

Legionella Written Scheme

What is Legionnaires' disease?

Legionnaires' disease is a potentially fatal form of pneumonia and everyone is susceptible to infection. The risk increases with age but some people are at higher risk including:

- People over the age of 45
- Smokers and heavy drinkers
- People suffering from chronic respiratory or kidney disease, diabetes, lung or heart disease
- Anyone with an impaired immune system

The bacterium *Legionella Pneumophila* and related bacteria are common in natural water sources such as rivers, lakes and reservoirs, but usually in low numbers.

Outbreaks of the illness occur from exposure to legionella growing in purpose-built systems where water is maintained at a temperature high enough to encourage growth, e.g. cooling towers, evaporative condensers, hot and cold water systems and spa pools used in all sorts of premises.

How do people get Legionnaires' disease?

People contract Legionnaires' disease by inhaling small droplets of water (aerosols), suspended in the air, containing the bacteria. Certain conditions increase the risk from legionella if:

- The water temperature in all or some parts of the system are between 20-45 °C, which is suitable for legionella bacteria growth
- It is possible for breathable water droplets to be created and dispersed e.g. aerosol created by a cooling tower, spa pool or water outlets including showers and taps
- If water is stored and/or re-circulated in cold water tanks, hot water heaters, cooling towers or spa pools for example
- If there are deposits that can support bacterial growth providing a source of nutrients for the organism e.g. rust, sediment, scale, organic matter and biofilms. These can be commonly found on shower heads, on filters, in TMVs, in cold water storage tanks, hot water heaters, cooling towers and spa pools

How is the risk controlled?

If conditions are favourable, the bacteria may grow, thus increasing the risks of Legionnaires' disease and it is therefore important to control the risks by introducing appropriate measures outlined in ACoP - L8 Legionnaires' disease - The Control of *Legionella* bacteria in water systems and the technical guidance in HSG274. This guidance gives clear instructions on controlling and managing the risks associated with

legionella bacteria in water systems. This guidance states that a legionella bacteria risk assessment should be undertaken to identify the risks present. From there, a written scheme of control can be created and the risks can be properly managed and controlled.

Water systems should operate within the below parameters:

- Cold Water Storage Tanks (CWST): 20°C (Maximum)
- Cold water outlets: 20°C (Maximum)
- Hot Water Storage Units (HWS) (above 15 litres): Flow 60°C (Minimum) 65°C (Maximum)
- Hot water outlets: 50°C (Minimum)
- Hot water return: 50°C (Minimum)
- Point of Use water heaters (less than or equal to 15 litres): 50°C (Minimum) at an outlet
- Combination Boilers: 50°C (Minimum) at an outlet
- Instantaneous Water Heaters: 50°C (Maximum) at an outlet
- Hot water outlets with blending valves set to 39-43°C as appropriate. Valves to be serviced twice per annum
- All outlets not used at least weekly to be flushed on a weekly basis
- Expansion Vessels to be flushed through and purged to drain
- Legionella monitoring should be carried out where there is doubt about the efficacy of the control regime or where recommended temperatures are not being consistently achieved throughout the system. Contact your legionella risk assessor to enquire about this.

Water services, new and modified shall be designed, maintained and monitored in accordance with HSE ACoP L8, HSG 274 part 2 and the British Standard 8558 "Specification for the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages".

Where people at risk of scalding are served by the hot water outlets, "fail-safe" thermostatically controlled mixing valves have been installed, positioned as close as possible to the hot water outlets, to reduce the hot water temperatures. Those people at risk of scalding include young children, the very old, and those with sensory loss.

The need for intermittently or infrequently used taps and appliances (particularly showers) will be identified by the risk assessment. If such taps and appliances are not necessary the supplies shall be cut off and re-coupled close at the branch pipework to ensure that no blind end is formed.

Showers and outlets that cannot be removed shall be flushed in a manner that removes the possibility of creating an aerosol. With flexible showers hoses, the spray head should be lowered temporarily into a bucket and the water run to drain without creating an aerosol.

