was determined that neither the bacterium nor the disease was new and that *Legionella* bacteria have been around and causing disease for many years. When reexamined, the CDC found *Legionella* bacteria in fifty-year old (archived) tissue samples of unsolved and similar-illness cases. So, Legionnaires' disease was not a new disease discovered in 1976 – just an old one that was finally recognized and named. CDC has estimated that the disease infects 10,000-15,000 persons annually in the US. OSHA estimates that over 25,000 cases of the illness occur each year, causing more than 4,000 deaths.

**Exposure** is most likely to occur via:

- 1. Inhalation:** of aerosols, fine sprays, mists or other microscopic droplets of water (or soil) contaminated with *Legionella* – providing direct access into the lungs; and/or
- 2. Aspiration:** such as may occur when choking or spontaneously during the drinking, ingesting, swallowing process – allows oral fluids and/or particles to by-pass natural gag reflexes and enter into the respiratory tract and lungs instead of the esophagus and stomach.

**LD sources** may include almost any warm water system or device (man-made or natural) that disseminates water, particularly as aerosols, sprays or mists. A notable source of *Legionella* today is the domestic (potable water) plumbing system. These systems in large buildings have been commonly linked to occurrences and transmission of LD. Other LD sources include various heat-rejection devices, humidifiers, showerheads, faucets, whirlpool baths and spas, hot springs, respiratory therapy equipment, and even misting machines found in grocery store produce sections.

**Susceptibility** is an important factor in disease contraction. The susceptibility to *Legionella* is found in the elderly and those with suppressed or compromised immune or respiratory systems. This includes heavy smokers, alcoholics, HIV patients, cancer, bone marrow or organ-transplant patients, and others with lung or respiratory diseases. Underlying disease and advanced age also contribute to a significantly higher risk of mortality with LD.

**LD incubation period** is 2-10 days. This is the time it takes, after exposure, before symptoms of the illness appear. For several days, the patient may have flu-like symptoms and feel tired and weak. Symptoms may include:

- High fever, chills, headache, muscle pain (flu-like symptoms)
- Dry cough and difficulty in breathing
- Diarrhea and/or vomiting, and
- Confusion and delirium

**The Domestic Plumbing System & Legionella:** The domestic (potable) water plumbing system can harbor Legionella, provide favorable growth and amplification conditions, and has many outlets (taps, showerheads, etc.) to disseminate aerosols that may transmit LD.

Hot-water systems are perfect breeding habitats for Legionella, as well as other bacteria. Legionella can flourish in hot-water tanks, especially in the bottom where warm zones develop beneath accumulated scale and sediment. The complexities of hot-water piping present an even greater problem than tanks alone. Deadlegs (unused piping) create additional problems because bacteria grow well in stagnant water conditions.

According to the *Association of Water Technologies*, the following are recommendations and sound practices to help manage and reduce the incidence of Legionella contamination within domestic plumbing (hot and cold) water systems:

- Reduce deadlegs (stagnant lines and stubs) in the system
- Clean and inspect hot water tanks regularly – annually as a minimum
- Continually run hot water circulation pumps – avoid recycling to mixing valves only
- Store hot water at a minimum temperature of 60°C (140°F) and deliver to the taps at a minimum temperature of 50°C (122°F)
- Store and distribute the cold domestic water below 20°C (68°F) – if not possible, then consider monitoring for Legionella and using a disinfection system if Legionella are not under control
- Flush the entire water system on a regular basis (at least annually)
- Consider routine potable water treatments – including the use of approved biocides

Housing Authorities should also make sure that during renovations between tenants, that the tub water is run thoroughly and the shower head then turned on to flush the line.

## Crisis Management

Several key elements were identified during the Paterson event that can help other Authorities in a similar event:

- **Pre-identify Resources** – What is your resident’s vulnerability if the water system needed to be shut off for an extended period of time? Locate a source for both bottled and bulk drinking water. Make sure you have 24/7 access to a contact person at that supplier, and a plan in place to procure water supplies as quickly as possible
- **Public Relations** – Make sure that a single individual is designated to speak for the Authority. Media will attempt to get statements and “sound bites” from anyone available. Have all staff politely refer inquiries to the designated spokesperson
- **Communication** – Keep all regulatory bodies, including Housing and Urban Development (HUD) apprised of the situation. Hold frequent update meetings with residents to answer their question and allay fears

For further assistance on this matter or other safety and risk control issues, contact your risk management consultant or Jim Rhoads, NJPHA-JIF safety consultant (610-397-5061).

**IMPORTANT NOTICE** - *The information and suggestions presented by PMA Companies in this risk control technical guide are for your consideration in your loss prevention efforts. They are not intended to be complete or definitive in identifying all hazards associated with your business, preventing workplace accidents, or complying with any safety related or other laws or regulations. You are encouraged to alter the information and suggestions to fit the specific hazards of your business and to have your legal counsel review all of your plans and company policies.*