

# Legionella Risk Management

## Legionella in the Environment

*Legionella* bacteria have been part of our environment for thousands of years. Our exposure to these bacteria has increased, as we have become more dependent upon industrial processes and air conditioning systems that use cooling towers.

Despite this, the number of people who actually contract Legionnaires' disease is very low. Only about one in a thousand people exposed to the bacteria become ill.

### Legionella in the Natural Environment

*Legionella* bacteria are found naturally in water and soil. They have also been found in lakes, rivers, creeks and other bodies of water.

### Legionella in the Built Environment

Like any living organism, bacteria require the right living conditions to survive and reproduce. Cooling tower systems used in air conditioning and industrial processes provide an ideal environment for growth.

### Legionella in Cooling Tower Systems

Cooling tower systems use water to assist in the cooling of buildings or industrial processes. This creates conditions where *Legionella* may multiply. To stop *Legionella* from growing, the water must be treated with chemical or physical agents.

Cooling towers use large fans to assist in the cooling process. The fans generate tiny droplets of water called aerosols and expel them into the air. If these aerosols contain *Legionella*, and people breathe them in, a small number of susceptible people may contract Legionnaires' disease. New laws have been introduced in Victoria to control *Legionella* in cooling tower systems.

### Legionella Outbreaks in the Melbourne Central Business District

The CBD has a higher concentration of cooling tower systems than most other areas. In addition, an increasing number of people live in the CBD. Despite the higher

number of cooling tower systems and the population density, the number of cases is still relatively low.

### Legionnaires' Disease (Legionellosis)

People contract this rare form of pneumonia by breathing in aerosol spray from water contaminated with *Legionella* bacteria. There has been no reported person-to-person spread. Most people exposed to *Legionella* do not develop illness.

The risk of disease increases with age, especially amongst smokers. People with chronic medical conditions that weaken the body's immune system (such as cancer, lung disease, diabetes and transplant patients) may be at increased risk of Legionnaires' disease. Young people, especially children, rarely get Legionnaires' disease. Pregnant women are not at any greater risk than the general population.



Two common types of cooling tower

The number of cases of Legionnaires' disease being notified to the Department of Human Services has increased over the last few years. This is probably due to improved diagnosis and testing and increased awareness of the symptoms of Legionnaires' disease as a form of pneumonia amongst doctors and the general community. The illness rate for Legionnaires' disease is still very low.

### **Symptoms of Legionnaires' Disease**

The early symptoms of Legionnaires' disease are often like a severe 'flu' infection, and include:

- Fever (up to 40°C)
- Headache (often severe)
- Shortness of breath
- Sometimes a dry cough
- Chills, muscle aches and pains.

In severe cases, other systems of the body may be affected, leading to diarrhoea, vomiting, mental confusion and even kidney failure.

### **New Legionella Regulations**

In March 2001 new laws came into force to control *Legionella* in cooling tower systems and warm water systems. Under the Regulations, owners of cooling tower systems are required to:

- Register their systems with the Building Control Commission.
- Develop, implement and review risk management plans.
- Implement improved maintenance programs.
- Keep records of maintenance and test results.

Bacteria levels in these systems, measured as Heterotrophic Colony Count (HCC) can range from zero into the millions of colony forming units per ml (cfu/ml). The new laws require that action be taken if a cooling tower system HCC exceeds 100 000 cfu/ml. and if any *Legionella* is detected in the system. It is important to note that a high bacteria count does not indicate the presence of *Legionella*. High bacteria counts are a signal that the system requires intervention to lower the bacterial levels.

### **Evaporative Coolers**

Evaporative coolers are a type of air conditioner commonly used in domestic settings. There have been no known cases of Legionnaires' disease associated with evaporative coolers.

### **Further Information**

Visit the *Legionella* Web site at <http://www.legionella.vic.gov.au>

Downloadable resources include:

- *Legionnaires' disease: Legionellosis*
- *Evaporative Coolers: an Operation and Maintenance Guide for Owners 2001*
- *What Is a Cooling Tower?*

The *Legionella* hotline on 1800 284 898 is available during business hours.