



Legionnaires' disease: minimising risk

Checklist for hotels and other accommodation sites

Legionnaires' disease is a rare, though severe, illness in travellers but it can lead to major legal costs for hoteliers or tour operators since the disease is preventable through the application of active *Legionella* control programmes in tourist buildings. The illness is often fatal and the publicity attracted by such cases can severely harm the hotel and tourism business. Almost 900 cases of Legionnaires' disease in European residents were reported to be associated with staying in hotels or other holiday accommodation in 2010.

What is Legionnaires' disease?

Legionnaires' disease is a form of pneumonia which kills between 5 and 15% of those infected and is caused by *Legionella* bacteria. *Legionella* can also cause less serious illness such as Pontiac or Lochgoilhead fever. Legionnaires' disease usually develops 5–6 days after infection but may take longer.

Symptoms and diagnosis

The illness usually starts with a fever, chills, headache and muscle pain. This is followed by a dry cough and breathing difficulties that progress to severe pneumonia. Between 25 and 50% of those infected will also have diarrhoea or vomiting and about 50% become confused or delirious. Accurate diagnosis requires specific laboratory tests, which will often not be carried out until the guests have returned home.

How is Legionnaires' disease caught?

The disease is acquired through breathing in air containing the *Legionella* bacteria in an aerosol that may not be visible. These aerosols are formed from fine droplets generated from water containing the bacteria by, for example, running a tap or shower, flushing a toilet, or from bubbles rising through water in a spa pool. The bacteria can live and multiply in water at temperatures of 20°C to 45°C with the risk highest at the upper end of this range. They can be found in the natural environment such as rivers, lakes and moist soil but

usually in low numbers. High numbers occur in inadequately maintained artificial water systems.

Where are the potential risk areas in hotels?

Wherever water droplets can be created, there is a risk of infection. Examples include:

- Showers and taps
- Cooling towers and evaporative condensers, even if situated on the roof or in the grounds of the accommodation site
- Spa baths, whirlpool baths and hot tubs
- Turkish baths and saunas
- Ornamental fountains, particularly indoors
- Humidified food displays

Where can *Legionella* multiply?

- Hot and cold water systems including storage tanks/cisterns
- Any system or part of a system where the water is warm, i.e. between 20°C and 45°C, and particularly when above 30°C
- Pipes with little or no water flow (this includes unoccupied rooms)
- Slime (biofilm) and dirt on pipes feeding showers and taps and tank surfaces
- Rubber and natural fibres in washers and seals
- Water heaters and hot water storage tanks
- Scale and corrosion in storage vessels, pipes, showers and taps
- Flexible hoses and artificial rubber seals.

These situations and conditions encourage the growth of *Legionella* bacteria and increase the risk of infection for hotel guests, visitors and staff.

Reducing the risk (the 14 point checklist)

The risk of Legionnaires' disease can be minimised. Any hotel that does not have an active programme to control the growth of the bacteria is negligent in ensuring the safety of its guests. This programme should include the following:

- Have one named person responsible for *Legionella* control.
- Ensure the named person is trained in the control of *Legionella* and other staff are trained to be aware of the importance of their role in controlling *Legionella*.
- Keep hot water hot and circulating at all times: 50°C–60°C (too hot to put hands into or under for more than a few seconds)³
- Keep cold water cold at all times throughout the system: it should be maintained at temperatures below 25°C².
- Run all taps and showers: in guest rooms run for several minutes at least once a week if they are unoccupied and always prior to occupation.
- Keep shower heads, hoses and taps clean and free from scale.

- Clean and disinfect cooling towers and associated pipes used in air conditioning systems regularly: at least twice a year.
- Clean and disinfect water heaters (calorifiers) and hot water storage tanks at least once a year.
- Disinfect the hot water system with a high level (50mg/l) of chlorine for 2–4 hours after work on water heaters and before the beginning of every season.
- Clean and disinfect all water filters regularly: every one to three months.
- Inspect water storage tanks, cooling towers and visible pipe-work monthly. Ensure that all lids and insulation are intact and firmly in place.
- Inspect the inside of cold water tanks at least once a year and clean. If they contain a deposit or are otherwise dirty, disinfect with 50mg/l chlorine for a minimum of 1 hour.
- Ensure that system modifications or new installations do not create pipe-work with intermittent or no water flow or insufficient capacity to cope with surges in requirement.
- If there is a spa pool (synonyms: whirlpool spa, Jacuzzi™, spa bath, hot tub) ensure that:
 - it is continuously treated with a minimum of 2–3mg/l chlorine or bromine and the pH is maintained at 7.0–7.6 and the levels are monitored at least three times a day;
 - at least half of the water is replaced each day;
 - sand or diatomaceous earth filters are back-washed daily;
 - the whole system, including the balance tank, is cleaned and disinfected once a week; and
 - daily records are kept of all water treatment readings, such as temperature, pH and chlorine concentrations and ensure that any measurements that are outside of those specified have been acted upon and are checked regularly by the manager.

Further advice about specific controls should be sought from experts in this field who can carry out a full risk assessment of the hotel site.

An example of a structured form for monitoring a *Legionella* prevention programme can be found in the Federation of Tour Operators handbook – Preferred Code of Practice, Health and Safety 2007 (www.fto.co.uk)

Legionella testing

Testing (which is not compulsory) can be inappropriate or misleading. Samples should only be collected by trained personnel and preferably examined within 24 hours of collection by laboratories accredited for testing water for legionellae. A negative test does not necessarily mean that the hotel or other accommodation site is clear of *Legionella* or that there is no risk.

Further information

Further technical information can be obtained from the European Technical Guidelines for Control and Prevention of Travel Associated Legionnaires' Disease available at <http://ecdc.europa.eu/en/activities/surveillance/ELDSNet/Pages/index.aspx>

³ Where these temperatures cannot be achieved due to local conditions, suitable alternative residual disinfection procedures must be used and supported by regular (at least quarterly) testing for *Legionella*. Residual disinfection procedures that have been used include chlorine dioxide and copper/silver ionisation.