



Legionella prevention & control strategies during Coronavirus (COVID-19) outbreak.

The **Coronavirus (COVID-19)** outbreak, which began in December 2019, presents a significant challenge for the entire world.

Some people will be more vulnerable than others to COVID-19. Generally, these infections can cause more severe symptoms in people with weakened immune systems, older people, and those with long-term conditions like diabetes, cancer and chronic lung disease – not unlike the susceptible groups for Legionnaires' disease.

There are no vaccines that can prevent Legionnaires' disease. Instead, the key to preventing Legionnaires' disease is to make sure that building owners and managers maintain building water systems in order to reduce the risk of Legionella growth and spread.

Legionnaires' disease is a type of pneumonia caused by the bacteria Legionella pneumophila and other Legionella species. The illness usually starts with flu-like symptoms including fever, tiredness, headache, and muscle pains. This is followed by a dry cough and breathing difficulties which may progress to a severe pneumonia. The disease is spread through the air from a water source. People become infected when they breathe in aerosols (tiny droplets of water) which have been contaminated with Legionella bacteria.

Many of the environmental factors that encourage Legionella growth also allow for growth of other are germs that grow well in drinking water distribution systems, such as Pseudomonas and nontuberculous mycobacteria.

Any water system that has the right environmental conditions could potentially be a source for legionella bacteria growth. The Health and Safety at Work Act still applies even in the current situation and as such an employer or those in control of premises must continue to manage any risk arising from their activity and this includes legionella control.

During periods of low occupancy there is an increased risk of biofilms forming on internal surfaces of water pipes and equipment. Once integrated into biofilm, Legionella bacteria obtain protection from disinfectants and temperature normally used as part of a buildings control measures. In addition to offering protection, biofilm provides an important nutritional source for Legionella.

Preventing the growth of biofilms is an important control measure against proliferation of Legionella because once established, biofilms are extremely difficult to eradicate, and Legionella-contaminated biofilm can rapidly colonize other parts of the water distribution system.

Safe Management

Ph Water are unable to provide statements about what is critical, what can be deferred for a few weeks and what can be deferred for longer. The legal responsibility for legionella control lies with the Dutyholder, but we can provide expert advice to assist with your compliance.

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Each Dutyholder must make their own determination for each circumstance but the following principles should be considered when making decisions on what to do to control legionella during the COVID-19 outbreak:

1. The expectation for evaporative cooling systems is that they will be maintained as usual or switched off safely – there is no leeway in this
2. The expectation for water systems supplying critical services, for example hospitals, is that they will be maintained as usual – there is no leeway in this
3. Hot and cold-water systems in buildings that are empty or with under occupancy must address the issue of stagnation:

a) If the building is still partially in use take additional measures to keep the remaining occupants safe:

- i. If possible, drop stored water levels in tanks to maintain <24 hours storage
- ii. Flush to simulate use – weekly flushing may not be sufficient
- iii. Monitor temperature to ensure thermal gain in cold water is controlled
- iv. If fitted, consider temporarily increasing levels of potable water treatment dosing – consider other consequences of this such as corrosion and make the decision on balance of benefit
- v. If controls are lost (temperature, biocide levels, etc.) the guidance in HSG274 is to sample for legionella weekly
- vi. Consider other short-term measures to keep remaining occupants safe such as point of use filters at designated locations with other areas shut off

b) Buildings that are temporarily shut down (mothballed) should follow the guidance in HSG274 Part 2 paragraphs 2.50-2.52:

- i. Do not drain down pipework
- ii. If possible, remove sources of heat and external thermal gain
- iii. Lock off, place signage on doors and otherwise advise potential users that the system has been taken out of use
- iv. Have a plan in place for recommissioning the water system

For all of the work above there should be a task risk assessment in place to ensure operatives are working safely.

Recommissioning Water Systems

It is essential that when buildings reopen following the lifting of COVID-19 restrictions, that any water system is not simply put straight back into use. During the period of shutdown, it would be sensible to formulate a recommissioning plan for each water system to allow safe start-up and assurance to users that it is safe. Dutyholders are likely to be able to access competent help from service providers remotely during the period of restricted movement.

