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# Legionella Management

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## 1. Purpose

1.1 The Legionella Management Procedure for Oxford Brookes University has been developed to ensure that water systems are installed, operated and maintained in a manner that both reduces the risk of a Legionella outbreak and ensures appropriate water quality for University employees, students, contractors and visitors.

1.2 The University is committed to achieving this intent by the most reasonably practicable means possible and in a way that ensures a coordinated approach between all Faculties and Directorates within the University. The University recognises the principles within the Control of Substances Hazardous to Health Regulations regarding the need to eliminate hazards in preference to managing the risk.

## 2. Scope

2.1 The University will ensure compliance is achieved with the requirements of all relevant legislation and in accordance with the HSE Approved Code of Practice L8 (Fourth Edition) 2013, which applies to the design, operation and maintenance of all water systems (whether owned or managed by the University or brought onto University sites by facility users, tenants, contractors or other visitors), where there is the potential for Legionella to grow and become dispersed as a respirable aerosol.

2.2 The sources include, but are not limited to, the following domestic or non- domestic systems:

* Cooling towers and evaporative condensers
* Calorifiers, hot water cylinders and down services, local point-of-use water heaters
* Fixed and mobile air-conditioning, dehumidification or ventilation systems and humidifiers
* Water storage tanks and down services
* Domestic showers and spray taps, emergency showers or eye wash stations
* Water features or fountains, including drinking fountains
* Sprinkler systems, hose reels (including fire-fighting equipment)
* Machine tool coolant systems e.g. lathes
* Adiabatic coolers
* Rainwater harvesting systems
* Wet-scrubbers

2.3 The University will ensure that all parties involved in the management of the systems identified, are given all necessary information, instruction, training and facilities for the management of these systems.

## 3. Definitions

3.1 **Legionella Bacteria:** Legionella are a range of bacteria widespread in water, which can, if they proliferate, cause Legionnaires' disease or Legionellosis - potentially fatal forms of pneumonia. In the UK there are between 200 and 300 cases per year of which approximately thirty are fatal.

The bacteria multiply where temperatures are between 20-45°C and nutrients are available. The bacteria are dormant below 20°C and do not survive above 60°C. The presence of sediment, sludge, scale and other material within the water system, together with biofilms, provide favourable conditions in which the legionella bacteria may grow. A biofilm is a thin layer of micro-organisms that may form as slime on the surfaces in contact with water.

3.2 **Legionellosis:** Is a collective term to describe the group of diseases caused by the Legionella bacteria.

3.3 **Legionnaires’ Disease**: A form of pneumonia caused by Legionella bacterium and is a statutorily reportable disease under RIDDOR

3.4 **Risk Assessment:** Identifying and assessing the risk of Legionellosis from work activities and water sources on premises and determining necessary precautionary measures and controls that may be required.

3.5 **Written Scheme:** Is for controlling the risk from exposure by specifying measures required to ensure the controls remain effective, properly implemented and managed.

3.6 **Responsible Person:** The person formally appointed, in accordance with the HSE Approved Code of Practice, to assume managerial responsibility for implementation of the Legionella precautions and the responsibilities detailed in this procedure.

## 4. Responsibilities

4.1 **Chief Executive and Vice-Chancellor**

* The Vice Chancellor has overall responsibility for all aspects of Legionella control on site, known as the Duty Holder. The day-to-day operational responsibilities have been delegated to the nominated posts outlined below:

4.2 **Director of Estates and Campus Services** **(ECS)** - (Deputy Duty Holder) is responsible for:

* Appointing a responsible person and delegate authority to ensure compliance. The deputy duty holder will also ensure a sufficient budget is available to ensure full compliance is achieved.

4.3 **Deputy Director of Estates** will:

* Provide line management and oversight to the Head of Maintenance in fulfilling their role of the Responsible Person with regards to weather hygiene management.

