

# How to keep out of court

## LEGIONNAIRES' DISEASE

An Authoritative Update On helping to keep you

### OUT OF COURT

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#### 1. INTRODUCTION

The first Authoritative Update document on the subject of Legionnaires' Disease was published by the Industrial Water Society (now the Water Management Society, WMSoc) in 1985. It proved an immediate success, being a concise guide to the causes of the disease, the nature of the legionnaire bacterium and the recommended methods of control. The booklet covered water systems susceptible to legionella growth and included cooling towers, cold water storage tanks and domestic hot water systems.

To assist plant maintenance engineers and facilities managers this Guide helps to provide basic requirements for complying with the current Health and Safety Commission (HSC) Approved Code of Practice and Technical Guidance L8 Legionnaires' Disease – *The control of legionella bacteria in water systems*, which includes information on miscellaneous water systems which could create a risk of infection.

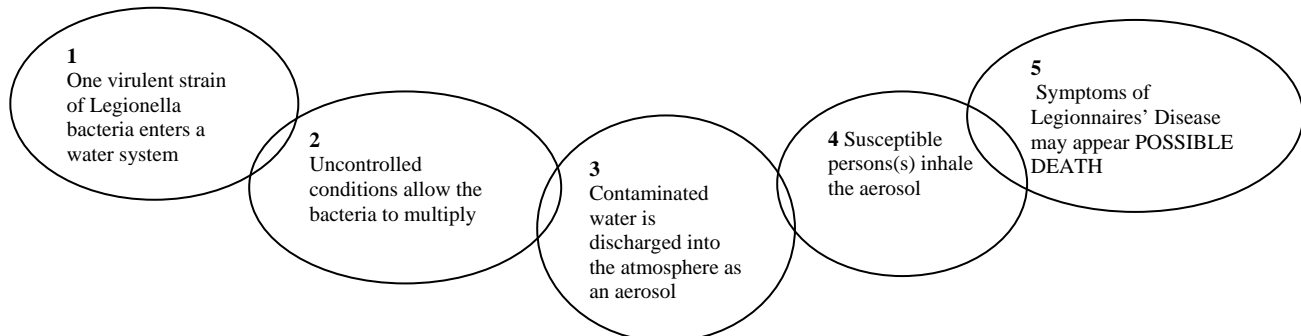
The requirement to undertake risk assessments for all water systems and implement a proper control regime was included in the first HSC Approved Code of Practice dating from the early 1990s. However there are still sites and premises that have chosen to ignore or are not aware of the requirement and this can lead to a risk to public health and possible prosecution.

The enforcement methods available to the Health & Safety Executive (HSE) and local Environmental Health Officers (EHO) in the event of failures of control are also explained.

Remember that attention to the information in this Guide will help break the causative chain that could lead to an outbreak situation.

*A risk assessment is the first ESSENTIAL step towards the CONTROL and MANAGEMENT of Legionnaires' Disease.*

## BREAK THE CHAIN



**This** Guide distills the essential elements of the HSE Guidance L8 published in January 2001. It is hoped that the basic requirements listed below may be taken on board and that suitable control and monitoring regimes will be set up covering whatever systems are present in the buildings within spheres of management that choose to consult this updated guidance. Other guidance may be necessary depending on systems that are rare or not the norm' and will require the assistance of the manufacturer.

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## 2. **THE FIRST STEPS - DO A RISK ASSESSMENT**

The basic steps towards effective CONTROL are listed here. You may already have started along this path, but need additional guidance to steer you in the right direction.

Obtain a copy of L8 and familiarise yourself with the contents ( from HSE Books Ref: ISBN 0 7176 17/2 6: Tel. 01787 881165) Part one is regulatory (up to page 16)

List all the sites/premises within your sphere of activity, control or responsibility.

Prioritise the list of sites/premises into risk categories – bear in mind all possible aerosol emissions and the susceptibility of persons that might be exposed to them.

Compile an asset register for each of the water systems on the site(s) – include such plant as cold water tanks, calorifiers, showers, evaporative cooling systems, adiabatic coolers and any other water systems which may release aerosols, for example spa pools, ornamental fountains, vehicle washes, safety showers, sprinklers, etc.

