# LCA STANDARD FOR THE DELIVERY OF LEGIONELLA RISK ASSESSMENT SERVICES

## A) WHAT DOES THIS STANDARD COVER?

**1** This service standard is for those involved identifying, assessing and reporting on the risk associated with legionella bacteria in all types of water systems. Whilst the service provider is required to comply with this standard the exact scope of the individual legionella risk assessment will vary from site to site and should be a matter of contractual agreement between him and his client, the service user.

## B) COMPETENCE OF SERVICE PROVIDER STAFF (INCLUDING SUB-CONTRACTORS)

**2** The service provider must ensure that all personnel involved in all aspects of legionella risk identification, assessment and review are competent to carry out their work by reason of their capability, training, knowledge and experience.

**3** The level of knowledge and skill required to carry out a suitable and sufficient legionella risk assessment will vary significantly with the complexity of the water systems being assessed and risk profile of the population that may be affected e.g. there is a vast difference between the requirements associated with a simple office block water system and a large and complex hospital water system or an industrial cooling process.

**4** The competence of the assessor is of paramount importance and should be matched to the complexity of the system and the risk being assessed. If the assessor is not competent then the assessment might not be suitable or sufficient. In each case, they should be able to demonstrate that they have sufficient experience, specialist knowledge and understanding of:

- **a.** the factors affecting the colonization by and growth of legionella
- **b.** the evaluation and assessment of risk from legionella and the adequacy of controls in place
- **c.** the procedures necessary to complete surveys, measurements and sampling
- **d.** the corrective actions that can be applied to reduce or eliminate the risk
- **e.** the relevant control measures that can be applied, e.g. water treatment, temperature control, thermal and chemical disinfection, cleaning, inspections, monitoring, etc.
- **f.** the relevant monitoring techniques to assess the performance of the control measures, e.g. temperature and biocide monitoring, sampling for microbiological testing.
- **g.** the type of water system(s) and associated equipment to be assessed.
- **h.** the suitability of records required to demonstrate compliance

**5** The differentiation of four classes of risk assessment in Appendix 1 reflects the general complexity but there will always be systems that fall outside these classifications. Risk assessors should not work beyond their competence and should be able to seek more competent help where unexpected complexities arise. A risk assessor must decline to complete a risk assessment or must include a statement to the effect that the assessment may not be complete where he does not have the necessary competence and cannot obtain more competent help.

**6** Service providers may use a prepared template or proforma for their risk assessment survey and report preparation and this constitutes a valuable aide memoire. Care should be taken that the prepared report format does not restrict the survey and findings of the assessment. An important aspect of legionella risk assessor competence is the ability to be able to go beyond any prepared template where the template does not fit the site conditions.

**7** See Appendix 1 for further guidance on the specialist requirements of a competent assessor of different types of water systems.

**8 The service provider must not carry out risk assessments on water systems where his personnel lack the assessed competence to do so.**

## C) SERVICE DELIVERY

**9** The service provider should have clear processes and documented procedures which cover:

- **a.** agreeing the scope of the assessment and services to be provided
- **b.** preparatory arrangements

**c.** carrying out the risk assessment
**d.** reporting
**e.** risk assessment reviews

**Section 1. Agreeing the scope of the assessment and services to be provided**

**10** When making an offer to undertake legionella risk assessment services the service provider must agree key aspects of the scope of works with the client beforehand and detail these in his proposal document or quotation. These need to include:

**a.** which premises and/or buildings are to be covered by the assessment
**b.** which water systems are to be assessed and any that are knowingly excluded
**c.** whether the assessor will have access to previous risk assessments
**d.** what the requirements will be regarding schematic diagrams and asset registers i.e.
*i.* whether the client will provide pre-existing schematic diagrams and asset registers to assist the assessor and whether their review is to form part of the assessment
*ii.* whether the assessor is to produce schematic diagrams as part of the assessment and their format
*iii.* whether the assessor is to produce asset registers as part of the assessment and their format

