

## ***Legionella* and Legionnaires' Disease (LD)**

Legionellosis or Legionnaires' Disease (LD) is a potentially fatal form of pneumonia which can affect anybody. The disease is caused by inhalation of aerosols contaminated with bacterium *Legionella pneumophila* and related bacteria. These bacteria found naturally in environmental water sources such as rivers, lakes and reservoirs. However, such water can introduce *Legionella* into purpose built water systems such as cooling towers, evaporative condensers, whirlpool spas, hot and cold water systems where the physical, chemical and biological conditions encourage the growth and thereby increase the risk of contamination and *Legionella* outbreak.

The disease manifests in two forms: more severe form of the infection, Legionnaires' disease, shows the symptoms of pneumonia, characterized by high fever, malaise, muscle aches, respiratory disorders and headache. According to the Center for Disease Control and Prevention (CDC), between 8,000 and 18,000 people are hospitalized with Legionnaires' disease in the United States each year (Morbidity and Mortality Weekly Report,[MMWR], 2007). Legionnaires' disease is a legitimate public health concern as its fatality rate during an outbreak ranges from 5% to 15% in those who contract the disease. In certain risk groups the fatality rate is as high as 30%. The incubation period is about 7 days. The mild form of the disease, Pontiac fever (called after Pontiac in Michigan, where it was first documented) is self limiting febrile illness without pneumonia.



Gram- stained micrograph of *Legionella pneumophila* bacteria from a victim of the 1976 Legionnaires' disease outbreak in Philadelphia.  
Source : Centers for Disease Control and Prevention

The negative publicity that is caused by an outbreak , can be devastating and extremely costly. Therefore managing the risk of *Legionella* is a public concern as well as it is more cost effective rather than responding to an outbreak. Hospitals and tourist hotels are recommend to establish *Legionella* control and management programmes including routine monitoring and testing to indicate the effectiveness of control measures already in place, and to provide an early warning of potential problems, in order to prevent *Legionella* outbreaks.

The risks can be controlled and managed by introducing measures outlined in the Code of Practice & guideline documents. The Code of Practice and guideline documents introduced by MicroChem help you to establish “*Legionella* control and prevention programme” which leads to *Legionella* control system certificate. The certificate signifies that the particular organization has implemented and maintained the necessary control systems to minimize the risk of *Legionella*.

### **Travel Associated Legionaries Disease (TALD)**

Travellers are more prone to be *Legionella* infections due to many factors, such as advanced age of most of travellers, smoking and immuno-suppression due to various other factors. Therefore, prompt diagnosis and reporting of TALD is important because its identification implies the presence of an environmental source to which other susceptible individuals are likely to be exposed. Further, this situation is aggravated by particular features of staying in accommodation designed for short stays , such as,

1. Occupation may be on a seasonal or intermittent basis and so, the use of the water facilities may be intermittent. This may lead to long periods of water stagnation and there by loss of temperature and residual biocides.
2. Stagnation of whole or part of the water system due to repair or refurbishment.
3. Intermittent demand for water usage at different times of the day, typically early morning before breakfast and early evening before dinner. This situation may leads to reduced level of hot water temperature and biocides.
4. Most holiday accommodations have indoor and out door ornamental water features where lot of mists or water droplets generates.
- 5 Hotel gardens are frequently irrigated with sprinklers and these may present an additional risk, particularly if they utilize recycled water.
- 6 Hotel engineers often have no training in controlling *Legionella* in hotel water systems and difficulty of maintaining adequately trained staff.

Travellers typically disperse from the source of infection before developing symptoms. Therefore clusters of Legionnaires' Disease associated with travel to hotels or any other accommodation sites are rarely detected by individual clinicians or health departments. Hence, a travel history should be actively sought from patients with community-acquired pneumonia and *Legionella* testing should be performed for those who have traveled 2 weeks before onset of symptoms. Center for Disease Control and Prevention reports 20 % of the reported Legionnaires' Disease to CDC are travel associated (Morbidity and Mortality Weekly Report [MMWR], 2007). CDC has provided facilities to report community acquired Travel Associated Legionnaires Disease. 50% of reported LD cases to European Legionnaires' Disease Surveillance Network (ELDSNet) is also travel associated.

## Sources

1. Jamie, B., Yves, C., John, V.L., Kathy, P., Susanne, S.L. (2007) *Legionella* and the prevention of Legionellosis. WHO Press, Geneva
2. Environmental Protection Agency (EPA), Legionella: Human Health Criteria Document. EPA-822-R-99-001, November 1999, [www.epa.gov](http://www.epa.gov) (May 6, 2012)
3. Morbidity and Mortality Weekly Report, MMWR, (2007). Surveillance for Travel-Associated Legionnaires Disease - United States, 2005-2006. MMWR ,December 7, 2007 / 56(48);1261-1263. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5648a2.htm> (May 6, 2012)
4. Phin, N., McLean, E., Naik, F.C., Zhao, H., Harrison T.G. (2012). Legionnaires disease in England and Wales, 2008-2010. Health Protection Agency Weekly Report, <http://www.hpa.org.uk/hpr/archives/2012/hpr0912.pdf> / March 2 2012
5. Stteinert, M., Hentsche, I U., Hacker, J. (2002) *Legionella pneumophila*: an aquatic microbe goes astray. *FEMS Microbiology Reviews*, **26**, 149-162.
6. European Centre for Disease Prevention and Control. European Legionnaires' Disease Surveillance Network (ELDSNet): Operating procedures. Stockholm: ECDC; 2012.