

Control of Legionella Policy

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1. Policy

London Metropolitan University will take all reasonable precautions to ensure that its staff, students, contractors and visitors are not exposed to Legionella bacteria from building services hot, cold or cooling water systems associated with the University while on its premises.

All new water systems will be installed, commissioned and handed over in accordance with the Health and Safety Executives (HSE) Approved Code of Practice ACoP L8, with further reference to their document the control of legionella bacteria in water systems HSG274 part 2, and the control of legionella bacteria in other risk systems HSG 274 part 3.

2. Introduction

Legionnaires' disease is the name given to the infection caused by Legionella bacteria. This is a potentially fatal illness caused by the inhalation of very small water droplets or aerosols which contain Legionella bacteria. Legionella is widespread within the environment and, it may gain access to and proliferate in water systems such as cooling towers and 'hot and cold' water services. This is only possible if the perfect environment is present. Legionella thrives at temperatures between 20°C - 45°C and if a supply of nutrients is present in the water system such as rust, sludge, scale, algae, and other forms of bacteria. For these reasons, robust processes of monitoring and control need to be implemented.

In order to fulfil its legal obligations, the University complies with the Health and Safety Executive's *'Approved Code of Practice and Guidance on regulations L8 – Legionnaires' disease: The control of Legionella bacteria in water systems'*, and further references HSG274, parts two and three.

3. Appointment of University Staff

The Vice-Chancellor is ultimately responsible for the management and control of Legionella risks in accordance with the ACoP L8, who discharges this duty through to the Director of Estates, who:

1. Appoints members of staff to fulfil the following roles:

- The Senior Estates Infrastructure Manager (SEIM) is responsible for managerial and delegated responsibility for the implementation of the University's policy and for the management of the water systems across the Estate in accordance with the ACoP L8.
- The Head of Estates Operations deputises for the SEIM in their absence.
- Deans of Schools are responsible for management and control of legionella risks for School's equipment. Their duties are listed in Section 11.

2. Responsible to identify and assess the sources of risk from systems on the University estate, in other words, to undertake legionella risk assessments.

3. Has in place a system for managing the risks identified through either prevention or control measures i.e., the Written Scheme of Control.
4. Monitors water systems and implements agreed remedial measures where these become necessary to control the risk.
5. Maintains adequate records of maintenance, monitoring, testing, disinfection and pasteurisation of the water systems necessary to demonstrate compliance with the University's procedures; ACoP L8 and HSG 274 parts 2 and 3.

4. Responsibilities

1. The Estates Senior Infrastructure Manager (SEIM) Advising the appointed specialist sub-contractor of any water systems on London Metropolitan University premises which require a legionella risk assessment, including those in the schools.
2. Managing the specialist sub-contractor to:
 - a. Conduct legionella risk assessments and implement the findings.
 - b. Implement the Maintenance and Testing of Hot & Cold Water & other water systems.
 - c. Implement remediation where the control programme is seen to be failing.
 - d. Maintain an asset register of all water-based systems.
 - e. Maintain all records for a period of 5 years (by the Facilities Management contractor).
3. Liaise with Facilities Management Contractor and ensure that they perform at least annually a review of the testing and monitoring data producing an audit report and addressing any concerns found.
4. Ascertain that the Facilities Management Contractor carries out an annual review with the sub-contractor responsible for testing & monitoring and any actions raised are addressed.
5. Liaise with Business Services (London Met staff) and Facilities Management Contractor for sub-contractor management, to ascertain records of training and competence for all involved in Legionella control for the University are kept.
6. Maintain copies of Water Risk Assessments (see section 6).

The Head of Estates Operations Undertaking the duties of the SEIM in their absence.

Project Team/Project Managers

1. Ensuring that any works undertaken meet all current water Regulations and the HSE's ACoP L8 and HSG 274.
2. Ensure that the works do not increase any Legionella risk, and where possible reduce this risk.
3. Advise the University appointed sub-contractor of any works so the sub-contractor can arrange for a Legionella risk assessment, update the asset registers, and implement control schemes for the new/modified systems.