**Note 1 Whilst it is not a requirement of a risk assessment to produce either schematic diagrams or asset registers the absence of an adequate schematic diagram, in particular, can limit the accuracy of the assessment – particularly in complex or substantially modified water systems. The service provider should explain this to the client in advance of the assessment. For extremely complex systems or high-risk areas it may be impossible to complete a risk assessment without schematic diagrams or asset registers.**

**Note 2 In the absence of an up-to-date schematic diagram the risk assessor may judge that for a simple water system in a small building there is sufficient information to complete and issue a risk assessment, and full reasons for this decision should be given in the assessment. The risk assessor may produce diagrams during the site survey in order to assist in understanding the system and explaining the findings of the assessment. These may not meet the requirements of L8 para 40 and the written scheme of control where full system schematic diagrams are needed. For larger buildings and systems and settings of elevated susceptibilities full schematic drawings will always be needed to produce a suitable and sufficient risk assessment.**

**e.** what the requirements will be regarding the written scheme of control i.e.
*i.* whether the client will provide pre-existing documents for the assessor to review as part of the assessment
*ii.* whether the assessment is to provide input into the production of a written a scheme of control and if so the extent of that input

**Note 3 Risk assessment does not involve the preparation of the written scheme of control, but it does provide information that is critical to its preparation in the form of recommended corrective actions and control measures.**

**f.** whether the assessment is to include photographs
**g.** in what format the final assessment is to be presented e.g. electronic format, hard copy, number of copies, etc.
**h.** to whom the final assessment is to be sent
**i.** what arrangements need to be in place to provide the required access and the necessary assistance that will be required from a competent escort who is familiar with the site and water systems to be assessed (and who will be responsible for the assessor's safety whilst on site).
**j.** what are the specific site safety and/or other requirements, e.g. induction training, etc.

**Note 4 Dependent on size and complexity of legionella risk assessment services the service provider may agree additional aspects of the scope of works with the client beforehand and detail these in his proposal document or quotation. These could include:**

**k.** how to assess areas of repetition such as identical business units or flats – an agreement on what constitutes an appropriate sample to represent the system as a whole

**l.** how to record any unavoidable omissions; the effect any such omissions might have on the assessment; whether the required information can be obtained by other means and; what provision should be made to provide access on a subsequent occasion

**m.** where reported information, such as records of previous inspections, is included, how this should be identified and used in the assessment of risk

**n.** any interim presentation of the findings, including prompt reporting of high risk factors (useful for larger multisite or long duration projects)

**o.** the extent of summation of the project (individual executive summaries/overall executive summary for multisite projects)

**p.** how any queries or other matters arising from the final report are to be addressed, for example, by a face-to-face presentation of the report and/or responding to subsequent communications (for risk assessment in a healthcare setting this may include details of presentation to the water safety group)

**11** If the client accepts the service provider's proposals, there then needs to be a record of a formal agreement between both parties defining the above points. This may take the form of a signed agreement, a purchase order or emailed acceptance referencing the service provider's detailed quotation or proposal which defines these points.

**Section 2. Preparatory Arrangements**

**12** The service provider's procedures should include the following preparatory arrangements:

**a.** the service provider must ensure that that the personnel assigned to carry out the assessment and associated tasks are competent to do so (based on the expected type and inherent complexity of the water systems and the likely risk profile of the exposed population)

**b.** a checklist of equipment required to carry out the assessment and associated task

**c.** those carrying out the work on site need to complete a documented pre-work task risk assessment

**Section 3. Carrying out the assessment**

**13** The service provider must ensure that (subject to scope) all required systems are identified and included in the risk assessment process.

**14** If an existing risk assessment report is available, it can be a valuable resource for the risk assessor in carrying out a reassessment. Appraisal of the current risk assessment can give the assessor valuable information about the water systems being assessed and the attitude of the management on site however the appraisal of the validity of the existing risk assessment cannot be performed adequately without a site survey.