With high level fixed shower heads, the method should be to place a food grade plastic bag over the head of the shower and attach using a plastic band, a corner of the bag is then cut to allow the water to be discharged safely into the shower tray/outlet without generating an aerosol.

Further details on maintaining water systems

Hot Water Storage Units (HWS)

- Check flow and return temperatures ensuring the readings meet the requirements as shown in section b.
- Inspect HWS internally by removing the inspection hatch or using a boroscope and clean by draining the vessel. (Contractor)
- Where there is no inspection hatch, purge any debris in the base of the HWS to a suitable drain. (Contractor)

Cold Water Storage Tanks (CWST)

- Inspect CWST annually. This should be carried out by a competent person.
- Take the appropriate temperatures readings

Sentinel Points

- Take temperatures at hot and cold sentinel points.

Representative Points

- Take temperatures at a representative selection of other hot and cold points within the water system.

Showers

- Dismantle, clean and descale removable parts, heads, inserts and hoses where fitted.
 - Remove the showerhead from the hose
 - Take apart the showerhead
 - Put the parts from the showerhead and the hose in a sink/bucket and soak in hot water with an appropriate showerhead cleaner
 - Use a brush to remove stubborn residue
 - Rinse all parts thoroughly with clean water
 - Dry with a clean towel and leave to dry
 - Reassemble the showerhead and attach it to the hose
- If shower heads and hoses cannot be cleaned or descaled effectively then they should be replaced.

Infrequently used outlets

- Consideration should be given to removing infrequently used showers, taps and any associated equipment that uses water, including redundant supply pipework.
- Little used outlets within a water system should be included on the flushing regime with records of flushing kept. These outlets should be identified in your risk assessment.
- Flush the outlets until the temperature at the outlet stabilises and is comparable to supply water.

Dead Legs/Dead Ends

- Dead legs are lengths of pipework which are no longer used, or used extremely rarely, but can be drained. These should be removed if possible, or added to the weekly flushing schedule.
- Dead ends are lengths of redundant pipework which are capped or sealed, and cannot be drained. These should be removed if possible, or be fitted with a functioning outlet to allow them to be drained as part of the weekly flushing schedule.

Terminology

- Sentinel point: The outlets at the beginning and end of a water system.
- Infrequently used outlets: Outlets that are unused for a week or more at a time.
- TMV: A thermostatic mixing valve, that blends hot and cold water to a safe temperature for use.
- Schematic plan: An illustrated plan of the water system.
- Cfu/l: The total number of colony forming units per litre of water. i.e. the number of bacterial cells that are capable of multiplication.
- Legionella outbreak: an 'outbreak' is defined as two or more people diagnosed with Legionnaires Disease that have a common place linking them within the past 6-8 months.

Purpose and scope of the written scheme

A written scheme of control for legionella is a comprehensive Legionella risk management document. In order to achieve control over the entire water system and maintain a suitable schedule of controls, the written scheme clearly identifies:

- The measures required to control the risks from exposure to legionella bacteria
- How those measures are implemented and managed
- Who is responsible for their implementation, so that control over the entire water system is achieved and remains effective.

The written scheme of control forms an essential risk management document that should be developed as a practical tool to be used by all stakeholders involved in the legionella control process. It should be read in conjunction with the current Legionella Risk Assessment.

This written scheme includes;

- an introduction to the building and the water system,
- the current names and positions of those responsible in the control regime,
- a schematic drawing of the pipe work layout,
- the maintenance, control and escalation procedures for all of the water based equipment on site,
- information on record keeping.

This document should be reviewed regularly (at least annually) and be kept up to date with the current guidance available for the control of legionella bacteria in water systems.

It remains valid providing there are no major changes to the water system, no changes to the building use, no additional equipment is added to the water system that is not already included in this document and no updated guidance on the control of legionella is released.

