Wiltshire Council

Managing hot and cold water systems to minimise the risk of Legionnaires' Disease

Important information to support you in re-opening your business post COVID19

What is this guide for?

This guide provides information and guidance on practical measures you should put in place to protect you, your employees and other visitors/customers by minimising the risk of potential cases of pneumonia caused by the water-borne Legionella bacteria. Aerosolized water from systems containing Legionella can cause Legionnaires' disease.

Whilst water systems in businesses may not seem to be high on the priority list during the COVID-19 pandemic, it is important ensure all water systems are managed safely at this time. Water systems that are not being used and maintained effectively are very likely to have increased levels of bacteria present, including the Legionella bacteria. Unless water systems are maintained, the closure of buildings due to COVID19 restrictions may result in the growth of Legionella to a level which may cause illness when buildings are re-opened. Please also note, the warmer summer months will lead to a greater proliferation of Legionella bacteria in water systems that are not being used or maintained.

Who is this guide for?

This guidance is aimed at public buildings including offices, retail outlets, hairdressers, beauty salons, hotels, pubs, clubs, restaurants, sports centres/clubs, gyms, residential buildings, camping/caravan sites, cruise ships, and any other buildings with a water supply which may have been unused for some time during the COVID 19 lockdown. Volunteer-run premises need to be included. It is particularly important if your business has showers, sinks and basins, spa pools, fountains or other water features and other water outlets which may be infrequently used, where there is the potential for splashing and aerosols. The procedures you follow now will have an impact on how soon you can open your facilities without causing harm to health.

What are the symptoms of Legionnaires' disease?

Symptoms of **Legionnaires' disease** can be very similar to COVID-19 and include high temperature, feverishness and chills; cough; muscle pains; headache; and pneumonia: https://www.hse.gov.uk/legionnaires/symptoms.htm

Symptoms of **COVID19** can include a new continuous cough, fever shortness of breath or difficulty breathing and may indicate more serious disease (especially pneumonia).

The groups of people most susceptible to Legionnaires' disease are similar to those most susceptible to serious complications from COVID-19 infection: those with serious underlying health conditions; those over 50 years; smokers. Legionnaires' disease can be contracted by inhaling small droplets of water (aerosols) suspended in the air containing Legionella bacteria.

Please note that this guide is based upon current advice at the time of publication (11 May 2020)

What should I do next?

Read through and follow the seven steps set out in this document and use the web links provided. If you are still unsure contact your insurance provider or a water systems maintenance specialist.

Please note: **This guidance is not intended to cover complex water systems such as cooling towers, swimming pools, spa pools and other water systems. Specialist guidance is available and referred to under point 7 below.**

1. Why this guidance?

The COVID-19 pandemic has resulted in the closure of many buildings. Closure of buildings, parts of buildings or their restricted use, can increase the risk for Legionella growth in water systems and associated equipment if they are not managed adequately. Aerosolised water from systems containing Legionella can cause Legionnaires' disease to vulnerable persons. During the COVID-19 pandemic there will be an increased number of people with greater susceptibility to Legionnaires' disease due to a compromised respiratory system during or after infection with the virus.

2. Why is this guidance important?

It is a legal requirement under the Health and Safety at Work etc. Act 1974 (HSWA) for employers, business owners and landlords to manage the risks of exposure to Legionella. It is very important that you manage and keep all water systems safe whilst closed or during partial shutdowns for the future health and safety of staff, customers and other visitors. The procedures you follow now will have an impact on how soon you can open your facilities without causing harm to health.

3. Who is this guidance document aimed at?

This guidance is aimed at individuals responsible and/or accountable for managing and maintaining a building and for local authority enforcement officers, as a source of reference. Under the Health and Safety Executive's Approved Code of Practice The control of Legionella bacteria in water systems (L8) a "competent person" is needed to manage your water system and ensure the system is safe when you re-open your business. This should be someone with sufficient authority, competence, knowledge of the system, and experience. It may be a combination of yourself, one or more workers and/or someone from outside your business.

4. How does Legionella grow in water systems?

Legionella occurs naturally in water systems, even in potable (drinking) water systems. Legionella will grow to levels which may cause infection where the temperature of the water is between 20 °C and 50 °C (even in just parts of the system)

Other risk factors which encourage the growth of Legionella

- Stagnant water or water with poor flow through the system or any parts of the system
- Use of materials which provide protective niches and nutrients for growth and biofilm formation including sludge, scale, rust, algae and other organic matter which may collect in the system pipework and calorifier particularly during periods of stagnation
- Contamination from poor quality source water (non-potable water)

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Where systems are poorly designed or poorly maintained, biofilms (or slime) develop where Legionella can survive for prolonged periods. Biofilms protect the Legionella bacteria from disinfectants and high temperature pasteurisation which may be used to disinfect water systems. Biofilms, if allowed to develop, will quickly reseed the water system with Legionella bacteria even after treatment. **It is far better to maintain a water system than to try and treat a water system which has gone out of control.**

5. Where should I start in order to re-open my business?

If you have not done so already, you should be thinking about this and taking action now, whilst in shut down and before re-opening is imminent. Ideally, water systems should have been flushed and maintained throughout. However, some buildings will not have been decommissioned (or partially decommissioned) safely.