Review the status of **risk assessments** that have not been updated within the past two years or initiate assessments if none has been carried out to date. Take into account this requires specialist competence, particularly for complex systems or those with a water treatment regime.

Update the status of remedial works that have been noted in **risk assessments**. Consider relative priorities alongside cost budgets to develop a plan to bring all assets up to compliance with current regulations, standards and guidance. Implement that plan.

Review the control schemes that should be in place at each site. Implement suitable schemes if they do not exist or modify those where changes to the water systems have been made.

Check the level of **record keeping** for each site – whether hard copy or electronic. Bear in mind that records should include details of **training** of those involved in the control scheme.

Ensure that routine **monitoring** applicable to each site is always undertaken and that the results are recorded with all relevant dates, including signatures of those doing the monitoring. Record any deviation from control levels together with the remedial actions taken. Record when any system has been out of use and whether it was drained.

Check that the level and frequencies of routine maintenance (cleaning/disinfection/repairs, etc) are undertaken with site-specific method statements and that fully detailed records are available for inspection after completion.

Consider a legionella risk management policy or strategy statement for your organisation which should include a **management structure** giving details of the named Statutory Duty Holder, the Responsible Person, their deputies and others who are part of the control management team, with clearly defined roles and responsibilities assigned to named individuals.

## 3. **BASIC CONTROL AND MONITORING REQUIREMENTS**

There is a tendency for many sites to undertake either no routine monitoring or, alternatively, extensive monitoring which far exceeds the HSE Guidance but fails to identify key problems or initiate remedial works where they are clearly required. A pro-active approach to monitoring is essential and only **proper training in the recognition and appreciation of problem areas can achieve this.**

Bear in mind that the Water Industry Act requires mains water supplied to a property to conform to current wholesome water quality standards. It is up to the Statutory Duty Holder or the site Responsible Person to ensure that such quality is maintained throughout the distribution system(s) within their premises. This can be achieved by conforming to BS 6700: 2006 and the Water Supply (Water Fittings) Regulations 1999 and HTM 04 Part A&B for Health Estates, and ensuring that all materials and fittings are listed in the WRAS Fittings and Materials Directory which is published twice annually.

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A basic monitoring, cleaning and disinfection regime to maintain control is as follows:

## 3.1 COLD WATER SYSTEMS

- 3.1.1 MONTHLY: Record temperatures at the sentinel taps (nearest and furthest from the CWS) within running for up to two minutes – should be less than 20°C.
- 3.1.2 ANNUALLY: Record the temperature of 20% of the remaining cold taps within the premises within two minutes of running – covering the entire premises over a five year period.
- 3.1.3 6 MONTHLY: Record the incoming cold water inlet temperature – winter and summer.
- 3.1.4 6 MONTHLY: Record the tank cold water temperature remote from the ball float valve and the mains water temperature at the float valve.
- 3.1.5 ANNUALLY: Visually inspect the cold water storage tanks – carry out remedial cleaning and disinfection works when considered necessary.
- 3.1.6 ANNUALLY: Check that the stored cold water capacity is approximately equal to one day's consumption.

Note that sprinkler systems may be regarded as cold water systems, but that it may not be practicable to apply all elements of the basic monitoring, cleaning and disinfecting regime.

## 3.2 HOT WATER SYSTEMS

- 3.2.1 MONTHLY: Record temperatures at the sentinel taps within running the water for up to one minute – should be at least 50°C.
- 3.2.2 MONTHLY: Record the temperature of the water leaving and returning to the calorifier. Outgoing should be at least 60°C, return not less than 50°C.
- 3.2.3 ANNUALLY: Record the temperature of 20% of the remaining hot taps within the premises within one minute of running – covering the entire premises over a five year period.
- 3.2.4 ANNUALLY: Sample the water from the base drain of the calorifiers and note the water condition i.e. the temperature, presence of any sludge and the time taken to run clear.
- 3.2.5 ANNUALLY: Undertake a visual check on the internal surfaces of calorifiers – look for evidence of scale or sludge. Clean and descale as required, disinfect or pasteurise before returning to use.

## 3.3 SHOWER HEADS

- 3.3.1 QUARTERLY OR AS NECESSARY: Dismantle, clean and descale showerheads and hoses. Don't forget dishwasher spray downs.

