Legionnaires' disease: Technical guidance

Part 3: The control of legionella bacteria in other risk systems

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This guidance for dutyholders, including employers, those in control of premises and those with health and safety responsibilities for others, will help them comply with their legal duties. These include identifying and assessing sources of risk, preparing a scheme to prevent or control risk, implementing, managing and monitoring precautions, keeping records of precautions and appointing a manager responsible for others.

The guidance gives practical advice on the legal requirements of the Health and Safety at Work etc Act 1974, the Control of Substances Hazardous to Health Regulations 2002 concerning the risk from exposure to legionella bacteria and guidance on compliance with the relevant parts of the Management of Health and Safety at Work Regulations 1999.

Introduction

3.1 *Legionnaires' disease: The control of legionella bacteria in water systems. Approved Code of Practice and guidance on regulations* (L8)[1] gives practical advice on the legal requirements of the relevant legislation concerning the risk from exposure to legionella bacteria. This guidance is for dutyholders, including employers, those in control of premises and those with health and safety responsibilities for other people, to help them comply with their legal duties. It gives practical guidance on how to assess and control the risk of exposure to legionella in risk systems, other than evaporative cooling systems or hot and cold water systems.

What are other risk systems?

3.2 In addition to evaporative cooling systems and hot and cold water systems there are other risk systems that may produce aerosols, thus posing a foreseeable risk of exposure to legionella. This list is not exhaustive but examples of these types of systems include, but are not limited to:

- ultrasonic humidifiers/foggers;
- misting devices used for humidifying vegetables, meat and other food products;
- spray humidifiers;
- air washers, wet scrubbers, particle and trivial gas scrubbers;
- water softeners;
- emergency showers, eyebaths and face wash fountains;
- sprinkler and hose reel systems;
- spa pools;
- whirlpool baths;
- horticultural misting systems;
- vehicle washers including automatic washers for cars, buses, lorries and railway rolling stock;
- powered dental equipment;
- fountains and decorative water features including those on display for sale;
- non-disposable nebulisers used for respiratory therapy;
- industrial effluent treatment plants;
- irrigation systems;
- fire, dust and odour suppression systems;
- paint spray preparation equipment;
- tunnel pasteurisers and similar equipment.

3.3 Many of these systems operate at or above ambient temperature, or are prone to thermal gain during operation. This may be seasonal for some; for example, irrigation systems that operate outdoors, so may use water at temperatures that fall within the recognised temperature range for legionella bacteria growth. All have the capacity to generate water droplets (aerosols) during operation and some, like powered dental equipment and respiratory therapy nebulisers, may dispense them directly into an individual's breathing zone.

3.4 The most significant, in terms of risk, are spa pools and the HSE/PHE guidance on managing spa pools, *Management of spa pools: Controlling the risks of infection*[2] should be followed. However, whirlpool baths (baths fitted with high velocity water jets and/or air injection but without water recirculation) are not considered a high risk if the water is immediately discharged after each use, subject to the source water supply being safe.

3.5 Any water system that has the right environmental conditions could potentially be a source for the growth of microorganisms, including legionella bacteria. There is a reasonably foreseeable legionella risk if the water system has a combination of the following factors:

- the presence of legionella bacteria in the system water, either introduced via the water supply and/or via external contamination;
- conditions suitable for colonisation and multiplication of the bacteria, for example, the water temperature in all or some parts of the system may be between 20–45 °C;
- where water is stored or recirculated;
- deposits and materials that are a source of nutrients for the organism and support bacterial growth, such as contaminants from the surroundings or process including rust, sludge, scale, organic matter and biofilms;
- a means of creating and spreading breathable droplets (aerosols);
- the presence of susceptible people who may be exposed to those aerosols.

Risk identification and control

3.6 As with all foreseeable risk systems, there is a duty to carry out a risk assessment to decide whether further actions are needed and to maintain records of all maintenance carried out, together with monitoring results. These systems and any others found to present a risk need to be adequately controlled and will often require a combination of measures, such as regular maintenance to ensure the system is kept clean, regular disinfection and ongoing monitoring where appropriate.

3.7 Most of these systems are likely to require a supply of mains water and will therefore be subject to the regulatory applications of the Water Supply (Water Fitting) Regulations 1999[3] and The Water Supply (Water Quality) Regulations 2001.[4] To assess the risk properly, it is necessary to understand the system and its operation. The risk assessment should also consider:

- the source of the water with respect to the likelihood of legionella contamination;
- the potential for microorganisms to grow;
- the potential for aerosol release;
- the likelihood and susceptibility of people being exposed to the aerosols.

3.8 If the findings show the risks from exposure to legionella are insignificant and properly managed, no further action may be required. However, it is important to review the risk assessment regularly in case anything changes in the water system or its use.