Any plan for recommissioning buildings must take into account the safety of the operatives carrying out the work. It is foreseeable that the hazard present within water systems in this situation would be greater than normally expected. Reasonably practicable measures such as limiting aerosol, minimising exposure and use of RPE should be considered.

Evaporative cooling systems should already have robust start-up and shut-down procedures in place and the expectation is that these will be followed.

The minimum expectation for small, simple hot and cold water systems would be flushing through with fresh mains water. Larger buildings, those with tanks, showers, calorifiers and more complex pipework the expectation is likely to be for more extensive flushing followed by cleaning and disinfection.

During flushing all valves should be operated in the fully open position so that any particulate matter can be flushed through. Of particular importance are float-operated or other restrictive valves which need to be manually opened to ensure clearing of particulates and prevent fouling of the valves. Where a clearing velocity cannot be achieved, consideration should be given to removal of valves to enable an effective flush.

Where cleaning and disinfection is carried out, it is very important to monitor the decrease in disinfectant level over the course of the contact time. Loss of more than 40% disinfectant concentration could indicate influence of biofilm. See BSI PD855468 for more guidance.

Where buildings have been empty for some time and during warm weather, it is likely that some increase in bacteria levels and biofilm will occur. These water systems may require more than a simple disinfection at 50ppm of chlorine for an hour to be successful. Be prepared for the need to repeat some disinfections to achieve success.

In all cases where systems are being recommissioned it is sensible to have evidence to prove/reassure that the recommissioning process has been effective. Sampling to BS7592 should be considered for recommissioning plans to validate the effectiveness of the process. As per HSG274 part 2, samples should be taken 2-7 days following recommissioning and not on the day of disinfection. Follow up samples may need to be considered as part of the recommissioning plan.

While each individual water system is likely to need individual consideration, it will be helpful to be aware of the bigger picture with regard to demand on services. There will be an increased demand for flushing and disinfection, sampling and other system recommissioning work. Be aware of this, make your customers and supply chain aware and manage expectations accordingly.

There is potential for multiple outbreaks of Legionnaires' disease following the COVID-19 outbreak if actions taken now are not carefully considered. The responsibility for legionella control lies with the Dutyholder.

References

www.legionellacontrol.org.uk/news/87/

<https://www.legionellacontrol.org.uk/news/88/>

<https://www.legionellacontrol.org.uk/news/90/>

<https://www.legionellacontrol.org.uk/news/91/>

Swimming Pools - PWTAG

Guidance on temporary pool closure

Because of the current coronavirus emergency, the UK Government has ordered the closure of leisure centres.

The following guidance explains the best way to temporarily shut down your pools.

- **Subject:** Guidance on temporary pool closure
- **Date:** March 2020

There are two options for temporary closure of the pool water treatment – reducing or stopping circulation.

1) Reduced Circulation

- Turn off pool water heating. Where heat exchanger booster pumps are in place, switch off and bypass the heating loop. Allow the pool water to cool naturally to ambient temperature. Prior to reopening the facility, the pool should be reheated in a controlled manner raising the water temperature by no more than 1 degree centigrade every 4 hours.
- Keep auto controller operating; raise free chlorine to the top of the recommended range; minimum 1.0mg/l and pH at 7.2 to 7.4. Check chemical concentrations and pH daily and adjust if necessary.
- Turn UV or ozone off.
- Turn flocculant off.
- Circulation of the pool should continue: the movement of water in the pool tank is necessary to prevent stagnation. Due to the absence of bather pollution, circulating pumps can be run at lower speed settings; no less than 50% of the design flow rate is advised. The balance between the flow from the pool bottom and the surface draw off will need to be adjusted to ensure movement throughout the depth of water.
- Continue to dose the pool water as normal using chemical controller. With no bathers in the pool the required disinfection will reduce considerably. Chemicals will be used at a much reduced rate, so dosing tank levels should be monitored.
- The pool hall air temperature can be reduced in line with the water temperature, but it is important that this is kept at or above pool water temperature, and that the relative humidity is controlled to a maximum of 60% to prevent condensation.

