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Collaton Consultancy Limited provide Expert Witness services, training, consultancy, and Authorising Engineer (Water) services relating to water treatment, Legionella and Pseudomonas aeruginosa.

Legionnaires' disease: lockdown risks and reopening safely



When buildings reopen after lockdown, it is essential that water systems are not put back into use without considering the risks of Legionnaires' disease. There is an increased risk of waterborne pathogens such as Legionella bacteria being present as a consequence of the conditions that lockdown may have created.

As a result of the **coronavirus (COVID-19)** pandemic, there is the potential for an increased number of people to be susceptible to Legionnaires' disease due to a compromised respiratory system during or after infection with COVID-19.

Scope

Legionnaires' disease is a type of pneumonia which can cause serious respiratory illness. It can occur when tiny droplets of water (aerosol) containing Legionella bacteria are breathed into the lungs of susceptible people. Preventing Legionnaires' disease is typically achieved by limiting the growth of Legionella in building water systems.

Legionella bacteria will inevitably enter man-made water systems and the degree of risk it poses will vary. All hot and cold water systems need to be considered, including those at: retail outlets; hairdressers; beauty salons; offices; hotels; gyms; sports clubs; golf clubs; hotels; pubs; clubs; restaurants; camp sites; volunteer-run premises and anywhere that has a water supply which is currently shut down or is experiencing restricted use.

Smaller hot and cold water systems are generally lower risk than more complicated ones and this guidance aims to assist those with such systems in controlling the risk of Legionnaires' disease and reopening safely when it is appropriate to do so. It is provided on the basis that organisations will already have suitable control measures in place.

Separate guidance is available for specialist water systems such as swimming pools, spa pools and buildings where water systems are more complex. These should already be subject to more detailed arrangements and control measures. Owners and operators are advised to seek advice from a competent water treatment consultant.

Legionella risk factors

Factors that give rise to Legionella risk are already described in existing guidance document [HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems](#). During this pandemic and

subsequent lockdown, there are two risk factors that may have increased within your organisation, creating ideal conditions for Legionella bacteria to grow in your water system. These are temperature and time for stagnation to occur.

Legionella bacteria thrive at temperatures between **20°C and 50°C** so one of the key control measures for minimising the risk is to ensure that your cold water is cold (i.e. below **20°C**) and the hot water is hot (above **50°C**). When water is below 20°C or above 50°C Legionella bacteria will not grow. However, water between these temperatures presents a greater degree of risk, particularly where it is left to stagnate. Generally, where water is left within a system without movement for more than a week then the risk of growth will increase.

The legal requirements

Under health and safety law, employers, business owners and landlords must manage the risks of exposure to Legionella bacteria. Owners and operators of water systems have a duty to keep them safe to protect the health and safety of employees and visitors. This is true at all times but especially where buildings are closed, subject to low use or reopening. This requires a suitable and sufficient assessment of that risk. Guidance on how to do this is provided in these Health and Safety Executive (HSE) documents: [L8 Approved Code of Practice and guidance on regulations](#) and [HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems](#).

Risk from this hazard is foreseeable in nearly all hot and cold water systems and a scheme of control should be in place to address that risk which will typically include checking water temperatures, programmed maintenance/checks and flushing parts of the system that may contain stagnant water due to low use. Where the risks within the water system change, the risk assessment must be reviewed and revised as necessary

to address those changes. The significant findings of any review should be recorded, but this may only need to be a simple written description of the extra measures being taken at this time.

The European Society of Clinical Microbiology and Infectious Diseases (ESGLI) has produced this useful [Guidance for managing Legionella in building water systems during the COVID-19 pandemic](#). This guidance states that the closure of buildings, parts of buildings or their restricted use, can increase the risk of Legionella growth in water systems and associated equipment if they are not adequately managed.

Key lockdown risk factors and control measures

A combination of warm external temperatures and low use of water systems may have given rise to an increased risk of conditions in which Legionella bacteria can grow.

Ideally, changes in Legionella risk will have been considered at an early point in planning lockdown arrangements. However, if you have not already done so, you must consider that risk now, particularly if it is foreseeable that buildings and water systems may remain shut down or subject to low usage for several weeks. Where conditions for Legionella bacteria growth exist, there is always an opportunity to put measures into place that reduce that risk.

For simple hot/cold water systems, a review could be straightforward. The main objectives should be to prevent stagnation and keep water temperatures outside of 20-50°C. If possible, aim to ensure the turnover of any water stored in tanks every 24 hours and movement of water through pipework and outlets at least once a week to prevent it from becoming stagnant.

If this cannot be achieved because the building is closed, or there is significantly reduced use, you will need to take additional steps beyond your current control measures

to ensure this can be achieved so far as you can. This may include flushing the entire water system (all outlets) weekly and, if possible, dropping the level of stored water in tanks.

