British Occupational Hygiene Society

The Chartered Society for Worker Health Protection

Certificate of Competence

Legionella

Qualification Guide

PQA-POL00Y Version 5.0

Contents

1. Qualification Overview

1.1 Qualification Introduction

The Certificate of Competence [CoC] in Legionella is a Professional Qualification set at BOHS Level 5 and is designed for candidates wanting to establish their competence in the specific field of Legionella and its control. This qualification is a progression from the completion of the appropriate BOHS Level 4 Proficiency modules in Legionella.

There is only one route to this qualification (see appendix 1).

Having successfully completed BOHS proficiency modules P901, P903 and P904 [Candidates holding the earlier BOHS module P902 are exempted from sitting both P903 and P904.] candidates with appropriate experience may apply for this professional qualification and may need to complete a report, submit a career summary [Curricula Vitae] and attend a professional discussion.

The Certificate of Competence in Legionella is only awarded to those candidates who satisfy the examiners as to their knowledge in that subject and demonstrate by their education, training, and experience that they are competent to practice in this subject field.

Successful candidates are awarded the **Certificate of Competence in Legionella** and are entitled to use 'CoC Legionella' as post nominal letters after their names.

1.2 Entry Requirements

Applicants for this qualification are expected to demonstrate that they have a minimum of 3 years operational experience. This experience needs to include practical experience in controlling the Legionella risks in a range of situations. This should include the development of procedures, and control recommendations.

The only route (appendix 1) to this qualification is for candidates who have taken the P901, P903 and P904 BOHS modules. Candidates taking the earlier P902 qualification may claim an exemption from taking P903 and P904. All candidates are expected to have at least 6 months additional experience since completing their last module. This experience needs to include some management experience including preparation of quotations/tenders, discussions with workers /colleagues/clients regarding relevant subject matters, development of procedures, and control recommendations.

Candidates will be required to complete an application form showing their previous qualifications and experience and submit this to BOHS. The team at BOHS will review the application and allocate the candidate to the pathway according to the qualifications they hold.

Applicants should note that some of the components of this qualification are assessed online, and therefore access to a computer and the internet is essential.

1.3 Application Procedure

Applicants may request to complete this qualification by submitting a completed application form. The form is located on the BOHS website on the 'Certificate of Competence' page. Applicants should follow the instructions for completion carefully. Applications are considered on an academic and relevant professional experience basis to ensure that entry requirements have been met, using all information provided. Candidates will be sent an email to inform them of the outcome of their application.

There is no charge for the application. Candidates are liable to pay fees for each component as they progress through their qualification. A full list of current fees is available on the BOHS website.

1.4 Using the Online System

Candidates will create their own account for the www.bohs-hub.org website which will then give them access to;

- Pay for each qualification component
- Submit the necessary assessment documents such as a report(s) or portfolio of evidence
- View feedback comments and assessment results
- Book the professional discussion appointment

2. Report and Professional Summary

2.1 General Information

Candidates will have already submitted reports to complete their modules P903 and P904 [or the earlier P902] these reports will normally meet all the criteria for the certificate of competence qualification. Where either of these reports were submitted more than 2 years prior to the Certificate of Competence application then a new more recent report will be required.

In addition, it may be necessary for copies of the previously accepted P903 and P904 reports to be resubmitted electronically as BOHS does not retain any such reports after marking. These will be made available to the examiners for the professional discussion only. This will not incur any charge.

This report must cover work which has been undertaken by the candidate personally within the last six months and must **not have previously been submitted** for examination purposes. The report will be examined for qualification purposes. When the Society has completed its assessment of the report it will be destroyed. It is the responsibility of the candidate to hold a copy (or the original and submit a copy) of their report for any alternations which might need to be made following marking.

Before submitting any documents, candidates will be asked to electronically accept a statement of authenticity to indicate that the work is their own.

The submission **must** demonstrate the candidates' technical knowledge and ability, be a piece of practical work carried out by the candidate themselves and must be directly concerned and relevant to the subject area of examination.

2.2 Subject of the Report

The report submitted must involve the taking of water samples where and when appropriate and the candidate **must** provide evidence that they took the samples themselves. The report must then also include a copy of the certificate of analysis from a laboratory.

In order for the examiner to judge a candidate's competence the report will need to be properly structured with an introduction, a full description of the reason for the survey and any proposed works (where applicable) which must include appropriate conclusions and recommendations,

The report must be the candidates own work and not wholly generated from a generic company format

The report submitted can cover any of the aspects outlined below.