Note that safety showers may be regarded as showers, but may require additional cleaning in some environments and should be checked for correct operation weekly. Some may incorporate frost thermostats or heated water tanks or may have low water turnover: Further guidance may be found on the Water Management Society website: [www.wmsoc.org.uk](http://www.wmsoc.org.uk).

## 3.4 LITTLE USED OUTLETS

- 3.4.1 WEEKLY: Flush through and purge to drain without release of aerosols.

## 3.5 COOLING TOWERS AND EVAPORATIVE CONDENSERS

- 3.5.1 WEEKLY: Site personnel should undertake basic monitoring of the cooling re-circulating water and the dosing and control equipment. The tests should include pH, conductivity or total dissolved solids (TDS), oxidising biocide level (if used) and microbiological activity (using dip slides). Note that dip slides should be taken prior to routine addition of biocides to the system and incubated at 30°C for 48 hours and the results recorded graphically for easy reference.
- 3.5.2 MONTHLY: The water treatment service provider should undertake such tests listed in Table 1 of L8 as considered suitable for the quality of make up water and type of system. Records of water treatment service visits should include evidence that the water quality is being maintained within the control parameters and that remedial measures have been taken

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if levels fall outside the control parameters. Any other concerns with the condition or operation of the equipment should be noted for action.

3.5.3 3 MONTHLY: Take representative samples for legionella testing – preferably from the outlet of the chillers. Samples should be tested by a UKAS accredited laboratory. Table 2 in L8 clearly indicates the required action levels should high legionella counts be obtained.

3.5.4 6 MONTHLY: Clean and disinfect cooling towers/evaporative condensers, making sure that any make-up tanks and associated systems are included. Descale as required, clean all internal surfaces, remove and clean fill packs where practicable or as dictated by L8 and any supplementary guidance from the HSE or local EHO. The condition of the fill pack, drift eliminators, water distribution system and internal state of the pond should be noted and any damaged or corroded components repaired or replaced.

## 3.6 SPA POOLS

3.6.1 DAILY AT START UP AND AT 2-HOURLY INTERVALS: Water colour and clarity, operation of plant, dosing and control equipment, chemical reservoir levels, disinfectant and pH levels in the water.

3.6.2 DAILY AT SHUT DOWN: Clean waterline area, check strainers, back wash filter. Record the number of bathers.

3.6.3 EVERY DRAIN AND REFILL: Clean the whole system including strainers and balance tank. Check the water balance.

3.6.4 MONTHLY: Chemical and microbiological analyses, clean air filter, check pipework and jets for biofilm, calibrate controls, check safety systems.

3.6.5 QUARTERLY: Test for Legionella, inspect filter media.

3.6.6 ANNUALLY: Check sand filter efficiency.

## 3.7 OTHER WATER SYSTEMS (SEE CHECKLIST 3 IN L8)

3.7.1 AS INDICATED BY RISK ASSESSMENT: Carry out checks on water and equipment conditions such as temperature, cleanliness, concentration (or consumption of) chemical additives, water usage etc. Specific guidance on some of these may be found on the Water Management Society website [www.wmsoc.org.uk](http://www.wmsoc.org.uk).

## 4. ADDITIONAL NOTES

HSE Guidance recommends that cold water storage tanks are inspected on an annual basis – or more often if required – then drained, cleaned and disinfected if considered necessary. The Guidance does not require annual cleaning if tanks are in a satisfactory condition.

Regular routine sampling and testing for micro-organisms is only recommended for cooling towers, evaporative condensers and spa pools as described above. If there is deviation from control parameters then actions including additional sampling and testing must be carried out as laid down in L8.

Routine dip slide testing of domestic water systems is not recommended – dip slides will not show signs of growth below 10<sup>2</sup>cfu/ml and are therefore not sensitive enough.

Bacterial water testing by a UKAS Laboratory is recommended (BS 6700) six monthly where tanks provide potable water to demonstrate their potability

## 5. ENFORCEMENT

In the event that an HSE Inspector or EHO has concerns about aspects of control against the risk of Legionella at your premises then there are a number of steps he or she can take in accordance with the Health and Safety at Work Act 1974 (HSWA).

