



Public Health
England

Protecting and improving the nation's health

Information about Legionnaires' disease for managers of commercial accommodation sites

Ten-point approach for reducing the risk of Legionnaires' disease

Contents

Executive summary	3
Legionnaires' disease	4
Monitoring Legionella in water systems	6
What managers of commercial accommodation sites can do to reduce the risk of Legionnaires' disease	7
References.....	10

Executive summary

This document provides general guidance to managers or owners of commercial accommodation sites where one or more cases of Legionnaires' disease have been reported to have stayed in the last 2 years. The identification of at least one case of Legionnaires' disease with association to a particular accommodation site does not necessarily mean that the accommodation site is the source of infection.

This document aims to provide managers or owners with a reminder of their responsibilities towards water management of commercial accommodation sites, raise awareness and provide advice on measures to reduce risks. The document sets out potential sources, risks, and control measures. It provides an 'approach' with specific considerations for the risk assessment and control measures for Legionnaires' disease at accommodation sites occupied by members of the public.

If you require more comprehensive guidance or information on legislation please contact your local environmental health department or health and safety executive, as appropriate for your accommodation site.

The enforcing agency for your premises (health and safety executive or your local environmental health department) may ask you to undertake measures in addition to your accommodation site reviewing this document.

For the purposes of this document, a commercial accommodation site is defined as a commercial establishment providing lodgings with or without other services such as meals for a monetary fee (for example, hotels, apartments, campsites, properties rented from online marketplaces, and so on).

Legionnaires' disease

Background

Local and foreign travel are continuing to increase among UK residents, with the number of travellers rising year on year since 2012 (1). As employers and 'persons in charge of premises' it is your legal duty to protect staff and members of the public from the potentially fatal syndrome, Legionnaires' disease under:

- the Health and Safety at Work Act 1974
- the management of Health and Safety at Work Regulations 1999
- the Control of Substances Hazardous to Health Regulations 2002

This document contains information for managers or owners and 'persons responsible for premises' of commercial accommodation sites to reduce the risk of Legionnaires' disease.

Legionnaires' disease

Legionnaires' disease is a lung infection caused by a group of bacteria from the genus *Legionella* which are ubiquitous in nature. They are present in rivers, lakes and reservoirs but they may also be found in manmade water systems such as cooling towers, hot and cold water systems and spa pools. There are over 60 different species of *Legionella* but *Legionella pneumophila* is the species most commonly responsible for human infection.

Legionnaires' disease is an atypical pneumonia. Early symptoms include muscle aches, tiredness, headaches, dry cough and fever, diarrhoea can occur and confusion may develop. Symptoms generally start between 2 to 10 days after infection.

Legionnaires' disease can cause long-term health problems and even death. The overall death rate for cases of Legionnaires' disease is usually between 5 to 10%, however, this can increase to ~30% during outbreaks and increases further to 40 to 80% in untreated, immunosuppressed patients, depending on the severity of clinical symptoms (2).

How people become infected

People become infected when they inhale bacteria that have released into the atmosphere from a contaminated water system in the form of an aerosol (very small droplets of water carrying the organism dispersed in air). Legionnaires' disease usually occurs when an individual is directly exposed to the source of the *Legionella* bacteria which will grow in manmade water systems where the conditions are conducive to growth and multiplication of the organism (3).

These include:

- water systems where some or all parts of the system are between 20 to 45°C
- in hot and cold water tanks or cisterns
- in pipes with little or no water flow (including unoccupied rooms)
- in biofilm and dirt on the inner surfaces of pipes and tanks
- on rubber and natural fibres in washers and seals
- in water heaters and hot water storage tanks
- in scale and corrosion in pipes, showers and taps

Common areas of risk in commercial accommodation sites

In general, areas of risk can be any area where it is possible to generate aerosols. Examples include:

- hot and cold water systems
- showers and taps
- spa pools or hot tubs
- food displays with water mists or other misting devices
- air conditioning units
- cooling towers and evaporative condensers
- fountains or ornamental water features
- water displays
- garden water systems, for example: garden hoses, sprinklers, water butts

Accommodation sites can pose a high risk of Legionnaires' disease due to:

- complex water systems – examples may include large sites with multiple separate water systems serving different areas of the site; changes in use of areas of a site over time resulting in changes and updates to the original schematics
- multiple different possible sources – for example, one site may have problems in the water system serving all the guest rooms in a specific floor and an unrelated problem identified in the maintenance of a spa pool in the site gymnasium
- seasonal occupancy – rooms or areas of an accommodation site may only be in seasonal use, this leaves pipework with little or no water flow for extended periods of time potentially creating conditions ideal for the growth of Legionella

As an owner or manager of a commercial accommodation site, you should be aware of the potential risks specific to the site(s) under your management and take measures to reduce these risks.

Monitoring Legionella in water systems

Public Health England

Public Health England (PHE) co-ordinates the monitoring and public health response to Legionnaires' disease through:

- being notified of cases of Legionnaires' disease
- liaising with enforcement agencies, such as environmental health departments (EHDs) and the health and safety executive (HSE), to ensure appropriate investigations are carried out.
- co-ordinating the National enhanced Legionnaires' disease surveillance scheme (NELSS)

PHE does not provide advice about environmental control of Legionella in water systems. Advice about legionella control matters should be sought from experts such as a water contractor experienced in Legionella risk assessment and control who would carry out a full risk assessment of the site.