Head of Provision Signature		Date completed	
Printed name		Next review date	

Information about the water system

School Name	RAISE-AP		
Address			
Postcode			
Email	contact@raiseap.co.uk	Telephone:	

Overview of the water system

(Provide number of storage tanks and heaters)

How is cold water supplied? The school may have direct mains water to all outlets, a cold-water storage tank, or a combination of the two.

How is hot water supplied? The school may use a combination boiler/stored hot water in a central heater/point of use water heaters/multiple water heaters or a combination.

(Insert schematic plan here)

Responsibilities

The duty holder (Head of Provision) will:

- Arrange for the completion of a suitable and sufficient legionella risk assessment by a competent person.
- Nominate and appoint in writing a responsible person and deputy to assist with the completion of preventive legionella controls.
- Allocate appropriate financial and other resources for the control of legionella.
- Provide the Responsible Person(s) with sufficient authority and support to ensure that all operational procedures are carried out in a timely and effective manner.

The responsible (the person with day to day management of legionella) person will:

- Ensure all control measures are carried out in a timely and effective manner, and results are recorded.
- Periodically review legionella records to ensure there are no gaps or unaddressed issues.
- Report any issues highlighted during implementation to the duty holder.
- Periodically review this document
- Review recommendations from the legionella risk assessment and complete in a timely manner.
- A responsible person must be appointed and not just assigned. Adequate training should be provided and they must be formally told about their duties. They should have a suitable knowledge of the systems that they are responsible for.

Deputy responsible person will:

- Support the responsible person with their duties.
- Carry out control measures in the responsible person's absence.

The legionella competent person (your legionella/water hygiene contractor) will:

- Complete a suitable and sufficient risk assessment for legionella
- Conduct technical tasks such as water sampling, dosing water systems and inspecting components of the water system

Contact Details

Duty holder	Name: Post: Contact Number:
Responsible person	Name: Post: Contact Number:
Deputy responsible person	Name: Post: Contact Number:
Other site staff with legionella responsibilities	Name: Post: Contact Number:
Legionella competent person (service provider for cleaning & disinfection, sampling, risk assessor, water treatment etc.)	Name: Email: Contact Number:

Locations of assets and control measures

Assets	Location	Actions (frequency)
Buildings with running water on site:	<i>e.g. Main Building Outbuilding by garden area</i>	
Location of mains inlet/ball valve	<i>e.g. Boiler room</i>	<i>Check temperature of stored water and incoming mains water (annually, summer)</i>
Location of cold water storage tanks on site:	<i>e.g. CWST is in the roof void above the caterpillars class</i>	<i>Inspect tank annually (Contractor, annually) Check temperature of stored water and incoming mains water (annually, summer)</i>
Locations of water boilers:	<i>e.g. Classes 1 & 2 have wall mounted water heaters with a circulating system classes 3-5 and kitchen are supplied by a water calorifier in the roof void which is non-circulating Class 6 & staffroom have point of use heaters</i>	<i>Classes 1&2 temperature checked at both flow (60 °C) and return (50 °C) pipes monthly. Classes 3-5 & Kitchen sentinel points are checked monthly. Other taps are checked on a rotating basis throughout the year. Class 6 and Staffroom check POU heater is operating between 50-60 °C. Contractor to check calorifier and heaters annually.</i>
Locations of sentinel points on site:	<i>e.g. Boys and girls toilets, left hand hot outlets Class 1 & Class 2 hot outlets Class 3 & kitchen hot outlets Class 6 hot outlet Staffroom hot outlet Staffroom & Class 6 cold outlet</i>	<i>Hot outlets without TMVs should operate at 50 °C or higher (Monthly). Outlets with TMVs should be between 39-43 °C. The hot pipe before the TMV should be at least 50 °C. All POU heaters should operate between 50 and 60 °C. All cold outlets should be below 20 °C within 2 minutes of running the tap</i>

