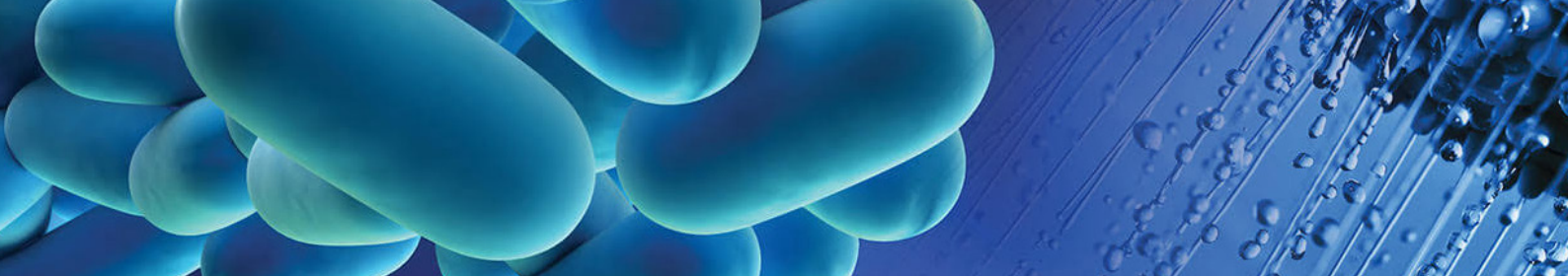




# Legionella Control

## During The COVID-19 Pandemic

Adapted from an article released by the European Society of Clinical  
Microbiology and Infectious Diseases



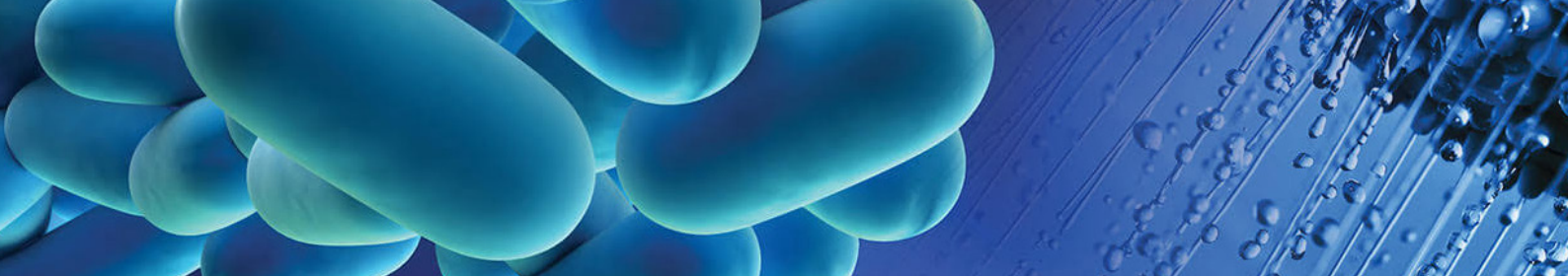
# Introduction

Those responsible for the management of water systems in office buildings have realised that the COVID-19 pandemic has created a much higher risk of people contracting Legionellosis, either Legionnaires Disease or a milder form of the disease known as Pontiac when using water outlets within business premises.

The concern is for staff still working in their company's premises or returning to work after working from home or due to being furloughed. Building managers and facilities management teams have recognised an increase in risk posed by legionella bacteria due to the conditions for Legionella growth being more prevalent during these times, mostly due to the stagnation of water within hot and cold water systems while buildings are either closed, or working on a much reduced workforce.

The risk is further exacerbated by those furloughed staff and others subsequently returning to the workplace may having had the virus, has left them with a greater susceptibility of contracting other conditions such as Legionellosis.

Building managers and others involved in water systems management are now seeking further advice as to best way to proceed. This presentation has been created to emphasise some of the key messages taught on our 'Control of Legionella within Hot and Cold Water Systems' courses and to provide some addition support to our clients who have already undertaken one of our courses.