	Examples of the types of Reports that could be produced by the candidate;
(a)	Assessment of health risks from Legionella in large/complex hot and cold-water domestic style systems. as found in a hospital, care home, employee facilities in an industrial setting, hotels etc. It is ***not usually sufficient*** to submit surveys of domestic properties as they are not generally considered to be of sufficient complexity.
(b)	Assessment of health risks from Legionella and control systems/procedures in in non-domestic spa baths and/or in recreational and competition swimming pools.
(c)	Assessment of health risks from Legionella in industrial cooling towers including dosing systems and/or sanitising systems.
(d)	Assessment of health risks from Legionella and control systems/procedures in display features in public facilities.
(e)	Assessment of health risks from Legionella in industrial situations [e.g. automated vehicle wash] or in air conditioning systems including humidification]
(f)	Technical report for legal purposes as a specialist witness. Other technical reports are also acceptable in situations where candidates are no longer active with site activities. For example, those who carry out quality or technical manager roles, laboratory management, project management etc. The report submitted will need to consider the role undertaken including why it is required, how it is achieved along with appropriate conclusions. The legal framework within which the role sits will also need to be referenced along with the details of how compliance is achieved.

To confidentiality, reports may be edited to delete/blank out the name of the company/organisation commissioning the report. But the report and the certificate of authorship must bear the full address of the premises where the task was carried out.

If at any time the submitted report or accompanying documents are found be deliberately misleading or fraudulent then BOHS will immediately withdraw any issued Certificate of Competence in Legionella and not allow the candidates to resubmit reports. This sanction will have no exceptions but will be subject to an appeal procedure.

2.3 Preparing a Report

There is no restriction on the maximum length of each report.

The report must be properly structured and would normally be expected to include the following sections:

a. Title page, including a title and a unique number by which the report can be identified.
b. Concise or executive summary.
c. Introduction or background including a description of the age and nature of the water system, including its purpose.*[For the purposes of this report the system under consideration should potentially have a significant risk of Legionella development if mismanaged and the report should consider this properly. A simple domestic system would not be regarded as sufficient. Thus the system must involve other equipment*

other than that found in the normal domestic situation such as; multiple shower facilities,(hotels, care homes, industrial premises etc.) spa bath(s) cooling towers, industrial component or unit washing (e.g. car and vehicle washing),ultrasonic cleaners etc.]

d. Methodology for the task(s) being reported including all relevant risk assessments and safety procedures.
e. The report should include both positive and negative information and data.
f. A copy of the original handwritten field notes, as an appendix to the report or as an attached document where appropriate. (In the case of surveys where the information is recorded electronically on site then confirmation of the system used should be provided in place of the notes).
g. Copy of any analysis reports [e.g. Incubated dip slide counts] with appropriate authentication.
h. Discussion and recommendations including an overall evaluation of the system [leisure or Industrial] identifying any risks of Legionella and defining adequacy or not of such control measures.
i. Discussion and recommendations. All reports must reach conclusions in a clear and logical way so that they are easily understandable to the recipient. Where action is required by the recipient, especially immediately, the report writer could be deemed to be negligent if the report did not contain this advice. *Note: if recommended action is not included in your standard report format then supplementary documentation will be required by BOHS with these reports.*
j. Reference tables and graphs etc. as appropriate.
k. Plans (architect or sketch).
l. Where reference is made in the report to legislation, approved codes of practice or other documentation these must be the current situation and should not contain out of date references.

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Reports will also be rejected and returned to the author for correction and resubmission where they contain misleading or inconsistent information.

Where reports are rejected more than twice [third occasion] the application for competent person will be rejected and a full resubmission will be required.

Studies and reports carried out by a team will only be acceptable if ownership of the report can be claimed by the candidate alone. Only in exceptional circumstances will reports for studies carried out on the same equipment or premises be allowed to be submitted. Use of exceptional circumstances for planned multiple studies must be prior notified as there are additional requirements required for the reports submitted. Please contact BOHS before any such study.
The report must be written by each individual candidate and where relevant any reported analytical data must confirm that the samples were taken and provided to the analytical laboratory by the candidate. Where the report is generated from a computer generic report that requires the author to put information in about the study, please ensure that the information required has actually been put into the report and that it is a free-standing document.

For the purpose of confidentiality, reports may be edited to delete/blank out the name of the company/organisation commissioning the report. But the report and the certificate of authorship must bear the full address of the premises where the task was carried out.

If at any time the submitted report or accompanying documents are found be deliberately misleading or fraudulent then BOHS will immediately withdraw any issued Certificate of Competence in Legionella and not allow the candidates to resubmit reports. This sanction will have no exceptions but will be subject to an appeal procedure. Reference tables and graphs etc as appropriate

2.4 Professional Summary

In addition to the report, all candidates must also submit a professional summary. This summary should outline their professional qualifications and career as a full curriculum vitae. Provided that their experience profile as submitted in the CV is appropriate and more than meets the minimum experience requirements in section 1.2, they then will be allowed to proceed to the professional discussion.