The University appointed Facility Management Company

1. Is responsible for undertaking, implementing and maintaining all the required legionella risk assessments, the risk assessment remedial actions, monitoring and testing of the systems as defined by the legionella risk assessments and HSG 274 part 2, specifically table 2.1 and as indicated in Section 6 below.
2. Draft the Written Scheme of Control on the behalf of London Met University, in accordance with the specific risks and needs of each building. A written scheme of control is devised and implemented (as stated in the ACOP L8) to design, maintain and operate the water services under conditions that prevent or control the growth and multiplication of legionella bacteria.
3. Undertake remedial actions should any system fail to meet the control parameters.
4. Is responsible for annual auditing of the delivery of the control testing, monitoring and management, supporting the SEIM and providing expert advice as required.

5. Training of Staff

University Staff

The SEIM and Head of Operations are required to attend a Legionella Responsible Persons training course, relevant to the University assets and systems.

University Project managers are required to attend a Legionella Awareness training course relevant to the University assets and systems.

Training should be refreshed every 3 years, or sooner in the event of updates in Legislation, Regulation or Health and Safety Executive's ACoP or technical guidance.

The SEIM and Head of Operations are required to be assessed as competent for the role by independent competence checks, initially and then reviewed 3-yearly.

The University appointed sub-contractor staff and The University appointed Water Consultant

The University appointed sub-contractor staff and the University appointed Water Consultant must be evidenced as trained and confirmed as competent for the tasks they undertake on behalf of the University prior to undertaking any works, this includes any specialist sub-contractors and the main University appointed sub-contractor used.

Evidence of training and competence must be provided to the SEIM.

6. Management of Risk

Identification and Assessment of the Risk

The ACoP L8 requires that a suitable and sufficient assessment is carried out for each premises and water systems under the University responsibility in order to identify and assess the risk of exposure to legionella bacteria. The Legionella risk assessment will meet the requirements of BS8580-1:2019 and be completed by a competent person for all of the building services water systems in University premises e.g., cooling systems, mains water/cold water down services/hot water services across the estate.

This will include the pipe work, taps, storage vessels/tanks, calorifiers, heat exchangers, showers etc. which will identify, assess and record the risks. It will also define advised remedial actions to be undertaken and produce a site and system specific maintenance plan to manage any associated risks, identifying the inherent, residual and as low as reasonably practicable risks for the system.

The risk assessment will include the provision of schematic drawings detailing the building services hot and cold-water systems in each building.

Assessment review

The legionella risk assessments will be reviewed on a programme as defined by the initial legionella risk assessment or sooner if changes have been made to the particular system which indicate the documentation is no longer valid.

Where a new system is installed or identified a legionella risk assessment is undertaken on the systems by the approved sub-contractor, and the monitoring and testing regimen recommended by the legionella risk assessment implemented by the specialist sub-contractor.

The legionella risk assessments will include those specialist water systems installed within academic departments which are the responsibility of the Schools but only where these have been identified to Estates by the Dean of School.

Copies of all legionella risk assessments are maintained by the SEIM, and stored on the Estates SharePoint at: Estates Operations \ Infrastructure \ Estates Compliance \ Water Management \ 2. Water Risk Assessments, and are issued to the specialist sub-contractor who must update the control scheme for the system risk assessed in line with the recommendations of the legionella risk assessment.

System for Managing the Risk

The following measures are undertaken by Estates for the management and maintenance of the water systems to minimise the risk of Legionella bacteria colonisation. Further detail of each process is provided within the ACoP L8, and HSG 274 parts 2 and 3.

The records are maintained in the appointed sub-contractor portal. The University RP and relevant stakeholders have access to the portal.