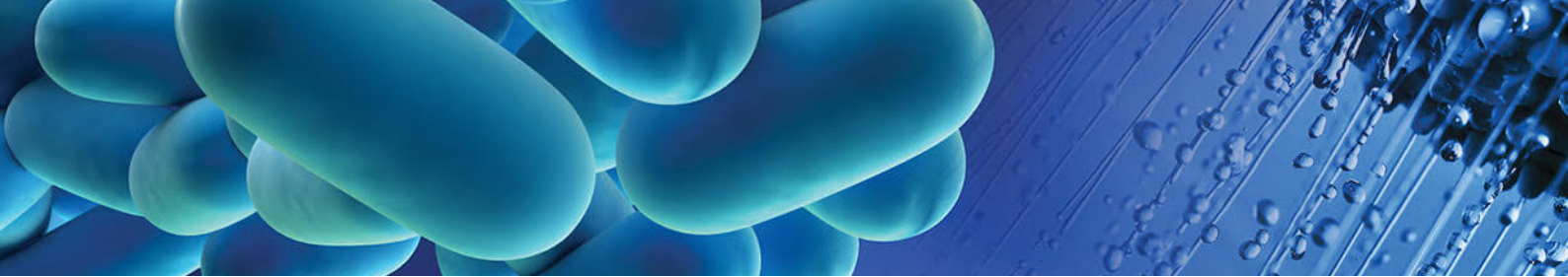
# Legionellosis

Legionnaires' disease is a type of pneumonia, and one form of Legionellosis, which can cause serious illness in persons who are susceptible such as those over 45 years, smokers, and those with underlying health conditions.

Inhaling aerosolized water from systems containing Legionella can cause Legionnaires' disease or Pontiac fever, another however milder form of the disease, similar to influenza (flu).

The path that best describes how infections occur is known as the 'chain of causation'. Simply put, water containing legionella bacteria enters a buildings water system, most likely via the cold mains supply; in a poorly managed water system conditions for growth, temperatures between 20°C and 45°C, no or slow water movement and nutrient deposits, exist that allow legionella bacteria to grow; water exiting the system via taps or other outlets creates a spray of fine water droplets, known as an aerosol, containing the legionella bacteria which is inhaled by a person who then becomes ill due to the subsequent bacterial infection of the lung.

Over 1000 people in the UK are known to have contacted Legionnaires' disease in the past two years. In normal settings, e.g., in an office building, around 1 in 10 die from contracting Legionnaires' disease.



# Compliance

Current legislation must be complied with during and after the COVID-19 pandemic. HSE Approved Code of Practice (ACoP) L8 and supporting HSG274 guidance documentation describe what should already be in place.

A review of the Legionella Risk Assessment (LRA) is necessary due to a change in water usage caused by the COVID-19 pandemic. Improvements to current control schemes will be needed, or otherwise there will be the necessity to mothball water systems for the duration of a closure.

These decisions will have to be based on existing management controls and staff occupancy. Operative and staff training should also be reviewed to ensure that all users of water during this time are aware of the increased risk associated with legionella bacteria.

It is essential that records are kept detailing the provisions made to control legionella bacteria and where exposure has been limited.



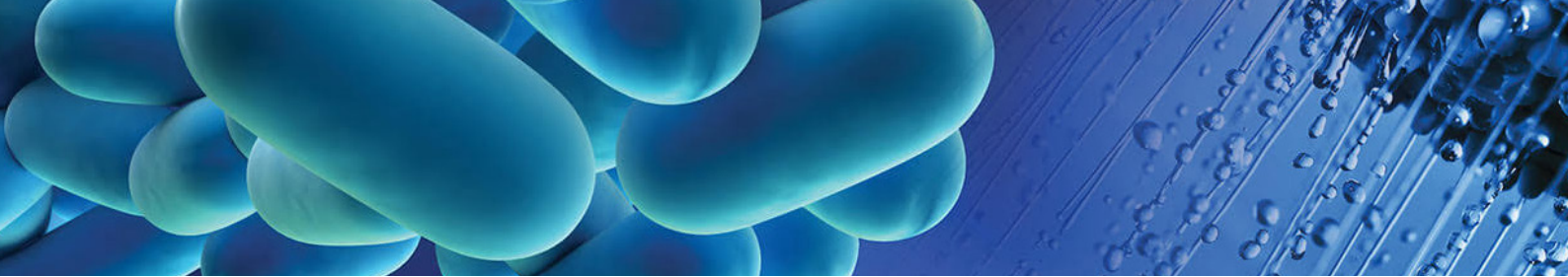
# Operating Scenarios and Options

**The most frequent operating scenarios are:**

1. All, or the majority the workforce no longer occupies the premises during office hours, or you are opening immediately after the lockdown is over.
2. The office is closed during the shutdown. Options are to either leave the system full of water or to drain down the system.

**ENSURE ALL NON-ESSENTIAL WATER SYSTEMS ARE NOT USED FOR THE DURATION OF THE LOCKDOWN**  
CLEAN AND DISINFECTION THESE SYSTEMS AS PER BS8558 AND PD855468  
PRIOR TO THEM BEING BROUGHT BACK INTO SERVICE AFTER THE LOCKDOWN.