2.5 Submission

Having completed the report and/or the professional summary, candidates will be able to submit this for marking/ assessment through the www.bohs-hub.org website. Instructions on how to create an online account and how to make a submission will be included in the qualification acceptance email.

These items must be submitted in either Microsoft Word or a PDF format and use the candidate's name as the file name - e.g. smithj.pdf. The submission may be submitted as a series of documents labelled with sequential numbers following the candidate's name e.g. smithj1.pdf, smithj2.pdf etc. Candidates are able to submit a maximum of 20 files and each one may be a maximum of 1mb; candidates should consider this when preparing their documents.

Full details on how to submit the documents are provided in the online submission facility on the www.bohs-hub.org website.

2.6 Assessment and Results

The submission is allocated to an assessor who will review the submission.

The assessment will consider the quality of the individual items and evidence of the application of the core competencies at a required level for this qualification.

If they are assessed as acceptable, the candidate will be notified through email that they have passed this component. The email will contain information about the next stage of the qualification, which is the oral examination.

If they are assessed as unacceptable in terms of content or quality, or if the assessor requires further information to evaluate either the submission, the candidate will be contacted directly through the www.bohs-hub.org website and asked to upgrade the submission. The candidate has two further attempts to update the submission to meet the required standard. If the submissions are still unacceptable, then the application will lapse, and the fee will be forfeited.

2.7 The Next Step

Once a candidate has successfully completed this component, they will move on to book an appointment for the oral examination. Instructions on how to do this will be sent by BOHS through email.

3. Professional Discussion

The final component required to achieve this qualification is the professional discussion. This section explains how to book your professional discussion, how to prepare for it and what to expect on the day.

3.1 Booking your Exam

Once a candidate has received a successful assessment of their report(s) and/or their professional summary, they will receive notification from BOHS advising them to proceed onwards to book the professional discussion.

Candidates will book this examination through the www.bohs-hub.org website, which they have used previously in this qualification to make assessment submissions. Full instructions on how to do this will be included in the notification email from BOHS.

The professional discussion is conducted online, through a video conference facility. BOHS will provide candidates with the appropriate links to set this up on their computer. Candidates will need to have access to a computer with a microphone or headset (which is preferable) and a camera (either built in or as a peripheral device), a good internet connection and a private room or office in which to conduct the professional discussion.

Once the appointment has been booked, the candidate will receive an automatic confirmation email.

3.2 Information about the Professional Discussion

3.2.1 General Information

In order to pass the professional discussion, candidates **must** be able to satisfy the examiners with regard to their knowledge including UK legislation, operational and practical skills in the full range of subject areas. The examiners will have access to the application form, technical reports, professional summary (CV) and any assessment feedback. They may refer to their contents during the examination. The Knowledge Matrix required is given in Appendix 2 of this document.

Three examiners, who will ask questions, in turn, covering all aspects of the relevant syllabus, will conduct the professional discussion. They will expect the candidate to be forthcoming with appropriate answers. The questions will be straight-forward tests of knowledge and understanding of the information covered by the syllabi. No trick questions are asked by the examiners. If a candidate does not understand the question being put, they should ask for clarification by the examiner.

This professional discussion normally lasts up to 60 minutes.

On some occasions it will be necessary, as part of the BOHS quality assurance scheme, for an observer to sit in on the oral examinations. The observer will be observing the examiners and takes no part in the results process of the examination.

Candidates **MUST** be able to demonstrate to the examiners that they have carried out relevant work and have knowledge in **ALL** of the areas of the syllabus.

Candidates are expected to have prepared themselves for this oral examination by ensuring that they have appropriate knowledge of all the areas of the subject areas and that it is up to date. A lack of knowledge of any part of the subject areas because, for example, those duties do not form part of the candidate's day-to-day responsibilities, will not be accepted by the examiners and candidates presenting themselves in this way will automatically fail the examination.

3.2.2 Specific Requirements

The oral examination will test the candidates' knowledge and include the following areas:

- The occurrence of Legionella and the health hazards that can occur as a result of exposure to Legionella.
- The legislation, COSHH including the Control of Legionella L8.and other statutory documents, HSG 274 Parts 1,2 and 3 and HSG282 et al.
- Exposure prevention including all safety procedures including the appropriate use of PPE and RPE.

3.2.3 Further Information

Additional information is available about oral examinations on the www.bohs-hub.org website.

