

Managing *Legionella* risk and responding to *Legionella* detection in care facilities

There is risk associated with *Legionella* in any drinking water distribution system. Of greatest concern are systems that automatically deliver warm water for washing and bathing at approximately 45°C to prevent scalding, as they have the most potential to become colonised with *Legionella* bacteria.

These systems are typically used in care facilities such as supported residential facilities (SRFs), retirement villages, residential aged-care facilities, hospitals and respite facilities. This fact sheet has been developed to inform facility operators of potential risks and recommended responses to *Legionella* detections.

Legionnaires' disease

Legionella bacteria must be inhaled into the lungs to cause illness. Most people exposed to *Legionella* do not become ill. Legionnaires' disease, a serious and sometimes fatal form of pneumonia, most commonly occurs in the elderly and people with severe chronic disease or suppressed immune systems, smokers and it is more prevalent in men.

Legionnaires' disease can occur following inhalation of aerosolised water droplets or micro-aspiration of water from consumed ice or chilled drinking water.

To prevent the risk of scalding, AS/NZS 3500.4:2003 *Plumbing and drainage - Heated water services* requires heated water at outlets of sanitary fixtures used primarily for personal hygiene purposes to be dispensed at a maximum of 45°C in healthcare buildings. While the prevention of scalding is an essential safety measure, the reduced temperature may provide conditions suitable for the growth of *Legionella* on the internal surfaces of pipes if not properly maintained.

Legionella in water systems

Warm water systems distribute or recirculate warm water through the majority of its branches at a nominal temperature of 45°C by means of a temperature controlling device. As warm water systems pose the greatest risk, they are regulated by the *South Australian Public Health (Legionella) Regulations 2013* (the Regulations), which prescribe mandatory system operation and maintenance requirements. However, as any drinking water distribution system can become colonised with *Legionella*, it is essential that operators of health and aged care facilities are aware of the risks and how to manage them.

This factsheet applies to all drinking water distribution systems (cold, warm and hot) in all care facilities, regardless of whether or not they are regulated systems. Facility operators should contact an Environmental Health Officer at their local council if they are unsure if they have regulated systems.

Legionella risk management in care facilities

Due to the presence of highly susceptible people, operators of care facilities have a heightened duty to minimise *Legionella* related public health risks through the ongoing management of water distribution systems.

Facility operators should ensure all components of their water system, including chilled water dispensers, ice machines, dental chairs, decorative fountains, misters and therapeutic devices

containing water such as humidifiers, are assessed and risks relating to *Legionella* growth are identified.

These components should be effectively maintained, through the development of an appropriate monitoring and maintenance regime, to ensure the risks are controlled. Some factors that could be considered, assessed, monitored and managed are:

- > **water temperatures** - identifying areas of possible heat transfer between hot/warm and cold water pipes, solar pre-heating systems or direct sun exposure of pipes and location of pipes in hot areas such as roof spaces
- > **water flow** - including frequency of outlet use and possible areas of water stagnation including obsolete pipe work or “dead legs”
- > **water quality** - including whether there is any residual disinfection from the water supply and presence of nutrients and biofilm
- > **system configuration** - backflow prevention and anti-microbial and anti-corrosion systems, programs and measures
- > **system sampling** - microbial and chemical sampling programs and verification

What should I do if *Legionella* is detected in my facility?

The detection of *Legionella* in a water sample from a care facility requires immediate attention. If the sample was collected from a warm water system, the system should be immediately shut down or decontaminated by a competent person.

Regardless of whether the *Legionella* detection came from a regulated system, Council Environmental Health Officers (EHOs) who are authorised under the *South Australian Public Health Act 2011* (the Act) should be contacted immediately to discuss the detection and provide advice and directions to protect public health. An EHO will work with you to review your water system and make any recommendations that are necessary.

Failure to manage *Legionella* in a care facility constitutes a risk to public health, an offence under the Act, and in regulated systems it is also an offence under the Regulations.

Clinicians at the facility ideally should be made aware of the detection, so they can consider implementing a testing regime for Legionellosis for clients displaying symptoms of pneumonic illness.

Verifying the efficacy of decontamination and maintenance regime

Whenever *Legionella* is detected, thorough investigations should be conducted to identify and rectify any controllable factors that may have resulted in the colonisation. Decontaminating the system alone is only part of the response as *Legionella* control requires ongoing management.

Verification samples should be collected and tested for *Legionella* 3-7 days following the completion of the decontamination procedure.

Additionally, the monitoring and maintenance regime should be reviewed and opportunities identified to ensure the regime is robust and effective.

Ongoing detection of *Legionella*

Often, *Legionella* will not be detected in the immediate post decontamination samples but it will be detected again in later samples.

This indicates ongoing colonisation of the system and that the decontamination procedure, whilst temporarily reducing *Legionella* concentration at the outlets, was inadequate to remove *Legionella* in biofilm on the surfaces of pipes. As biofilm layers build up in pipes over time, this is a common issue in older facilities with large and complex water distribution systems that have been inadequately managed and maintained.

In circumstances where the distribution system cannot be appropriately managed or modified to reduce *Legionella* risks, it may be necessary to implement long term controlled low residual chemical (most commonly chlorine) dosing. This strategy should be thoroughly investigated, as it may compromise the current water treatment processes implemented by the water distributor.

Investigations into this process should include the water distributor, water treatment specialists, infection control specialists and relevant government departments.

Legionella colonisation of cold water pipes

Cold water systems which are poorly designed, installed and maintained may be at risk of *Legionella* colonisation.

This is predominantly caused by the heating of water within the cold water pipework through inadequate system design, insulation and backflow prevention. Temperature profiling (i.e. regular systematic testing of temperature from water outlets) of the cold water pipework or water sampling will determine if this is an issue.

If *Legionella* colonisation of the cold water is suspected or confirmed, the water should not be used for drinking by people at risk of aspiration pneumonia. If cold water pipework is found to be contaminated, cold and warm pipework and all outlets will require decontamination. This process should be performed by a person or company with specialised knowledge, experience and equipment to ensure the process is successful.

Conclusion

Legionnaires' disease is a potentially fatal disease caused by the bacteria *Legionella*. Whilst there is some risk associated with *Legionella* in any water system, it is particularly important that those systems that service vulnerable populations are managed to minimise *Legionella* colonisation. Proper design and maintenance of these systems will help reduce the proliferation of *Legionella* and reduce the risk of disease in care facilities.

Further information

The local council is the relevant public health authority for the area, and a council environmental health officer should be contacted in the first instance.

Further information, including the Guidelines for the Control of *Legionella* in Manufactured Water Systems is available on SA Health's *Legionella* website:

www.sahealth.sa.gov.au/legionella

For technical plumbing information contact the Office of the Technical Regulator

otr.plumbenquiries@sa.gov.au

For more information

Health Protection Programs

SA Health

Telephone: 08 8226 7100

www.sahealth.sa.gov.au/legionella

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