4.4 **Head of Maintenance** (the Responsible Person) will ensure that:

* All water systems that are the responsibility of OBU are managed according to the guidance set out in the ACOP
* Suitably trained and experienced members of staff are appointed, in writing and provided with the resources to manage Legionella hazards within defined areas of responsibility.
* ECS contractors are managed by a ‘host’ who will ensure that the necessary requirements for the safe management of water systems are fully-identified and incorporated into specifications, method statements/risk assessments for the design or works carried out for the University as well as incorporated into the University records.
* All employees working on water systems within the University comply with the written method statements and risk assessments.
* Water systems are tested for Legionella bacteria on completion of work, depending on the nature of work carried out.
* The design of new water systems or equipment containing water considers the hazards arising from Legionella in order that the risks are eliminated or minimised.
* In the event of any increased risk such as high bacterial or other pathogen counts or Legionella outbreak, the relevant senior management from the area affected are informed and preventative measures implemented.

4.5 **Mechanical Team Manager** (Deputy Responsible Person) is responsible for ensuring:

* The day to day operation of Legionella management programme and carrying out remedial work to reduce risks raised.
* Oversight of the operations of the external water hygiene contractor to ensure compliance. They will ensure all staff have the appropriate training to ensure competency to work on water systems.
* Ensuring effective arrangements are implemented for the assessment and management of the Legionella risks within the University.
* A documented register of all water systems, including cooling towers and evaporative condensers, is established, maintained and regularly reviewed.
* Documented risk assessments are in place for all systems detailed in the water systems register.
* Risk assessments will be reviewed every five years. Where it is known that significant changes and/or modifications to water systems occur or issues arising following the regular monitoring programme a consideration should be given to whether the risk assessment is renewed.
* Documented "Written Schemes", based on risk assessments describe the correct operation of the water system and persons responsible for carrying out actions.
* All records relating to the management of Legionella are retained in accordance with the requirements of the University’s Record Retention Schedule, including but not limited to test results, inspection records, maintenance records, contractor training records etc.
* Any instance of increased risk e.g. high bacterial or other pathogen counts or Legionella outbreak is reported immediately to the Deputy Director of Estates and the Health and Safety Department. Further information can be found in ‘[*Legionnaires’ disease Part 2: The control of legionella bacteria in hot and cold water systems*](https://www.hse.gov.uk/pubns/priced/hsg274part2.pdf)’
* All existing or new cooling towers, evaporative condensers and specific types of adiabatic coolers are registered with the local environmental health authority, in writing, detailing the type and location of the facility. A copy of this notification should be retained. Where cooling towers or evaporative condensers are made redundant, decommissioned or demolished, inform the local environmental health authority, in writing, retaining a copy of the notification.
* Actively investigate any reported suspected contamination by Legionella Bacteria and put in place appropriate measures to control the bacteria.

4.6 **Contracts and Compliance Manager (Mechanical)** is responsible for:

* Deputising for the Mechanical Team Manager in their absence.
* Ensuring water systems comply with legislation,
* Ensuring persons are competent and are adequately trained for water and other systems work,
* Ensuring water system planned preventative maintenance is carried out in a timely and effective manner and to report any resource issues.
* Ensure all water systems or other legionella risks are acted on in a timely manner and reported if significant to the Mechanical Team Manager or responsible person

4.7 **Project Managers** are responsible for ensuring that:

* Risk assessments for water services work take into account whole premises impact and ensure satisfactory implementation and commissioning. In addition, prior to handover of the system ensuring the risk assessment is reviewed as appropriate.
* Ensuring consultants and contractors engaged to carry out water systems work are competent to do the work.
* Ensuring appropriate communication and consultation is carried out and all records are filed centrally along with risk assessments and flushing records prior to project completion.

4.8 **Pro Vice-Chancellor/Deans and Directors of Service** are responsible for:

* Ensuring appropriate arrangements are in place for the management of water hygiene associated with specific, local activities (such as research projects)
* Where appropriate, the arrangements must also include the flushing of infrequently used outlets which are not the responsibility of ECS to flush.

4.9 **Director of Occupational Health and Safety** is responsible for:

* Developing a programme of assurance to monitor compliance with this procedure and present a report on the findings to the Health Safety and Welfare Committees and The Vice-Chancellor’s Group.
* Ensuring arrangements are in place to notify the Health and Safety Executive, under the Reporting of Injuries Diseases and Dangerous Occurrences Regulations (RIDDOR) and relevant internal stakeholders.