Assets	Location	Actions (frequency)
Location of rainwater storage tanks:	<i>e.g. water butts in garden area.</i>	<i>e.g. Never used for hoses of aerosol generating equipment</i>
Location of “shower/sprinkler” style outlets:	<i>e.g. Medical room shower Shower style tap in kitchen Sprinkler head in garden</i>	<i>e.g. Flushed directly down drain weekly Dismantled, descaled, and sterilised with Milton quarterly</i>
Location of infrequently used outlets:	<i>e.g. Garden area outbuilding Class 3 outdoor tap Medical room shower and basin</i>	<i>(Flush for at least two minutes, and until water temperature has dropped below 20 °C)</i>
Location of TMVs:	<i>e.g. boys and girls toilets, 2x beneath each basin Class 3-5 beneath each basin</i>	<i>e.g. Maintained by service provider and failsafe checked annually</i>
All outlets following school closedowns	-	<i>e.g. Outlets flushed until they reach the appropriate temperatures.</i>
Sampling of the system	<i>e.g. in line with recommendations made in the legionella risk assessment, samples are taken for lab testing.</i>	<i>e.g. Results of sampling are recorded with this written scheme. In the event of positive samples, the procedure in appendix 6 will be followed.</i>



Appendix 1: Hot water temperature monitoring – Within 1 minute

Date:

Signed:

[illegible]

Date:

Signed:

Location	TMV: Hot pipe	TMV: Blended outlet	Hot outlet	POU water heater	Sentinel point Y/N	Actions/comments	Date completed

Appendix 2: Cold water temperature monitoring. Initial and within 2 minutes

Date:

Signed:

Location	Initial temp	Temp after 2 minutes	Sentinel point Y/N	Actions/comments	Date action completed

Date:

Signed:

Location	Initial temp	Temp after 2 minutes	Sentinel point Y/N	Actions/comments	Date action completed

Appendix 3: Flushing infrequently used cold outlets

Date:

Signed:

Location	Initial temp	Temp after flushing	Sentinel point Y/N	Actions/comments	Date action completed

Date:

Signed:

Location	Initial temp	Temp after flushing	Sentinel point Y/N	Actions/comments	Date action completed

Appendix 3: Flushing infrequently used hot outlets

Date:

Signed:

Location	Temp after 1 minute	Sentinel point Y/N	Actions/comments	Date action completed



Date:

Signed:

Location	Temp after 1 minute	Sentinel point Y/N	Actions/comments	Date action completed

Appendix 4: Cleaning shower style heads

Date:

Signed:

Location	Dismantled Y/N (if not possible, consider replacing with one that comes apart)	Actions/comments (if levels of scale are high, more frequent cleaning may be required)	Date action completed

Date:

Signed:

Location	Dismantled Y/N (if not possible, consider replacing with one that comes apart)	Actions/comments (if levels of scale are high, more frequent cleaning may be required)	Date action completed

Appendix 5: Hot water heaters and calorifiers

Date:

Signed:

Location	Flow temp	Return temp	Actions/comments	Date action completed

Date:

Signed:

Location	Flow temp	Return temp	Actions/comments	Date action completed

Appendix 6: Positive legionella samples

If it is suspected that control measures are not effective, it is recommended that legionella sampling of the water system is undertaken. The following actions are required depending on the Total Viable Count result.

Results <100 cfu/l	Continue with current control measures.
Results >100 cfu/l and up to 1000: If the minority of samples are positive:	The system should be resampled. If similar results are found again, a review of the control measures and risk assessment should be carried out to identify any remedial actions necessary.
Results >100 cfu/l and up to 1000: If the majority of sample results are positive:	The system may be colonised, albeit at a low level. An immediate review of the control measures and risk assessment should be carried out to identify any other remedial action required. Disinfection of the system should be carried out.
Results >1000 cfu/l:	The system should be resampled and an immediate review of the control measures and risk assessment carried out to identify any remedial actions, including possible disinfection of the system. Retesting should take place a few days after disinfection and at frequent intervals afterwards until a satisfactory level of control is achieved.

For further guidance and appropriate remedial action, please contact your water hygiene specialist