Firstly an Improvement Notice may be served when the inspector is of the opinion that a person or facility has contravened one of the relevant regulatory provisions and that this will be repeated or continued. An Improvement Notice will detail the contravention and specify a time period to achieve compliance. When the contravention is remedied to the satisfaction of the Inspector the Notice is lifted.

In more extreme cases where the inspector is of the opinion that carrying out the activity is likely to lead to serious personal injury or harm then he or she can issue a Prohibition Notice which requires that the process or

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plant is immediately closed down. Failure to do so is an offence and operation of the process or plant cannot be carried on until the contravention has been remedied.

There are slightly different procedures for Crown properties or facilities but essentially the same Enforcement Notices apply.

In cases of very serious breaches of the regulatory provisions, normally involving severe personal injury or harm, an organisation or person may be prosecuted under a relevant section of the HSWA.

Incarceration is fast becoming a likelihood where mortality is involved.

## 6. OTHER HELPFUL GUIDANCE

The Water Management Society has published several documents to help owners and operators meet their responsibilities in respect of Legionella control.

- Site Log Book for Water Services – This meets the need for record keeping of all water services. By systematically filling in the appropriate pages within the Log Book compliance with current HSE Guidance will follow.
- Guide to Risk Assessment – An essential companion to the Site Log Book for Water Services in cases where a facility or plant chooses to do its own risk assessments.
- Keeping your Cooling Tower Safe – A concise summary to how cooling towers need to be operated and maintained to avoid a public health risk from Legionella.
- Understanding Your Cooling Tower System Water Treatment Reports – A guide to what should be in a water treatment service report and how to understand the content of the report.
- Web-Based guidance published from time to time at [www.wmsoc.org.uk](http://www.wmsoc.org.uk)

The HSE and Health Protection Agency (HPA) has also published detailed guidelines for spa pools Management of Spa Pools Controlling the Risks of Infection, available from the HPA at [www.hpa.org.uk](http://www.hpa.org.uk).

In L8 reference is made to the Legionella Control Association (LCA) Code of Conduct for Service Providers for the Control of Legionellosis. This is a voluntary registration by service providers to satisfy the LCA conditions of compliance and meet specific commitments to help ensure that water system owners and operators not only receive a high standard of service but also are provided with instruction and assistance in meeting obligations to avoid the risk of Legionellosis. The WMSoc recommends that owners and operators use service providers registered as signatories to the LCA Code of Conduct and that recommends that owners and operators use service providers registered as signatories to the LCA Code of Conduct and that they satisfy themselves of the competence and performance provided. A list of signatories is available at [www.conduct.org.yk](http://www.conduct.org.yk).

**NOTE THAT THE LATEST EDITION OF THE WATER MANAGEMENT SOCIETY'S WATER HYGIENE "SITE LOG BOOK FOR WATER SERVICES" INCLUDING RISK ASSESSMENT WILL COVER ALL SYSTEMS THAT WILL BE ENCOUNTERED ON SITES. BY SYSTEMATICALLY FILLING IN THE APPROPRIATE PAGES WITHIN THE LOG BOOK, COMPLIANCE WITH THE GUIDANCE WILL FOLLOW AUTOMATICALLY.**

**USE A COMPANY REGISTERED WITH THE LCA GIVING PROFESSIONAL COMMITMENT AS LISTED WITHIN THE CONDITIONS OF COMPLIANCE AND THIS WILL ENSURE THAT YOU, THE END USER, WILL RECEIVE THE CORRECT INSTRUCTION AND GUIDANCE RELATING TO YOUR OBLIGATIONS UNDER THE LEGIONELLOSIS LEGISLATION.**

## 7. SUMMARY

This is not a complete set of currently available guidance, and you should obtain a copy of L8 for greater in-depth reference purposes. By knowing your responsibilities and implementing a control scheme for the systems within your premises, you will be well on the way to fulfilling your legal obligations within the Health & Safety at Work Act 1974 and current COSHH Regulations. Active compliance will certainly help towards ensuring that you are not on the receiving end of enforcement actions by your local HSE Inspector or Environmental Health Officer.

**WATER IS FOR LIFE – DON'T LET IT KILL YOU**

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