## 5. Training and Competency

5.1 Suitable and sufficient information, instruction and training will be provided to employees, students, contractors and visitors to enable them to safely carry out their duties regarding water systems within the University.

5.2 Managers and supervisors must liaise with their Health and Safety Lead to determine and arrange appropriate information, instruction and training for identified personnel.

5.3 Refresher training will be provided every three years or after:

* An outbreak of Legionnaires disease
* A significant change in legislation

## 6. Procedure

**Risk Assessment**

6.1 ECS will, through the Deputy Responsible Person, arrange for suitable and sufficient risk assessments of water hygiene to be undertaken on all university buildings, unless this responsibility has been passed to a 3rd party such as a tenant.

6.2 In addition ECS will schedule, design, order and monitor all controls necessary to reasonably and practicably manage Legionella bacteria within OBU University and have appointed a competent contractor to carry out this function.

6.3 Relevant information will be held on an appropriate system accessible by relevant stakeholders including appropriate staff within ECS and the H&S department.

6.4 Risk assessments will be reviewed at least every five years or sooner if there is a significant change to the water systems or considered appropriate by the Responsible Person, Deputy Responsible Person or Contracts and Compliance Manager (Mechanical). **Appendix 1** provides an overview of the University water systems and responsibility for the management of these.

**Management of Hot and Cold Water Systems**

6.5 All hot and cold water systems can potentially lead to Legionella proliferation if water is allowed to stagnate at ambient temperatures (between 20 – 450 C. The risk of the disease occurs when contaminated water is in aerosol form. This can be a particular concern associated with infrequently used outlets.

6.6 Infrequently used outlets will be flushed on a weekly basis or more frequently should the monitoring or risk assessment indicate the need. ECS will coordinate the flushing programme.

6.7 Those undertaking flushing must maintain accurate records of the flushing being undertaken.

6.8 **Microbiological Monitoring:** Microbiological monitoring of domestic hot and cold water supplied from the mains is not usually required, unless the risk assessment or monitoring indicates there is a need. The risk assessment should specifically consider systems supplied from sources other than the mains, such as private water supplies and sampling and analysis may be appropriate.

6.9 **Communication Pathway**: a separate document detailing an appropriate communication pathway is held with the Engineering Department and shared with relevant stakeholders including external contractors. A diagram, summarising roles and responsibilities for communication purposes can be found in **Appendix 2**.

**Management of Void Periods within Residencies**

6.10 Students have access to the residencies throughout the full period of their licences. However, the University recognises there are periods when students are more likely to vacate the residencies for a period of time. Typically these are the Christmas, Easter and Summer periods. During these times ECS will arrange for additional weekly flushing of the water systems.

6.11 Where the students have notified Residential Services that they will have vacated their rooms at any time, this accommodation will be added to the ‘Void Rooms’ list, shared with ECS for additional flushing of the water outlets.

## 7. Course of Action in the Event of an Outbreak:

7.1 A suspected Legionella outbreak is likely to be identified by the health authority who will communicate with all relevant local premises, in order to attempt to identify the source of the bacteria. Where an OBU University premise is approached in this way, the following is required:

* + Report the contact to the Deputy Director of Estates and Mechanical Team Manager .
  + Cooperate fully with the investigating authorities, providing them with access to sampling points etc. in order that they can take water samples
  + Provide access to all relevant records
  + Shut down systems capable of generating aerosols, which have been implicated in an outbreak
  + Undertake emergency disinfection of systems suspected of harbouring Legionella bacteria. This should only be carried out as directed by the Local Environmental Health Department
  + Where relevant, identify and investigate the health status of employees, students or other persons who could have been affected.