Daily

- Monitor and test the pool water to confirm the presence of adequate free chlorine and pH values.
- Check chemical controller, dosing pump operations, and dosing tank levels and adjust if necessary.
- Check the operation of the filters and vent air as necessary, circulation pumps, and air bleeds.
- Visually check the pool – particularly for algae in dead spots and corners. Continue with pool bottom cleaning on a weekly basis as the closure may extend into summer and algae present a seasonal threat.
- If algae is present, consider superchlorinating.

Monthly

- Backwash media bed filters.
- Normal routine maintenance.

We also advise that pool closure is a good opportunity for planned maintenance works and cleaning activities, such as balance tank cleaning, transfer channel superchlorination, pool filter inspections and cleaning under moveable floors.

2) Stopping circulation

This option is favourable if energy consumption or resource is a major concern during the pool closure period.

- Superchlorinate to 20mg/l at pH 7.2-7.4
- Turn off automatic chemical dosing, and pool circulation
- Reduce water and air temperatures etc as in 1 above
- Check chemical readings and pH weekly.
- To reduce stagnation/dead areas, circulation pumps and filters could be operated once a week for one turnover period.
- Consider use of (low energy) sump pumps in the pool tank to provide a degree of water movement.

Emptying the pool

PWTAG advises against emptying the pool to preserve its structural integrity, unless it is designed to be emptied on a regular basis and there are established procedures in place to achieve this safely.

Commercial Spa pools

Commercial spa pools should be designed for regular emptying, raise the free chlorine to 5mg/l prior to emptying the pool shell, balance tank and all associated pipework.

Superchlorinate and clean the spa before emptying and upon refilling to recommence operation using 50mg/l chlorine for at least one hour with the pH kept to 7.0. On recommencing operation follow the commissioning procedures recommended by the HSE in HSG 282 paragraph 110 www.hse.gov.uk/pubns/books/hsg282.htm

Re-commissioning of pools

A risk assessment should review the potential for microbial growth during the shutdown period and the measures that need to be taken to minimize the risk of infections as a result of biofilm formation within the pool, system pipework and components.

As stated in an earlier guidance note, swimming pools themselves should be safe against microbiological hazards as long as they are chlorinated properly and operated according to PWTAG standards.

If pool buildings intend to remain open, they should follow the government advice on social distancing – both in the pool and in the changing rooms etc, where enhanced disinfection procedures may be necessary. Disinfection should be with 1,000mg/l chlorine strength (or equivalent) paying particular attention to things like door handles and surfaces.

Hot & Cold-Water distribution systems

When pools are closed managers / owners should not forget the need to manage the risks from Legionella growth within water distribution systems feeding showers, changing rooms, kitchens and spas etc.

The HSE ACOP L8 (paragraph 32 requires “that risk assessments are reviewed if there is reason to suspect the assessment is no longer valid” this would include when there is reduced usage resulting in low flow / water stagnation as a result of full or partial closure etc.

Reviewing the Risk Assessment and the Scheme of Control is particularly important when systems are re-commissioned after a shut down.

Reference

<https://www.pwttag.org/guidance-on-temporary-pool-closure/>

Continued Support

PH Water and Air Technologies remains open for business, despite the issues surrounding the Covid-19 pandemic. We watch and review the daily updates from the UK government and implement any changes necessary.

Should anyone require assistance with managing their water systems; ph Water and Air Technologies Ltd have procedures in place to enable our office to run efficiently, remotely and minimise social contact between our staff (Form 226)

We have stringent controls in place to ensure that our site staff follow the correct hygiene procedures in order to minimise the potential transmission of the virus within our own and customers businesses.

Our engineers are equipped with PPE that can be used to reduce transmission i.e. full-face mask, eye protection, gloves (including disposable gloves).

The COVID-19 health crisis is presenting challenges that are unprecedented in our lifetime. Our thoughts and well wishes are with everyone affected by COVID-19.

Please feel free to contact us if you require any further information or assistance during this time of uncertainty, we are here to support you.

Kind regards

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