Checklist for hot and cold water systems. Guidance from HSG 274 part 2 table 2.1

Service	Action taken	Frequency
Calorifiers/heat exchangers	Inspected internally by removing the inspection hatch or using a boroscope, cleaned and disinfected by draining the vessel. The frequency of inspection and cleaning is subject to the findings and increased or	Annually, and as indicated by the rate of fouling

	decreased based on the conditions recorded	
	Where there is no inspection hatch, any debris in the base of the calorifier is purged to a suitable drain. The initial flush is collected from the base of hot water heaters to inspect the clarity, quantity of debris and temperature.	Annually, but may be increased as indicated by the risk assessment or result of inspection findings
	Check flow and return temperatures. The flow temperature should be set to achieve 60°C and the return temperatures are 50°C minimum.	Monthly
POU water heaters (no greater than 15 litres)	Check water temperatures to confirm the heater operates at 50-60°C or check the installation has a high turnover	Six monthly, unless advised by the risk assessment.
Combination water heaters	Inspect the integral cold water header tanks as part of the cold water storage tank inspection regime, clean and disinfect as necessary. If evidence shows that the unit regularly overflows hot water into the integral cold water header tank, instigate a temperature monitoring regime to determine the frequency and take precautionary measures as determined by the findings of this monitoring regime	Annually
	Check water temperatures at an outlet to confirm the heater operates at 55-60°C	Monthly
Sentinel taps	Temperature checks carried out to confirm hot water temperature reaches 50°C within one minute of opening the outlet and is less than 20°C for cold water within 2 minutes of opening the outlet	Monthly
Infrequently used outlets (e.g. Eye wash stations; mop sink taps; emergency showers)	Flushed through and purged to drain by maintenance team. Temperatures measured and recorded.	Weekly
	Infrequently used showers, taps and any associated	Weekly

	equipment that uses water will be removed where practical. If removed, any redundant supply pipework will be cut back as far as possible to a common supply, but preferably by removing the feeding 'T'.	
	Infrequently used equipment within a water system (i.e. not used for a period equal to or greater than seven days) is included on the flushing regime.	Weekly
Shower heads, hoses and spray taps	Dismantle, clean and descale & disinfect removable parts, heads, inserts and hoses where fitted	3 monthly or more often if rate of fouling indicates this is required.
Water taps	Temperature tests carried out across a representative number of taps throughout each building to confirm the water temperature reaches 50°C within one minute of opening the hot water outlet and is less than 20°C within 2 minutes of opening the cold water outlet	Annually – throughout the year and recorded within the logbook
Expansion vessels	All expansion vessels flushed through and purged to drain. Details are recorded.	6 monthly
Thermostatic Mixing Valves (TMVs)	TMVs are inspected, cleaned, descaled and disinfected, along with any strainers or filters. Details are recorded. To maintain protection against scald risk, TMVs require regular routine maintenance carried out by competent persons in accordance with the manufacturer's instructions.	Annually or on a frequency defined by risk assessment, taking account of any manufacturer's recommendations TMVs included in PPMs
Water tanks	Water sample taken for basic bacteriological testing Total viable count @22°C and 37°C, E Coli and Coliforms	6 monthly
	Tanks inspected and temperatures noted remote from the ball valve and the incoming mains.	Annually in the summer

	The maximum temperatures of the stored and supply	
Base Exchange Water Softeners	Check salt levels and hardness check	Weekly
	Service & disinfect	Annually
POU Filters	Record the service start date and lifespan or end date and replace filters as recommend by the manufacturer (0.2um membrane POU filters should be used primarily as temporary control measure while a permanent safe engineering solution is developed, although long-term use of such filters may be needed in some healthcare situation)	According to manufacturer's guidelines
Multiple use filters	Backwash and regenerate as specified by the manufacturer	According to manufacturer's guidelines
Legionella sampling	According to the sampling plan as detailed below.	

Legionella Sampling Program

The microbiological sampling regime is detailed in the London Met Written Scheme of Control which has been developed by the specialist sub-contractor.