# Scenario 1

## An improved control scheme

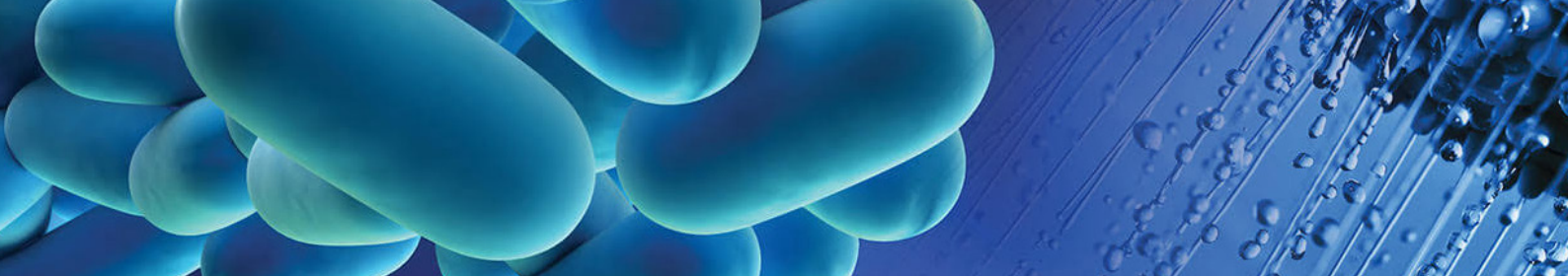
Analyse the results of your existing control regime for anomalies due to the recent changes in occupation. Adjust your existing control regime where appropriate. For a typical control regime see HSG274, part 2; page 31: Calorifiers (hot water cylinders), hot water distribution (including sentinels, subordinate and tertiary loops), combination heaters, point-of-use heater units, thermostatic mixer valves, cold water storage tanks, cold water services , etc.

Ensure all low-use outlets (all outlets in the case of no occupancy), WC cisterns, urinals, by-passes and any other extraneous locations on the hot and cold water distribution systems at least weekly.

Where possible, adjust cold water storage tanks volumes to ensure enough turnover and verify turnover using either volume, temperature, or free chlorine (0.2-0.5 mg/L) measurements.

Drain and re-fill cold water tanks when necessary or consider additional chlorine dosing techniques.

It is important that improvements have been made and verified by monitoring regimes, ensuring these control levels have been achieved at all sentinels and other little used outlets and records are kept of who carried out the monitoring, the time, date and signature.



## **Scenario 2 – *Option 1 of 2***

# **Closed building and leaving the system full of water**

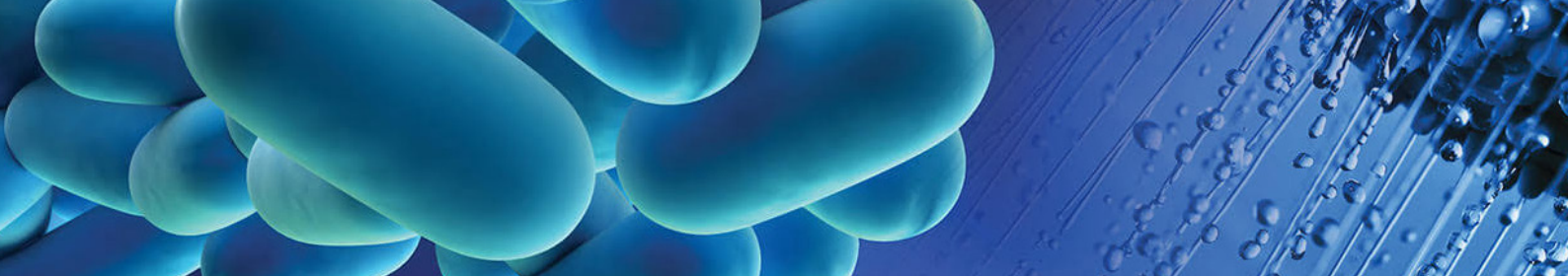
Before closing the system down, turn off the calorifiers (hot water cylinders), drain from the base until the water runs clear, valve off the water supply and drain.

Where the system has not been disinfected recently or there have been problems with temperature or biocide control 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.

Where applicable naturalise the chlorine before draining and refill the system with mains water to all outlets.

Before bring the system back into service: Carry out a full system disinfection of the cold-water system, flushing through to all outlets to achieve 50 mg/L free chlorine for at least an hour checking that this level is achieved at the furthest outlet.