If hot water systems are switched off to conserve energy, ensure water stored in any associated tanks is also turned over within 24 hours. Regular temperature checks across the water system at various outlets as described in [HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems](#) assist in confirming that water is not warming up to a point at which Legionella growth may occur, and demonstrate that stagnation is being prevented if they are typically satisfactory and consistent across the system.

Advice for reopening

If you have already reviewed your risk assessment and implemented additional control measures, then it is unlikely you will need to take any further steps prior to reopening.

A building is more likely to be safe to reopen without additional measures if:

- Flushing of the water systems has been undertaken weekly
- Water temperatures at outlets have been checked and are consistently in line with the recommendations in [HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems](#).
- Any microbiological sampling undertaken over the course of the lockdown indicates no significant change in the total viable count (TVC) and Legionella bacteria samples have returned as not detected or satisfactory

Note – there is no legal requirement to undertake microbiological sampling but where it has been undertaken then it may provide assurance and confirmation that control measures have been effective.

Where no additional action has been taken, or you are concerned about the effectiveness of controls implemented, you must take reasonable steps to ensure the safety of the water system prior to reopening. It is foreseeable that some increase in bacterial levels will have occurred. Such water systems should not simply be put straight back into use and a plan should be formulated to allow safe start-up prior to reopening the building.

Any plan should consider the competency and health and safety of individuals carrying out the work. The hazards from Legionella bacteria will likely be greater than expected under normal conditions so measures such as limiting the production of water droplets (aerosol), minimising exposure to those droplets and even use of respiratory protective equipment should be considered.

Where you have concerns, for example if you have previously experienced problems with Legionella in your water system, external advice should be sought from a competent person who may be able to assist remotely or through attendance on site.

Additional steps to take prior to reopening could include:

- Flushing through simple hot/cold water systems with fresh mains water for several minutes
- Increasing the temperature of hot water systems to above 60°C if possible and drawing it through to all hot water outlets (a temperature over 60°C will kill Legionella bacteria over time)
- Flushing through larger hot/cold water systems (including those with tanks, showers, calorifiers etc.) for a significant period of time
- Ensuring that the system is capable of delivering water at safe temperatures by checking temperatures ahead of reopening
- Undertaking a chemical or thermal disinfection of the water system
- Undertaking microbiological sampling for Legionella bacteria

Note – increasing the water temperature to 60°C and above can result in a scalding risk. While water should

be stored at 60°C, there should be a thermostatic mixing valve before the tap to reduce the temperature to around 43°C. This is especially important in settings such as nurseries, play centres, care homes and day centres to protect vulnerable groups.

Something as simple as flushing taps can generate water droplets, so plan in advance how you can do this safely. This could include running taps at low velocity or flushing shower heads into a part filled container of water, ensuring that the showerhead is submerged under the water in the container.

System disinfections take significant time and are typically undertaken with chlorine at harmful levels. They will likely require specialist assistance from a water treatment contractor. Their services may be in high demand at this time so you are advised to contact such service providers as soon as possible if disinfection may be required.

Microbiological sampling could assist in determining the degree of risk any water system currently poses and demonstrate whether any steps taken have been effective. It involves taking a sample of water and sending it to an appropriate laboratory for analysis. It will also likely require specialist assistance from a water treatment contractor. Such sampling should be undertaken 48 hours after any flushing and disinfection and may need to be repeated a few weeks later to ensure that effective controls are being maintained.

Each individual water system within a building or workplace is likely to need some degree of individual consideration as no two systems are entirely alike.

Note – if water systems are already subject to poor or no control, then this guidance may be insufficient to achieve safe reopening. Further specialist risk assessment from a competent person is likely to be required to determine appropriate steps and control measures.

Additionally, some systems believed to be under good control may now find that previous high levels of use and turnover have masked existing issues that may become apparent within periods of low use.

References

HSE Legionella and Legionnaires' Disease Advice

HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems

HSE Legionella & Legionnaires' Disease FAQs

The Legionella Control Association

HSE Advice on Legionella Risks in Your Workplace

Guidance on investigating cases, clusters and outbreaks of Legionnaires' disease for Public Health England health protection teams

Health and Safety at Work etc. Act 1974

Management of Health and Safety at Work Regulations 1999

Control of Substances Hazardous to Health Regulations 2002

L8 Approved Code of Practice and guidance on regulations

ESGLI Guidance for managing Legionella in building water systems during COVID-19 pandemic

Further guidance for complex water systems

Swimming Pools: PWTAG Temporary Pool Closure Guidance

Spa Pool System: HSE HSG282 Spa Pool Systems

Cooling Towers: The Control of Legionella Bacteria in Evaporative Cooling Systems

Other Risk Systems: The Control of Legionella Bacteria in Other Risk Systems

Credits

CIEH is grateful to the following for assistance in providing this guidance:

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About the Chartered Institute of Environmental Health (CIEH)

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