Monitoring of Water Systems

The University appointed sub-contractor is assigned to carry out the required maintenance tasks as per the above table and the requirements of the legionella risk assessment. Any non-conformances which are outside the designated control limits are to be remediated and notified to the SEIM.

Maintenance and monitoring of Records

Records will be kept of the maintenance, monitoring, testing, disinfection and pasteurisation of the water systems necessary to demonstrate compliance with the University's procedures and the ACoP L8 and HSG 274 parts 2 and 3.

Records of all activities regarding legionella control as advised by ACoP L8 are held by the University appointed Facilities Management Contractor. They are monitored by the University appointed RP (Estates Senior Infrastructure Manager) monthly and quarterly; the specialist sub-contractor audits every 12 months and University appointed sub-contractor's internal H&S team audit annually. Reports of all the audits are issued to the SEIM for review.

Copies of audit reports are held by University appointed sub-contractor and are reviewed in regular management meetings. Attendees are SEIM, Head of Operations, representative of the Health & Safety Team, and the appointed specialist sub-contractor account manager.

A full asset register for the water systems forms part of the planned maintenance system.

Copies of logbooks, and test results are held by University appointed sub-contractor and made available to the University Estates department.

7. Projects – Design and Installation

All water systems within the University will be designed, manufactured and installed to be safe and without risk to health. Designers and installers will ensure the water systems comply with the Water Supply (Water Fitting) Regulations 1999 and are approved by the Water Regulation Advisory Scheme (WRAS).

The design, sizing, layout, construction and commissioning of water systems will comply with the above Regulations.

Low corrosion materials (copper, plastic, stainless steel) should be used where practicable. Non-metallic materials are deemed to be compliant provided they meet BS6920. Certain aspects of water systems will have to comply with the Building Regulations. Water storage tanks must comply with the Water Regulations and the guidance of HSG274 part 2.

Modifications or changes to existing installations should always be carried out with due regard to relevant water, health and safety legislation and BSI Standards, and so they do not increase, and ideally reduce, the risk associated with legionella growth and dissemination.

All associated drawings, legionella risk assessments and test schedules must be updated by the University appointed sub-contractor following new designs or installations and be made available before any 'hand over' occurs. It is the responsibility of the Project Team to advise the University appointed sub-contractor of any works being undertaken and completed.

8. Equipment

Estates are to maintain an asset register, recording all calorifiers, humidifiers, shower heads, sentinel monitor points and relevant plant identified by the legionella risk assessment. Showers and taps are identified by room number, and quantity, rather than individually. These are held by University appointed sub-contractor in the water log books and on the CAFM system.

9. Remedial Actions

The following emergency procedures will be implemented where there is a departure from the HSG 274 part 2 control limits for calorifiers, water tanks or water systems.

Control limits for calorifiers, water tanks or water systems.

Total Viable Count (TVC) @22°C and 37°C, E Coli, Coliform	<ul style="list-style-type: none"> TVC results are trended against previous results, if seen to be rising significantly remediate the system by cleaning and disinfection. If the remedial works have not been effective, discuss the SEIM an alternative action E Coli, Coliforms, control limit is <1 cfu/ml. If detected, clean and disinfect the cold water tank and re-sample within 2-3 days to confirm effectiveness. If the remedial works have not been effective, discuss the SEIMan alternative action. All actions and results to be recorded
Positive Legionella Result	<ul style="list-style-type: none"> Dependent on the count - see below guide issued by the HSE in HG274 part 2. All actions and results to be recorded
Hot & Cold Domestic Water High Cold-Water Temperatures	<ul style="list-style-type: none"> The situation shall be monitored for a period of 1 week. In the event that the temperature remains above the required 20°C, further advice shall be sought from a specialist. All actions and results to be recorded
Hot & Cold Domestic Water Low Hot Water Temperatures	<ul style="list-style-type: none"> The boiler settings need to be reviewed to ensure that the temperature can be raised. If so, adjust the settings. Further additional temperature checks to be made after 1 week, to ensure that the problem does not persist. If the temperature cannot be raised to the required level, further action is to be taken to ensure the boiler is serviced or checked, or to determine the root cause of the issue. All actions and results to be recorded
Cold: Dirty Cold-Water Tanks	<ul style="list-style-type: none"> Clean and disinfect All actions and results to be recorded
Hot: Dirty/scaled calorifiers	<ul style="list-style-type: none"> Descale clean disinfect All actions and results to be recorded

