

*Legionnaire's
Disease*





Legionnaire's disease was first identified in 1976 when over 200 members and visitors to a convention of the American Legion in Philadelphia USA

developed pneumonia and 34 people died.

There are over 40 species of *Legionella* each with many sub types. However, twelve species of *Legionella* bacteria have been implicated with causing human disease and two are significant in Western Australia. These are *Legionella pneumophila* and *Legionella longbeachae*.

Legionella bacteria are widely present at low levels in the environment, in lakes, streams, ponds and soils, including potting mixes, mulches and compost. The chance of contracting Legionnaires disease from these sources is very low and most people who have been exposed to the bacteria develop antibodies (immunity) without showing any obvious symptoms. However, it is a serious disease as it has a mortality rate of around 15%.

This guide contains information on water borne sources of Legionnaire's disease and it will help you avoid the disease.

Symptoms of Legionella infection

Pneumonia (Legionnaire's disease) is the illness most commonly associated with *Legionella* infection. Early symptoms of Legionnaire's disease are much like those of influenza and usually develop two to ten days after exposure. Some or all of the following symptoms may be experienced:

Fever



Chills



A cough which may be dry or may produce sputum



Aching muscles and joints



Headache



Tiredness



Loss of appetite



Diarrhoea and abdominal pain

It is difficult to distinguish Legionnaire's disease from other types of pneumonia by symptoms alone and other medical tests are required to diagnose the disease.

How does Legionella grow in water?

Legionella bacteria can be widely distributed in water systems. They tend to grow in 'bio films' (like slime) on the surfaces of lakes, rivers and streams, and in other containers of water like pipes and tanks. Low levels of the organism can colonise the water body and grow to high concentrations given the correct conditions.

Conditions that promote growth of *Legionella* in water include:



stagnation



water temperatures between 20°C and 50°C



pH between 5.0 and 8.5



sediment that tends to promote growth of *Legionella* and other micro-organisms



other micro-organisms including algae that can supply essential nutrients for growth or harbour the organism

Some of the best conditions for *Legionella* growth are found in:

- ✎ large air-conditioning water-cooling towers, evaporative condensers
- ✎ domestic hot water systems with water heaters that operate below 60°C
- ✎ humidifiers and decorative fountains
- ✎ spas and whirlpools
- ✎ warm water pipes that operate at a temperature above 20°C but below 60°C
- ✎ stagnant water bodies

Water stored below 20°C is generally not a source for *Legionella*. However, high levels of the micro-organism have been measured occasionally in the water supply of cold water and ice making machines.

How are Legionella bacteria spread?

Legionella can be transmitted through the air by inhaling fine droplets of water contaminated with the organism. However, it is also possible that *Legionella* may be contracted by aspirating contaminated water into the lungs during drinking or eating.

In many cases it is difficult to identify the likely source of a *Legionella* infection. However, unlike other micro-organisms, *Legionella* infection cannot be caught from another person or from animals.

Who gets Legionella infection?

Legionnaire's disease is more common in middle aged and older persons and in those whose immune system is weak. There is an increased risk of acquiring this disease if you smoke or have a chronic health condition such as emphysema, diabetes, cancer, renal disease, or HIV; if you are on steroids or other immunosuppressive medication; or if you consume alcohol to excess. These conditions lower a person's resistance to this disease.

How to minimise the growth of Legionella bacteria

Avoiding or preventing conditions that allow *Legionella* to grow to high levels is the best means to control infection.

- ✎ Commercial water-cooling towers, evaporative air-conditioners/condensers and water distribution systems should be regularly maintained and cleaned in accordance with Australian Standard AS 3666.
- ✎ Domestic evaporative air-conditioners should be cleaned before summer. If the system has not been used for two weeks or longer it should be cleaned again before use. Draining dry is best.
- ✎ Domestic hot water systems should be operated and maintained at a temperature above 55° C.
- ✎ Hot/warm water pipe lines should be regularly flushed to prevent stagnation. Large water storage tanks should be enclosed and disinfected with chlorine.

How to maintain your domestic evaporative air-conditioner

The following steps should be followed if you wish to clean your evaporative air-conditioner.

Before Summer

- ✎ Remove covers.
- ✎ Remove filter pads, clean with water and renew if necessary.
- ✎ Close drains if required and fill with clean water.

At the end of Summer

- ✎ Drain all water from the unit's tank and pipes.
- ✎ Clean the tank and pump with a cloth soaked with a chlorine based household bleach then flush with clean water.
- ✎ Remove filter pads, hose clean and allow to dry.
- ✎ Dry the internal components, leave drains open and fit covers to exposed units if required.

Air-conditioning firms can provide a cleaning and maintenance service.

Note: Legionella will not grow in dry systems such as reverse cycle air-conditioners - these include air-conditioners commonly mounted in windows and walls of domestic buildings.



Summary

- ✎ *Legionella* can be found widely in the natural environment. Given the correct conditions of warmth, moisture and nutrients it can become a risk to your health.
- ✎ First symptoms of Legionnaire's disease usually develop within 2 to 10 days of exposure.
- ✎ *Legionella* infection can cause serious disease, with a death rate of approximately 15%. However, it is usually readily cured if diagnosed promptly and treated with appropriate antibiotics.
- ✎ Disinfecting, cleaning, emptying, drying or heating easily destroys *Legionella*.
- ✎ Regular cleaning and maintenance of water based air-conditioning, cooling and water distribution systems is essential to prevent the growth of *Legionella*.
- ✎ Australian Standard AS 3666 provides information on how to control the growth of *Legionella* for commercial operators of air-conditioning and water distribution systems, such as spas and water coolers/fountains.



Other leaflets available are:

Safe Handling of Potting Mixes, Mulches,
Garden Soils and Composts
(Preventing Legionella infection)

How Safe is the Air in Your Home

Indoor Condensation and Mould

Is the Water in Your Rainwater
Tank Safe to Drink

How Safe is your Drinking Water

Further information

For further information contact your local
government Environmental Health Officer

or

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