## 8. Review

8.1 This procedure will be reviewed every three years or before if it is evident that changes are required.

## 9. References and Links

9.1 [Legionnaires' disease: guidance, data and analysis](https://www.gov.uk/government/collections/legionnaires-disease-guidance-data-and-analysis)

9.2 Legionnaires’ disease: The control of legionella bacteria in water systems. [Approved Code of Practice L8](http://www.hse.gov.uk/pubns/books/l8.htm) (Fourth edition) HSE Books 2013

## 10. Appendices List

10.1 Appendix 1 - Management of Equipment Identified as Having a Legionella hazard

10.2 Appendix 2 - Managerial Responsibility Arrangements for the Control of Legionella Bacteria

**Appendix 1**

**Management of Equipment Identified as Having a Legionella hazard**

This is the state of play as date of approval. The aspiration is to have a single source of truth for all records, and the University will work towards that over the coming year.As this is achieved, the procedure will be updated

| **System/Service** | **Task** | **Frequency** | **Managed by** | **Recorded on** |
| --- | --- | --- | --- | --- |
| **Hot and Cold Water Services** |  |  |  |  |
|  | Flushing of little used outlets within residencies (as identified by residential team) | Weekly | * ECS | Paper records/kept in mechanical office |
|  | Flushing of little used outlets within academic buildings | Weekly | * CSA | Google spreadsheet managed by Campus Services |
|  | Void flushing within residencies (Summer, Christmas and Easter) | Weekly | * Contractor | Contractor portal |
| Hot Water Services | Check flow and return temperatures on calorifiers/direct storage water heaters | Monthly | * ECS Team * Contractor | Contractor portal and Google spreadsheet managed by Campus Services |
| Visual check on internal surfaces of calorifiers/DSWHs for scale and sludge. | Annually | * ECS team * Contractor | PPM report |
| Inspect the condition and monitor temperatures of water heater header tanks. | Annually | * ECS team * Contractor | Contractor portal |
| Check water temperature up to one minute to see if it has reached 50°C in the sentinel taps | Monthly | * ECS team * Contractor | Contractor portal |
| Check representative taps for temperature as above on a rotational basis | Annually | * ECS team * Contractor | Contractor portal |
| Cold Water Services | Check tank water temperature remote from ball valve and mains temperature at ball valve. Note maximum temperatures recorded by fixed max/min thermometers where fitted. | Monthly | * ECS * Contractor | Contractor portal |
| Check that temperature is below 20°C after running the water for up to two minutes in the sentinel taps. | At least monthly | Contractor portal/report |
| Visually inspect cold water storage tanks and carry out remedial work where necessary. | Annually | Contractor report |
| Shower Heads | Dismantle, clean and descale shower heads and hoses | Quarterly | Contractor | Contractor report, Cranfield record sheet |
| Little Used Outlets, including taps in LEVs | Flush through and purge to drain, or purge to drain immediately before use, without release of aerosols. | At least monthly | * Communal areas - ECS team * Within laboratory - Laboratory manager | TBC |
| TBC |

**Other Legionella Risk Systems**

The University does not have any cooling towers or operational hose reels. The following are examples of systems that should be included, together with suggested controls:

* Sprinklers and hose reel systems: Consider regular draining and replenishing of the water, particularly if connected to the mains water system. When testing, ensure aerosol generation is minimised.
* Water Softeners: Clean and disinfect resin and brine tanks as directed by the manufacturer.
* Lathe and machine tool coolant systems: Clean and disinfect storage and distribution of coolant systems as directed by the manufacturer.

| **System/Service** | **Task** | **Frequency** | **Managed by** | **Recorded on** |
| --- | --- | --- | --- | --- |
| Spray Humidifiers | Clean and disinfect spray humidifiers and make-up tanks, including all wetted surfaces, descaling as necessary | Monthly | BAM | PPM report |
| Emergency showers, eyebaths and face-wash fountains | Flush through and purge to drain ensuring three to five times the volume of water in the stagnant zone is drawn off | At least monthly | Faculty | Logbook (TBC) |
| Water Tank fed units require the tank cleaning and sanitising | Six Monthly | Contractor | Contractor report |
| Clean and disinfect shower heads, nozzles, roses, Y strainers, | Quarterly | Contractor | Contractor report |
| Misting systems | Clean and disinfect distribution pipework, spray heads and make-up tanks including all wetted surfaces, descaling as necessary | Quarterly | Contractor | Contractor report |
| Spray outlets | Clean and disinfection of spray outlets (Taps) | Quarterly |  |  |
| TMV | Maintenance and servicing | Annually |  |  |

**Appendix 2**

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## Picture of the Managerial Responsibility Arrangements for the Control of Legionella Bacteria.

## 11. Document Control

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