Local Authority and Environmental Health Department

Environmental Health Officers (EHOs) have legal powers to undertake inspection of potential local authority (LA) enforced sites associated with cases, clusters and outbreaks of Legionnaires' disease, to review risk assessments and monitor and enforce legislation relating to the control of Legionella and to undertake sampling as appropriate.

What managers of commercial accommodation sites can do to reduce the risk of Legionnaires' disease

Reducing the risk: a ten-point approach for reducing the risk from Legionella

The risk of Legionnaires' disease can be minimised through good management and control of water systems.

Managers or persons responsible for commercial accommodation sites should be aware of the following ten-point approach for reducing the risk from Legionella. Please note this document is for your general awareness and is not intended to replace formal advice given to you by professionals specialising in the control of legionella in water systems.

1. Appoint a competent or responsible person(s) to take on the duty to manage the control of any identified risk from Legionella bacteria.
2. Ensure that the competent person(s) have the sufficient authority, knowledge, training, and resources to carry out their tasks proficiently and safely. They should know:
 - potential sources of Legionella bacteria and risks they present
 - measures and precautions to adopt to protect guests, staff and other persons from identified risks
 - actions required to ensure that control measures remain effective.
3. Ensure that the competent person(s), and all staff, are given suitable and sufficient training, information and instruction on significant findings of risk assessments and actions they need to take to safeguard themselves and guests.
4. Avoid water temperatures between 20 to 45°C:
 - hot water should be stored at a minimum of 60°C and kept circulating so that it reaches a temperature of 50°C within one minute at the outlets throughout the entire water system
 - cold water should be kept cold (below 20°C) throughout the entire system at all times (there may be occasions when the ambient temperature is very high and a temperature of 20°C cannot be maintained, this should be an exception and should be avoided wherever possible)
5. Avoid water stagnation in your water system, as this can encourage the growth of biofilm. Flush (taps and showers in guest rooms and other areas) for several minutes

at least once a week if rooms are unoccupied and always prior to occupation (4).
Where a water system is taken out of use, for a period of time temporarily, additional flushing may be required to manage microbial growth, including Legionella.

6. Maintain the cleanliness of the system and the water in it:

- dismantle, clean and descale removeable parts, for example, showerheads, inserts, hoses and taps
- clean and disinfect cooling towers and associated pipes - at least twice a year*
- clean, drain and disinfect water heaters (calorifiers) once a year*
- clean and disinfect any water treatment accessories (for example, potable water filters, water softeners etc.) regularly, as directed by the manufacturer, at least every one to 3 months*

*These timescales are guidelines. Advice specific to your premises and/or equipment should be sought from manufacturers and specialists in the control of legionella in water systems and the risk assessments for the water systems.

7. Use of the following water treatment techniques should be included in the cleaning and maintenance of the water system:

- disinfect the water system after any plumbing work on the system. Water heaters should also be cleaned and disinfected before commissioning or recommissioning at (for example, the beginning of every season) as instructed by specialists in the control of Legionella in water systems
- inspect the inside of cold water tanks at least once per year. Disinfect and clean, if deposits or dirt and debris are found in the tank. This can be carried out by a water management contractor

8. Monitor, record and maintain the condition and performance of the system:

- inspect water storage tanks, cooling towers and visible pipe work monthly. Ensure that all coverings are intact and firmly in place
- ensure that if any system modifications or new installations are carried out, they do not create pipework with intermittent or no water flow and disinfect the system following any work. Wherever possible use materials which are approved for use in the UK by the Water Regulations Advisory Scheme

9. If there is a spa pool (also known as whirlpool spa, spa bath etc.), ensure that you (5):

- check water clarity daily at opening and every 2 hours thereafter
- monitor and record the pH value and residual disinfectant daily at opening and every 2 hours thereafter
- backwash filters daily at the end of the day or user period

- drain the spa pool, clean the whole system, and refill daily/weekly based on risk assessment
- test for Legionella quarterly or more frequently if problems have been identified in the system or as advised by specialists in the control of Legionella in water systems.
- continuously treat the system with biocides and monitor the pH levels as recommended by a specialist in Legionella control of water systems

10. Keep an up-to-date risk assessment. Monitor control measures through the review of control logs of water temperature at representative outlets, pH and residual disinfectant levels. These should be checked and signed by the manager.

Further advice on controls measures specific to your water system should be sought from experts such as a water contractor experienced in Legionella risk assessment and control who would carry out a full risk assessment of the site and provide appropriate advice.

Environmental Testing

Environmental sampling is a useful tool to validate the effectiveness of control measures and is recommended 2 to 7 days after disinfection. The sampling should be carried out by appropriately trained personnel, equipped to carry out the environmental sampling. All samples should be submitted to an accredited UKAS laboratory with the current ISO standard methods for the detection and enumeration of legionella included within the scope of accreditation.

Useful links for further information

GOV.UK webpage: <https://www.gov.uk/guidance/legionnaires-disease-case-definitions>

Health and Safety Executive 'Control of legionella bacteria in water systems' document: <http://www.hse.gov.uk/pubns/books/l8.htm>

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About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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