

UNIVERSITY OF SHEFFIELD

CONTROL OF LEGIONELLA BACTERIA WITHIN WATER SYSTEMS - OPERATIONAL PROCEDURES MANUAL

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1. Legionella Control documentation and reporting

Documentation relating to the recording of relevant information to demonstrate effective control of Legionella

1. Monthly water storage temperature records will be kept on the Planon Planned Preventative Maintenance System and available to any authorised person to view.
2. Annual water outlet temperature records will be kept on the Planon Planned Preventative Maintenance System and available to any authorised person to view.
3. Shower head inspection reports - these are produced as paper reports by the Contractor responsible for routine tank cleaning and Legionella treatment and will be retained by the Responsible Person or his / her Deputy.
4. Hot water system inspection / safety report - these are produced as paper reports by the Contractor responsible for taking temperatures of Sentinel Taps and will be retained by the Responsible Person or his / her Deputy.
5. Cold water tank inspection / water quality report - these will be produced as paper reports by the Contractor responsible for routine tank cleaning and Legionella sampling and treatment and will be retained by the Responsible Person or his / her Deputy.
6. Cold water system water quality reports - these will be produced as paper reports on a 6-monthly basis per building, or as required by risk assessment, by the Contractor responsible for routine tank cleaning and Legionella sampling and treatment and will be retained by the Responsible Person or his / her Deputy.
7. In the event that the cold water tank inspection / safety report identifies remedial actions being necessary for the control of Legionella bacteria, additional reports will be provided by the Contractor responsible for the remedial work required stating what was done and the condition of the tank following the work.

2. Procedure for the Pasteurisation of a Calorifier

- For
- (1) Annual insurance or Maintenance Inspection of the vessel
 - (2) Returning the Calorifier back in service.

The following routine must be adhered to:

Pastuerisation Procedure

1. The Calorifier must be filled and isolated from the building system by closing the DHW flow and return valves.
2. The de-stratification pump is to be put in manual override.
3. The temperature control thermostat to be raised to 70°C.
4. On reaching the higher temperature, this must be maintained for 1 hour.
5. Return the control setting to 60°C and the de-stratification pump to auto.

Returning Calorifier to Service

1. Care must be taken not to put the higher temperature water back into service and risk scolding a building occupier. The Calorifier should be allowed to drop to normal operating temperature.
2. Open the DHW flow and return valves on the Calorifier to the system.
3. Check the operating temperature is correct.
4. Check with your supervisor, and isolate the standby Calorifier from service and drain down.
5. Recheck the system is maintaining the correct temperature.
6. Record and sign the Log sheet for the System.

Calorifier Insurance Inspection

1. Pasteurise the Calorifier as described above prior to dismantling the unit.
2. Isolate primary heating, and fit temporary plug or blank.
3. Carefully remove insulation to allow coil to be removed. This insulation is to be refitted on completion.
4. Remove bolts securing heating coil, clean and spray with high temperature lubricant. Replace any corroded or damaged bolts. Look to replace any imperial bolts.
5. If electrically heated arrange for isolation with your supervisor. Do not remove coil unless separately instructed.
6. Isolate the cold feed and vent pipe via the 3-way valve (if fitted) and carefully drain the Calorifier via a suitable hose to a local drain.
7. Remove primary heating coil from Calorifier if an insurance requirement.
8. Test safety valve to the marked pressure, service or replace as necessary.
9. Re-assemble and leave drained and isolated from the system until required.
10. Complete the Log sheet and return it to Property Services testing section.
11. Pasteurise the Calorifier if it is to be put back in service. Record the information in the Water Services Log Book.

3. Procedure for flushing infrequently used outlets

The water system in residences (and elsewhere at the University) is regularly cleaned, disinfected and monitored by the Legionella Contractor, and is operated at temperatures to provide conditions that prevent the growth of the bacteria that cause Legionnaires Disease. However, there is a possibility that the bacteria might start to grow in parts of the water system when not in regular use and is most likely to occur in pipes connected directly to shower heads or taps. Shower heads or taps should be flushed through on a weekly basis should ensure that any contamination that might occur is kept at a low level. The first 30 seconds to 1 minute flush is the period of greatest risk and staff should avoid contact with spray from outlets during this period.

Showers

Run water from both hot and cold supplies, or warm if on a single mixer tap, through the showerhead for 5 minutes if the shower has not been in use for a period of 7 days. Showerheads are designed to produce spray so the shower head should be immersed in a bucket of water to avoid spray generation or, if a fixed head, run water at very low rate of flow (dribbling) through the head for 1 minute following which the rate can be increased for a further 4 minutes.

Taps

Run water from both hot and cold supplies, or warm if on a single mixer tap, through tap(s) for 5 minutes, if the taps have not been in use for a period of 7 days. The water should be run slowly to avoid spray for 1 minute and can then run faster for a further 4 minutes.

Procedure for purging infrequently used outlets

Where it is difficult to carry out weekly flushing, that the outlet concerned needs to be purged to drain before the outlet is used normally. Therefore the following procedure should be utilised:

- Open the outlet slowly at first.
- It is important that this is done with the minimum production of spray.
- It may be necessary to use additional piping to purge to drain if it is envisaged that spray may be produced.
- Run the outlet for 5 minutes before using the outlet.
- Records should be kept detailing the time, date, location and name of the person who carried out the purging procedure.

It is envisaged that this procedure will only apply to outlets that are in areas difficult to access regularly and that all of the accessible outlets will be flushed.