**15** The risk assessment process must include, where applicable and relevant to the assessment of risk:

**a.** review of any previous risk assessments

**b.** review of existing schematic diagrams and asset registers (if available) and comment/recommendation on their accuracy and suitability for understanding legionella risk

**c.** preparation of new schematic diagrams and /or asset registers (where required by the agreed scope)

**d.** inspection and assessment of the condition of system water and accessible equipment and an assessment of the contribution to risk made by the design, construction and operation of the system (condition surveys)

**e.** it may be useful to include an appraisal of condition surveys from site records, but this should be clearly identified, and any limitations taken into account in the assessment of risk

**f.** where it is not possible to inspect all parts of the system and it is not possible to determine the system condition from other evidence, it may be necessary to postpone the assessment return at a later date when access can be arranged

**g.** appraisal of the inherent risk presented by the system before any controls are applied

**h.** appraisal of the residual risk presented by the system when the controls in place are applied

**i.** appraisal of any risk gap between residual risk and ALARP (as low as reasonably practicable) risk

**16** If there is no written scheme of control in place, a high priority in the risk assessment recommendations must be that one needs to be produced, unless the service provider considers that there is no reasonably foreseeable risk, in which case they must document that this is their assessment.

**17** Where a written scheme of control is in place, the risk assessor should check the written scheme of control and report on its adequacy which may include:

**a.** description of the correct operation of the plant and any precautions to be taken

**b.** start-up and shut-down procedures, and plant rotation and flushing requirements for little-used outlets

**c.** details of any plant or equipment brought onto site by third parties

**d.** where appropriate, method statements and task risk assessments, e.g. for major tasks such as cleaning operations

**e.** schedule of monitoring tests that are to be completed on the systems, along with the required frequency of the tests and the control limits

**f.** planned appropriate corrective actions*

**g.** the effectiveness of the written scheme of control from success of desired outcomes

**h.** the maintenance history of the systems

**i.** history of past issues, such as water temperature in legionella growth range, positive legionella results, high dip slides, etc. For actions taken after adverse results have been found in the past the following should be considered.

*i.* Were the correct actions taken and the correct communication chain invoked?

*ii.* Were the actions taken within a reasonable time?

*iii.* Were the results rechecked (after the action) to confirm conditions were back under control?

*iv.* If the actions did not result in better control, was an escalation procedure invoked to ensure conditions were eventually controlled? If not, is there an escalation procedure in place?

*v.* Were there lessons learned or a new procedure put in place to prevent recurrence?

**j.** monitoring and inspection records for the systems and significant deviations from acceptable operating conditions

*Planned actions in a written scheme of control are preplanned responses to situations that arise. Any anticipated result should have a planned response detailed in the written scheme – i.e. low HWS temperature, check calorifier and retest in one hour, low bromine, check/adjust brominator and retest in one hour, etc.

**Information Box 1: Proportionality in Risk Assessment and Written Schemes of Control**

The above list of requirements for a written scheme are dependent on the complexity of the system and the level of risk present. It may be proportionate to expect detailed written procedures for start-up and shut down in a hospital hot and cold water system or a cooling tower. It would not be proportionate to expect the same level of written detail in a domestic house with a simple hot and cold water system only and normal susceptibility of occupants.

The risk assessor must make an assessment of the suitability of the written scheme and whether it is proportional to the risk identified.