Where applicable naturalise the chlorine before flushing out the system and refill with mains water to all outlets.



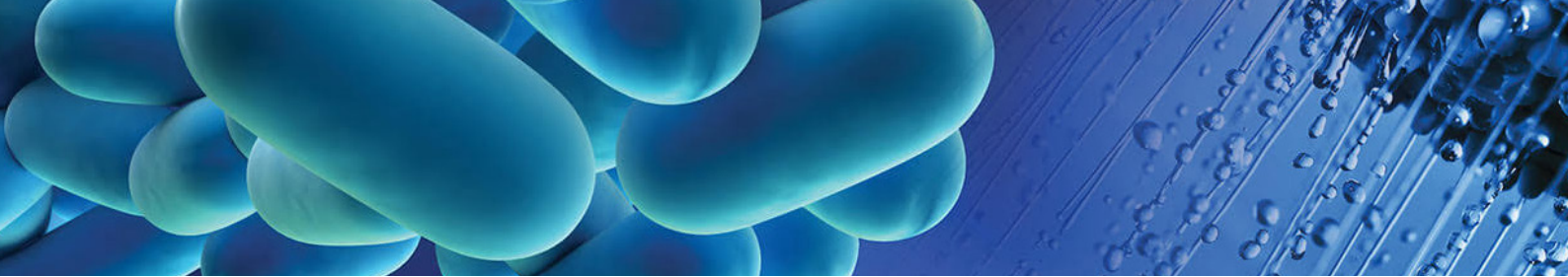
Refill and reheat the calorifier to 60°C. and when the calorifier has been heated to 60°C throughout, open the valves and flush through all outlets taking care to avoid any scalding risk.

Monitor temperatures and biocide levels where applicable, adjust where necessary, for at least 48 hours and then take Legionella samples from the sentinel outlets.

When you are satisfied the hot and cold-water systems are under control then reopen the building.

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, including the time, date and signature.





## Scenario 2 – *Option 2 of 2*

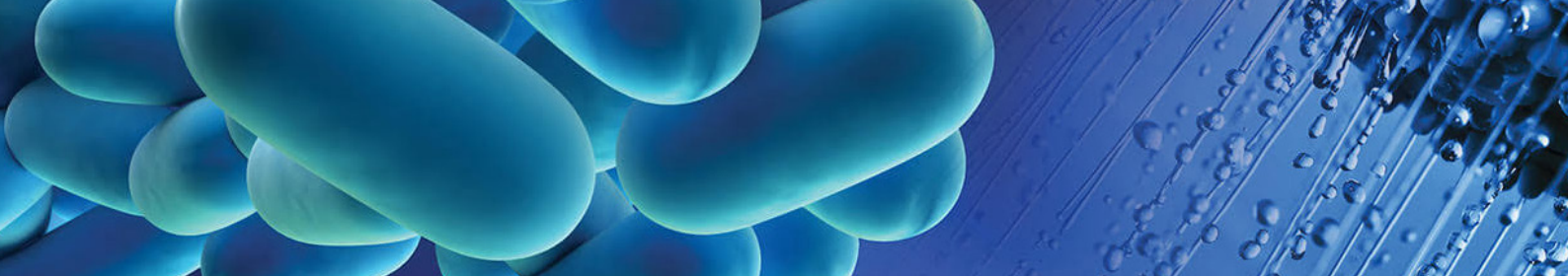
# Closed building and draining the system completely

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 enough to allow microorganisms including Legionella to grow.

Carry out a full system disinfection flushing through to all outlets to achieve 50 mg/L free chlorine or equivalent biocide for at least an hour and then drain.

Where biocides are **NOT** used or allowed, drained down and the blow air through the system to dry it as thoroughly as possible before bring the system back into service: Carry out a full system disinfection of the cold-water system, flushing through to all outlets to achieve 50 mg/L free chlorine for at least an hour checking that this level is achieved at the furthest outlets.

Where applicable naturalise the chlorine before draining the system and refill with mains water to all outlets.



Refill and reheat the calorifier to 60°C. and when the calorifier has been heated to 60°C throughout, open the valves and flush through all outlets taking care to avoid any scalding risk.

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).

When you are satisfied the hot and cold water systems are under control then reopen the building.

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, including the time, date and signature.



# References

- ACoP L8: HSE guidance document on regulations
- HSG274 part 2: HSE technical support document
- BS8580-1: Code of practice for risk assessment for legionella control
- BS8554: Code of practice for sampling and monitoring
- PD855468: Code of practice for flushing and disinfection of water services
- ESGLI guidance