Guidance Issued by the HSE, HSG 274 part 2 in respect of legionella positive test results

Legionella Bacteria cfu / litre	ACTION REQUIRED
> 100 up to 1000	Either: if the minority of samples are positive, the system should be resampled. If similar results are found again, <u>a review of the control measures and risk</u>

	<p><u>assessment should be carried out to identify any remedial actions necessary</u></p> <p>or if the majority of samples are positive, the system may be colonised, albeit at a low level. <u>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 considered</u></p>
> 1000	<p>The system should be resampled, <u>and an immediate review of the control measures and risk assessment carried out to identify any remedial actions, including possible disinfection of the system.</u> Retesting should take place a few days after disinfection and at frequent intervals afterwards until a satisfactory level of control is achieved.</p>

The Health and Safety Team and the Director of Estates must be informed by the SEIM of any reading with a detected legionella test of >1000cfu/l.

10. Actions in the Event of an Outbreak of Legionnaires' Disease

In England and Wales, legionnaires' disease is notifiable under the RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013. An outbreak is defined as two or more cases that are geographically linked within 6 kilometres by places of residence, work or other type of community setting, with an interval of no more than 28 days between onset dates of consecutive cases and one or more of the following:

- isolates from clinical and environmental specimens from at least 2 cases are indistinguishable.
- or
- isolates from respiratory specimens from at least two cases are indistinguishable.
- or
- strong epidemiological evidence for link(s) between as cases (e.g. a common workplace).

In the identification of an outbreak of Legionnaires' disease confirmed to originate from London Metropolitan University, the University will fully co-operate with the appropriate authorities. The duty holder shall be the assigned point of contact and assemble a crisis team and follow the appropriate guidance from London Metropolitan University, and specialist consultants.

11. Control of Legionella in Schools Equipment

The control of legionella in most areas across the University is managed through Estates (as described above). However, some items of equipment which are not considered to be part of the building fabric or infrastructure and are the responsibility of a School may be susceptible to colonisation by legionella bacteria. Such equipment would contain water which is held or circulated at a temperature between 20°C - 45°C and is not maintained by Estates.

Examples of the type of equipment which fall under the responsibility of the School include:

- Hydraulic tanks
- Lathes and machine coolant systems
- Hydrodynamic tunnels
- Laboratory water baths
- Water-jacketed incubators
- Equipment containing a water cooler or purifier
- Fume cupboards with scrubber units
- Machines or tanks which are not permanently plumbed into the building water system
- Other equipment where stored water could be recirculated at room temperature and where there is a potential for the release of airborne water droplets

Responsibilities and Duties

Deans of School

- Ensure that risk assessment for procedures and equipment operating with water consider the risk of legionella.
- Advise the Estates Department of any equipment using or operating with water where risk assessment highlighted the risk of legionella, so the Estates Department arrange via their specialist sub-contractor to undertake a legionella risk assessment on the equipment.
- Ensuring that identified departmental equipment is maintained to the standard necessary to control the risk of legionella, as advised by the legionella risk assessment.
- Providing suitable and sufficient resources to enable compliance with ACoP L8 for equipment under the School's control.
- Keeping records of equipment servicing and maintenance.
- Facilitating any monitoring or inspections.
- Ensuring no modifications, alterations or additions to water systems are carried out unless Estates have been notified and approval granted.

Schools are responsible for minimising the likelihood of the colonisation of legionella for items of equipment under its control and ensuring it does not present a risk of infection when the equipment is used, maintained or repaired.

Schools and Departments can seek advice from Estates and/or the Health & Safety Team.