3.9 If the assessment shows there is a risk from exposure to legionella:

- consider if the system can be replaced with a dry system. Where this is not practicable, draw up and put in place a written scheme of measures to prevent or control the risk of exposure to the bacteria – the extent and complexity of the written scheme will be dictated by the level of risk;
- monitor any control measures and keep records of the results;
- record the significant findings of the risk assessment and keep appropriate records, with an indication of when to review the assessment and what to consider;
- review the assessment regularly to see whether circumstances that could alter the risk have changed;
- review the written scheme if the level of risk changes;

- ensure that those people involved in controlling the risks (including any contractors) are competent to do so and that their roles, responsibilities and reporting lines are clearly set down.

3.10 When carrying out the risk assessment, the dutyholder may need access to competent help and advice. Unless there is sufficient knowledge and expertise within your company, specialist help may be needed to carry out the legionella risk assessment, and to devise and implement an effective written scheme and monitor its effectiveness.

3.11 A summary of the actions that should be taken for other risk systems is detailed in Appendix 3.1 and are in addition to the manufacturer's instructions. Further information is also available on the HSE website at www.hse.gov.uk/legionnaires/other-risk-systems.htm. Additionally, the Water Management Society publishes guidance on a number of other risk systems including industrial process systems, air scrubbers, vehicle washers, emergency showers, dental equipment and solar heating systems at www.wmsoc.org.uk.

Appendix 3.1 Checklist for recommended frequency of inspection for other risk systems

System/service	Task	Frequency
Ultrasonic humidifiers/ foggers and water misting systems	If the equipment is fitted with UV lights, check to ensure the effectiveness of the lamp (check to see if within working life) and clean filters	Six monthly or according to manufacturer's instructions
	Ensure automatic purge of residual water is functioning	As part of machinery shut down
	Clean and disinfect all wetted parts	As indicated by risk assessment
	Sampling for legionella	As indicated by risk assessment
Spray humidifiers	Clean and disinfect spray humidifiers and make-up tanks, including all wetted surfaces, descaling as necessary	Six monthly
	Confirm the operation of non-chemical water treatment (if present)	Weekly
Air washers, wet scrubbers, particle and trivial gas scrubbers	Clean and disinfect air washers, wet scrubbers, particle and trivial gas scrubbers and water storage tanks	As indicated by risk assessment
	Apply, monitor, and record the results of the water treatment	As indicated by risk assessment
Water softeners	Clean and disinfect resin and brine tank – check with the manufacturer what chemicals can be used to disinfect resin bed	As recommended by manufacturer
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	As indicated by risk assessment, but at least every six months
	Inspect water storage tanks (where fitted)	Monthly
	Clean and disinfect shower heads, nozzles, roses, 'Y' strainers, and water storage tanks (where fitted)	Quarterly, or more frequently, as indicated by the risk assessment
Sprinkler and hose reel systems	When witnessing tests of sprinkler blow-down and hose reels ensure that there is minimum risk of exposure to aerosols	As directed

System/service	Task	Frequency
Spa pools	Detailed HSE/PHE guidance on the management of spa pools is available in *Management of spa pools: Controlling the risks of infection*	
Whirlpool baths	Clean, flush and disinfect air channels Remove, flush and clean jets	As indicated by risk assessment
Horticultural misting systems	Clean and disinfect distribution pipework, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	Quarterly or as indicated by risk assessment
Dental equipment	Drain down, clean, flush and disinfect all system components, pipework and bottles	Twice daily (typically at the start and finish of each working day). Disinfectant contact time as recommended by the manufacturer
	Clean storage bottles, rinse with distilled or Reverse Osmosis (RO) water, drain, and leave inverted overnight	Daily
	Take microbiological measurements – refer to *Decontamination Health Technical Memorandum 01-05: Decontamination in primary care dental practices*[5]	As indicated by risk assessment
Vehicle wash systems	Check and clean filtration systems, collection tanks and interceptor tanks and check treatment system A biocide programme should be in place and should be monitored and controlled similar to the standards required in cooling towers Clean and disinfect system and ensure sludge tanks are emptied	As indicated by risk assessment
	Sample for legionella	Initially to establish that control has been achieved and thereafter quarterly or as indicated by risk assessment
Fountains and water features	Clean and disinfect ponds, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	As indicated by the risk assessment, and depending on condition

System/service	Task	Frequency
Industrial process water systems	Conduct a risk assessment of each system, preferably using an assessment team comprising members knowledgeable in legionella management and control, as well as those familiar with the design and operation of the system Devise a control scheme based on this risk assessment	Monitoring, inspection, and testing frequencies to be determined as indicated by the risk assessment

References

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

2 *Management of spa pools: Controlling the risks of infection* HPA/HSE 2006 www.hse.gov.uk/legionnaires/spa-pools.htm

3 *Water Supply (Water Fitting) Regulations 1999* SI 1148/1999 The Stationery Office

4 *The Water Supply (Water Quality) Regulations 2001* SI 3911/2001 The Stationery Office

5 *Decontamination Health Technical Memorandum 01-05: Decontamination in primary care dental practices* 2013 Department of Health www.gov.uk

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Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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This guidance is available online at www.hse.gov.uk/pubns/priced/hsg274part3.pdf.