4. Procedure for Legionella control in laboratory equipment

Waterbaths (and other laboratory equipment recirculating or storing similar volumes of water) operating at temperatures of 25 - 45°C

The water contained in the equipment should be emptied monthly to the sewer via drains in laboratories in such a way as to avoid splashing and aerosols. The container should be wiped out using a cloth or scourer with detergent to remove any bacteria attached to surfaces of the equipment before refilling.

Equipment operating at temperatures of 25 - 45°C generating aerosols, mists or sprays from stored or recirculated water storage,

The water contained in the equipment should be emptied weekly to the sewer via drains in laboratories in such a way as to avoid splashing and aerosols. The container should be wiped out using a cloth or scourer with detergent to remove any bacteria attached to surfaces of the equipment before refilling, and the spray head soaked in disinfectant for two hours before reassembling the equipment. If the equipment has a fixed head, after changing the water, run water at very low rate of flow (dribbling) through the head for 1 minute following which the rate can be increased for a further 4 minutes.

Equipment operating at temperatures of 25 - 45°C generating aerosols, mists or sprays from mains water supplies on an infrequent basis.

If the equipment has not been in use for a period of 7 days, the spray / mist / aerosol head should be flushed out weekly for a minimum of 5 minutes. If practicable immerse the spray / mist head in a bucket of water to avoid spray / mist generation or, if a fixed head, run water at very low rate of flow (dribbling) through the head for 1 minute following which the rate can be increased for a further 4 minutes.

Equipment operating at temperatures of 25 - 45°C containing large volumes of stored or recirculating water

If it is impractical to empty the equipment of water on a monthly basis, then it may be necessary to treat the water with chemicals to kill any bacteria. You should contact the relevant "Approved Person (Legionella)" for your area of the University for advice. Contact Estates Services on 29000.

5. Procedure for the Removal of Fire Hose Reels

Planned removal by Estates Services

It is the Policy of the University to remove all fire hose reels and replace these by fire extinguishers. Removal of a fire hose reel must be agreed in advance with Safety Service as alternative appropriate fire fighting equipment must be installed, prior to the removal of any fire hose reel and capping of the water pipe supplying the hose reel.

The Fire Hose Reel and the supply pipe work must be flushed through into a bucket, with the nozzle submerged below the water level, in such a manner that does not allow the production or escape of water spray. This must be carried out for at least 5 minutes and will purge the dead leg of any stagnant water.

After isolating the Fire Hose Reel locally, any residual pressure or volume of water, should also be drained into a bucket with the nozzle submerged below the water level, in such a manner that does not allow the production or escape of water spray. Once drained, the Hose Reel can be disconnected from the local isolation valve.

Following removal of all fire hose reels from a building or corridor where those hose reels are supplied by a common fire main, the common fire main will also be removed and the water main to which it is connected capped at the point of connection.

6. Procedure in the event of a positive Legionella sample

Where sampling and testing of cold water systems identifies the presence of *Legionella* then the following actions must be taken immediately by the Contractor, Estates Services and the building manager: -

1. The Contractor to inform Campus Control or Estates Services of the affected building(s) indicating the area(s) where Legionella was isolated and the remedial actions necessary to deal with the bacteria.
2. Estates Services or Campus Control will inform the manager of the affected building(s) indicating the area(s) where Legionella was isolated and the remedial action(s) required by them to help deal with the bacterial contamination.
3. The affected outlet(s) must be isolated from the community they serve by means of warning notices, barriers and/or tape.
4. The affected part(s) of the cold water system must be flushed and sterilised by the Contractor using Sodium Hypochlorite solution (50 ppm).
5. The outlet(s) that sampled positively must be re-sampled and left unused until demonstrated free of *Legionella* bacteria.
6. Estates Services to complete an Incident Report form and forward to Safety Services.

7. Procedure in the event of a suspected Legionellosis outbreak

Exposure to *Legionella* bacteria does not indicate that someone will develop the Legionellosis, as the risk of developing this disease is very low following limited, low-level exposure. The incubation period between exposure and symptoms developing is typically 2 -3 days. However, in the event that a student or occupant of one of the University's premises develops "flu' like" symptoms, or "chestiness" following exposure to a stagnant aerosol or shower, then they should be advised either go to see their GP or University Health Service (UHS), if they are a patient there, and inform the doctor of this fact.

In the event that a student contacts the UHS (in normal hours) or the "Out of Hours Collaborative" (outside normal hours) presenting symptoms similar to those of *Legionella* bacterial infection, UHS will arrange for the student to be transferred to the Infectious Diseases Unit at the Royal Hallamshire Hospital for further investigations.

If *Legionella* infection is confirmed, the Health Protection Agency (HPA) will be contacted by the Royal Hallamshire Hospital to commence an investigation into the source of the infection if not already known. It is likely that the Health and Safety Executive (HSE) will also be contacted to start investigations if the student / person might have contracted the bacteria whilst on University premises.

The HPA will investigate all likely sources of the infection and take appropriate actions to contain the infection / outbreak when identified, including closure of buildings as necessary. The University would be expected to implement any advice or instructions issued by HPA for the control of an outbreak.

The role of the HSE would be to investigate whether appropriate *Legionella* control measures have been taken, and the investigation would be expected to scrutinise the procedures, practices and documentation relevant to the control of *Legionella* in the specific building and generally across campus.

Relevant telephone numbers

University Health Service	0114 222 2100
Health Protection Agency	0114 242 8850
HPA Emergency Out of Hours (ask for Public Health / Health Protection on-call)	01302 366 666
Health and Safety Executive	0114 291 2300