**18** The service provider must also assess management responsibilities to include:

**a.** the duty holder, the responsible person and any deputies are clearly identified in the written scheme of control

**b.** where applicable (healthcare or other settings where a WSG is in place), there is an appropriately comprised multi-disciplinary water safety group

**c.** the roles of all responsible persons and parties (e.g. consultants, facilities management companies and water treatment companies) are clearly defined and contact details for these persons and parties are readily available

**d.** lines of communication and the reporting structure are clearly stated in the written scheme of control

**e.** the responsibility for tasks to be undertaken by each individual or party are outlined clearly with the necessary frequency of the tasks

**f.** the ability of management to maintain control of the risk of legionella

**19** The service provider needs to review the available training records of those personnel with an involvement in the written scheme of control and make comments as to their relevance and validity. In addition to the formal training records, the service provider should assess the level of competence of the staff by studying the site records. For example, the assessor can look at actions taken after adverse results have been found in the past to ensure that suitable corrective actions were taken in a timely manner. Records can also be checked to verify, as far as reasonably practicable, that staff are competent to undertake the written scheme of control tasks. Similarly, the assessor might be concerned that the checks on competence are inadequate, in which case they should make recommendations to improve the procedure for confirming competence.

**20** If the service provider identifies an imminent danger of exposure to legionella, e.g. failure of a biocide dosing system or a previously unidentified water system, or one which falls outside the scope of their brief, they must report this immediately to the responsible person or their site representative, and not keep this for the final written report.

(For further information refer to BS8580, L8, HSG274, HSG282, HTM 04-01, etc.)

**Section 4. Reporting**

**21** It is important to remember that the risk assessment is the process and the written output is the record of that process. The principal purpose of the risk assessment report is to communicate clearly to the dutyholder the risks identified and assessed in an efficient and effective manner. It should be sufficiently detailed to allow dutyholders an appropriate understanding of the key issues and actions required to control risks from exposure to legionella.

**22** Risk assessment reports should be concise without unnecessary repetition and/or the inclusion of superfluous detail and unnecessary information. Common inappropriate content includes large extracts of guidance such as ACoP L8 and HSG274, information which relates to risk systems other than those that are the subject of the assessment and risks other than those associated with legionella (these may be identified, but detailed discussion should be elsewhere).

**23** The service provider must ensure that, **subject to the agreed scope and where relevant**, the content and output of the assessment contains the following:

**a)** Assessment Details

*i.* an executive summary (for simple systems this may not be required) *

*ii.* the scope of the assessment, including clear identification of buildings, systems assessed and their use

*iii.* the identification of which systems can potentially present a legionella risk and those which cannot

*iv.* analysis and evaluation of risk for each system including an explanation of how the risk rating is derived

*v.* identification of key personnel, both staff and contractors, and an assessment of their competence (Ref: BS8580)

*vi.* schematic diagrams (if they have been produced); or reference to them (if they have been reviewed); or recommendation that they be produced or updated, as appropriate. *

*vii.* the results of condition surveys including operating parameters, temperatures, system inspections and asset registers

*viii.* the review of the existing written scheme of control (if there is one) *

*ix.* any limitations of the assessment

*x.* any matters or areas of evident concern identified which fall outside the scope of the assessment

*xi.* details of the assessor and the person involved in QA reviewing the assessment report (if different)

*xii.* details of any sources of reference and guidance utilised, e.g., bibliography *

**b)** Recommendations

*i.* prioritised recommendations for corrective actions to eliminate or reduce the risk

*ii.* if the existing written scheme of control and control measures are inadequate then the report should give recommendations for site and system specific control measures (monitoring, inspection and treatment, etc.) including identification of sentinel outlets and/or other sample and inspection points

*iii.* short term control measures to be applied until completion of corrective actions

*iv.* longer term control measures to be applied following completion of corrective actions.

*v.* recommended precautions to be taken when testing, maintaining or operating low risk systems, such as fire systems, heating and chilled water systems, etc. *

*vi.* the recommended review date and guidance regarding the circumstances under which a reassessment will be required (see section 5 for more detail on review and reassessment)

**Note 5 Not all risk assessment reports will require all items. For example, individually occupied residential premises with low risk water systems (e.g. Tenanted flat) may not require items marked ***

**Information Box 2: Additional Requirements for Health Care Premises**
The report should include a statement that it that it is a legionella Risk Assessment and not a Water System Risk Assessment as required by HTM04-01 and include an explanation of the additional requirements of HTM04-01

**Section 5. Risk Assessment Reviews and Reassessment**

**24** Risk assessment is a process that should be continually reviewed and the records updated when there are changes. Reviewing a risk assessment or reassessing are events with the objective of keeping the risk assessment up to date.