Initially:

- Determine/clarify who is responsible and who is the "competent person"
- Where necessary, identify a competent contractor to assist. It is recommended that you assess a potential contractor to ensure their competence for your water system: The Legionella Control Association can assist in finding competent contractors:
- Ensure you have undertaken a Legionella Risk Assessment. If you already have one in place for your business and buildings, ensure it is reviewed and updated to include where water system usage has been reduced or shut down.
- Document how remaining staff, visitors, etc. will be protected from Legionella when on site during the lock down and when the business re-opens.
- Identify all additional elements of the water system and how these will be restarted safely. Do not overlook equipment such as humidifiers, jet washers, indoor fountains, etc.

National guidelines on the control of Legionella can be found at:

https://www.hse.gov.uk/legionnaires/index.htm
https://www.hse.gov.uk/legionnaires/workplace-risks.htm

6. How can I re-open safely immediately after shutdown?

If you wish to remain safe to re-open immediately after the closure then you can do one of the following:

A. Maintain your normal control regimes
This is the most straight forward option if someone can safely flush the system and the water heater is kept running.

1. Maintain your normal control regime so that the hot water is circulating throughout all parts of the system and flow temperature is maintained at ≥60 °C and the return on all loops is at ≥50 °C.
2. The temperature reaches all outlets at ≥ 50 °C within one minute and the cold reaches ≤20 °after running the outlet (normal flow, avoid splashing) for 2 minutes. If using a biocide, maintain target levels throughout all of the system.
3. Flush gently (to reduce aerosols) all hot and cold outlets (showers and taps) at least weekly until they achieve the above temperatures. Where there are thermostatic mixer valves ensure

the pipework feeding them achieves the same temperatures. Flush all WC cisterns, urinals, by-passes and any other points on the network.
4. Ensure drinking water storage tanks remain at 0.2 - 0.5ppm of free chlorine.
5. Adjust your monitoring regime to be able to verify these levels have been achieved at all sentinels and other little used outlets.

B. Close down the system without draining

If it is likely that the building is to be closed for more than a month, or you have made the decision not to heat your hot water for energy conservation or have no-one on site; please follow these steps:

1. Before closing the system down, turn off the calorifier (heated storage water tanks), drain from the base until the water runs clear, valve off the water supply and drain.
2. Where the system has not been disinfected recently or there have been problems with temperature or biocide levels then consider carrying out a full system disinfection with flushing through to all outlets to achieve 50 ppm free chlorine or equivalent biocide for at least an hour.
3. Flush through and refill and check the biocide is at the highest target normal operating level at the furthest outlets.

<u>When restarting</u>

4. Carry out a full system disinfection of the cold-water system, flushing through to all outlets to achieve 50 ppm free chlorine or equivalent biocide for at least an hour, checking that this level is achieved at the furthest outlets, top up when required.
5. Flush out and refill the system to achieve maximum normal operating target levels of disinfection (equivalent to at least 0.2 ppm free chlorine).
6. Refill and reheat the calorifier to 60 °C. and when the calorifier/ storage water has been heated to 60 °C throughout, open the valves and flush through all outlets taking care to avoid any scalding risk.
7. Monitor temperatures and biocide levels where applicable, adjust where necessary, for at least 48 hours and then take Legionella samples from the sentinel outlets (microbiological samples taken before 48 hours following disinfection may give false negative results).
8. When you are satisfied the hot and cold-water systems are under control then re-open the building.
9. Ensure you keep all documentation for inspection: including the review and update of risk assessments (these can be annotated by hand) including monitoring data etc, with evidence of who carried out the monitoring, add time, date and signature.
10. Follow the advice for other additional waters systems or equipment as above.

C. Drain the system down

Any system which is drained, unless very small and simple and can be physically dried, will pose a risk when restarted as there will be remaining pockets of water and condensation which is sufficient to allow microorganisms including Legionella to grow.

1. Carry out a full system disinfection flushing through to all outlets to achieve 50 ppm free chlorine or equivalent biocide for at least an hour and then drain.
2. Before re-opening follow steps 4-10 as for option B, closing down the system without draining

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For any actions taken, it is recommended that you record the flushing and temperature readings that you undertake during lockdown at sentinel points and record any planned maintenance (e.g. draining of systems/tanks, cleaning of water storage tanks) and any recommissioning procedures you undertake.

7. Are there other water systems that need to be considered?

Separate guidance is available for complex, specialist water systems:

Swimming pools and spa pools:
PWTAG temporary pool closure guidance
HSE HSG282 Spa Pool Systems

Cooling towers and evaporative cooling systems:
The Control of Legionella Bacteria in Evaporative Cooling Systems
The Control of Legionella Bacteria in Other Risk Systems

Care homes, hospitals and dental surgeries: Separate guidance has been developed for such sites by ESGLI and can be found at:
European Study Group for Legionella Infections

8. Further Information, Legislation and Guidance

- HSE Legionella and Legionnaires' Disease web pages
- HSG274 Part 2 - The Control of Legionella Bacteria in Hot and Cold Water Systems
- HSE Legionella & Legionnaires' Disease FAQs
- The European Society of Clinical Microbiology and Infectious Disease (ESGLI) has issued specific guidance on managing Legionella in buildings and offices that have shut down due to the pandemic.
- UK updates on COVID-19 are available through https://www.gov.uk/

Legionnaires' Disease is a notifiable disease and Legionella spp.as well as COVID 19 are notifiable causative agents under The Health Protection (Notification) Regulations 2010 http://www.legislation.gov.uk/uksi/2010/659/contents/made

See also https://www.gov.uk/guidance/notifiable-diseases-and-causative-organisms-how-to-report

Both Legionnaires' disease and COVID-19 are reportable under RIDDOR regulations if attributable to the work place https://www.hse.gov.uk/riddor/

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