**25** L8 paras 32 & 47 indicate that risk assessment reports should be reviewed regularly and reassessed when the assessment record is no longer valid. It is the dutyholder's responsibility to identify the requirement to carry out a review, and if necessary, a reassessment as detailed in D) below.

**26** The overall responsibility for validity of risk assessment records lies with the dutyholder who may seek the competent help of a service provider. The service provider should have procedures in place to, if contracted to do so by the client, determine whether the existing assessment is still valid and remains suitable and sufficient and to decide if a reassessment is required. See BS8580 for guidance on the requirements of a reassessment.

**D) GUIDANCE TO THE SERVICE USER ON THEIR DUTIES AND RESPONSIBILITIES**

**27** There are several key responsibilities that the dutyholder has a legal duty to address. These are listed below:

**a.** The dutyholder should ensure there is a legionella risk assessment record that includes all systems where water is stored or used in any premises controlled by the dutyholder (COSHH Regs). This risk assessment record should be regularly reviewed to ensure it is valid and reassessed when required. (See L8 paras 32 & 47.)

**b.** Any invitation to potential service providers to quote/tender for legionella risk assessment services should have a clear scope of work defined by the dutyholder or their representative.

**c.** Make reasonable enquiries of the service provider regarding proof of competence of individuals involved in carrying out the legionella Risk Assessment e.g. Provision by the service provider of: Training records, competence evaluations, examples of previous work, etc. (See LCA buyers guide)

**d.** Schematic diagrams and asset registers should be available in order to inform and help the risk assessor. (See L8 paras 38 & 40.). Pipework engineering drawings may be too detailed to allow simple communication of legionella risk. Guidance on the appropriate level of detail and complexity can be found in BS8580.

**e.** The findings of the risk assessment including the required corrective actions and the control measures should be implemented and this should be recorded and used in any subsequent review of risk.

**f.** A written scheme of control should be produced and maintained and the output from this should be recorded and used in any subsequent review of risk.

**g.** Regular reviews of the effectiveness of legionella control activities should be carried out to challenge the written scheme of control.

**h.** Change management procedures and/or regular review procedures should be in place to determine if the existing risk assessment remains valid, suitable and sufficient. If it is not, then a reassessment of the risk is required.

**Note 6 It is likely that the risk assessor or other service providers can play a valuable role in these processes and an outside perspective can be invaluable.**

**Information Box 3: Additional Requirements for Health Care Premises**

Healthcare Premises are covered not only by L8 but also HTM04-01: Safe water in Healthcare premises which requires the Duty Holder to establish a Water Safety Group (WSG) and produce a water safety plan (WSP). This includes but goes considerably beyond the legionella Risk Assessment.

In this case the Duty Holder has broader responsibilities to ensure that all members of the WSG are competent.

Further information defining Healthcare premises can be obtained at:

*www.cqc.org.uk/sites/default/files/20151230_100001_Scope_of_registration_guidance_updated_March_2015_01.pdf*

**FOR AND ON BEHALF OF THE LEGIONELLA CONTROL ASSOCIATION**

**Appendix 1 – Competence Requirements for Risk Assessors for Different System Types**

**28** The principle of proportional management of legionellosis risk is founded on effective risk assessment. Any shortcoming in this process is likely to have an impact throughout subsequent risk management. Complex systems and especially those with a highly susceptible population, such as healthcare, require assessors with the highest levels of competence.

**29** Those involved in risk assessment need a suitable and sufficient understanding of legionella & legionellosis, appropriate control measures and regulatory requirements. They need a good, practical understanding of the principles of risk assessment and require an appropriate understanding of design and operation of the type of water systems to be assessed and the implications for legionella risk.

| **Hot and cold water systems (non-healthcare)** | |
|---|---|
| **Types of system (including but not limited to)** | **Specialist requirements** |
| • Individually occupied residential premises with low risk water systems (e.g. Tenanted flat)<br>• Multi occupancy dwellings (e.g. Flats with part common water systems)<br>• Hotels, leisure centres, universities, schools, military barracks<br>• Commercial buildings with larger but relatively simple water systems (e.g. Office block)<br>• Industrial premises (e.g. Unique hot & cold water systems developed to meet specific demand) | Assessors should have additional knowledge, experience and/or training in:<br>• Types of systems, their operation and likely risk factors e.g.<br>- Small mains fed systems<br>- Gravity fed cold water systems<br>- Pressurised systems<br>• Water heater types, their operation and likely risk factors<br>• Disinfection and cleaning techniques |
| **Evaporative cooling systems** | |
| **Types of system (including but not limited to)** | **Specialist requirements** |
| • cooling towers<br>• evaporative condensers<br>• dry/wet cooling systems including adiabatic coolers<br>• plume abatement cooling towers<br>• humidifiers | Assessors should have additional knowledge, experience and/or training in:<br>- cooling system design and operation<br>- cooling water treatment theory and practice<br>- water testing, monitoring and interpretation<br>- system condition appraisal<br>- pack inspection techniques<br>- cleaning and disinfection techniques |
| **Evaporative cooling systems** | |
| **Types of system (including but not limited to)** | **Specialist knowledge required** |
| • swimming pools<br>• spa and hydrotherapy pools<br>• vehicle wash systems<br>• misting systems<br>• leisure and ornamental water features<br>• engineering and machining systems<br>• paint prep systems<br>• fume scrubbers<br>• fire and deluge systems<br>• hose pipe and sprinkler systems, water bowsers<br>• pressure washers<br>• dentistry equipment<br>• emergency showers<br>• rain water harvesters/grey water<br>• wet dust collectors<br>• water jet cutters | Risk assessments of these systems may require the assessor to use a first principles approach. Assessors should therefore have a level of competence appropriate to the type of system being assessed including: water chemistry, treatment and testing, applicable inspection and condition appraisal techniques, cleaning methodologies, etc. Since there is such a wide variety of other systems, it can be highly beneficial to the assessor to have the availability of someone (usually an employee of the service user) with intimate working knowledge of the system being assessed. |

| Water systems in healthcare, care homes and other premises with users of elevated susceptibility to infection: | |
|---|---|
| **Types of system (including but not limited to)** | **Specialist knowledge required** |
| These include all water systems on the specific premises. | Assessors should consider the elevated susceptibility of users to legionella bacteria and make appropriate adjustments to the designation of risk and recommendations for control measures, including enhanced precautions advocated in guidance specifically for healthcare premises.<br><br>Assessors should have an awareness of other potential waterborne infection risks to which users might be particularly susceptible in healthcare and how these risks interact with legionella risk. These other infection risks are generally not included in the legionella risk assessment but may have implications for the recommendations of the legionella risk assessment i.e. they should not conflict.<br><br>An Assessor involved in Healthcare should also understand:<br><br>i) the requirements of the relevant managerial and technical aspects of HTM 00 and HTM 04-01 as a minimum;<br><br>ii) the elevated susceptibility of patients in certain areas of the hospital (not all patients are of a high susceptibility);<br><br>iii) the application of, and often reliance on water treatment in hospital water systems and its relevance to end use of the water;<br><br>iv) the complex arrangements including the interaction between estates, clinical departments, infection control, sterile services and health & safety departments;<br><br>v) the restrictions on surveys that exist in areas such as augmented care wards and operating theatres;<br><br>vi) large and complex domestic water systems, including the principles of HWS recirculating systems in HSG274 part 2.<br><br>vii) Hydrotherapy and Birthing Pools. |