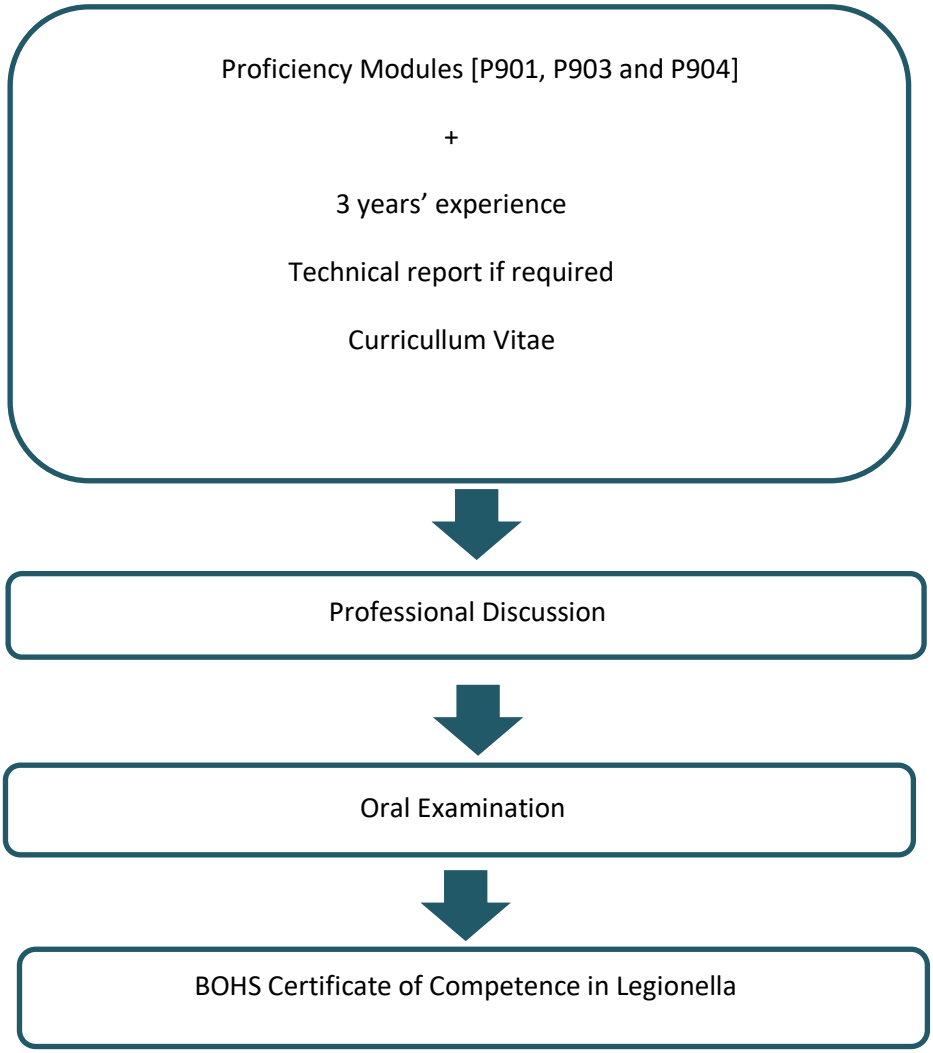
3.3 Results

Results are issued to the candidates via email within two weeks of attending the oral examination.

If the candidate has passed the professional discussion, they receive notification by email followed by the certificate of successful completion of the qualification by post.

If the candidate has not passed the professional discussion, they will receive information from BOHS by email detailing how to rebook the professional discussion. In this case, feedback is given in order to help the candidate prepare for a further attempt. Candidates will be allowed to retake the professional discussion for two further attempts (at the current fee for a professional discussion) provided that they remain within the 18-month allowable timeframe for the qualification. If candidates exceed the 18-month allowable timeframe or are unsuccessful after their third attempt at the oral examination, then the candidate will be required to reapply for the qualification.

Appendix 1 - Progression Routes to the CoC Legionella Qualification



Appendix 2 Knowledge Matrix

Level of Knowledge					Module subject			
Basic	**Intermediate**	Advanced	Expert		P900	P901	P903	P904
				Legionella and Health Risks				
			×	Conditions that allow it to proliferate in water systems. Effects of temperature, stagnation, presence of biofilms, etc.	×			
			×	Health risk from exposure to water aerosols containing legionella bacteria.	×			
			×	Vulnerability of certain at-risk individuals.	×			
			×	Types of disease, symptoms and health effects	×			
				Legislation and Guidance				
			×	Acts of Parliament, Health and Safety at Work act.	×	×	×	×
			×	Approved Codes of Practice, HSE guidance notes and British Standards. Other industry accepted good practice sources of information.	×	×	×	×
				Types of Domestic Hot and Cold Water Systems				
			×	Overview of the different types of domestic hot and cold water systems and fittings in buildings.	×			
			×	Overview of operation and inspection requirements for hot and cold water systems.	×			
				Precautionary Measures for Legionella Control				
				Overview of water treatment and control programmes.	×			
				Overview of the requirements for the implementation of precautionary measures for the control of legionella bacteria in domestic hot and cold water systems.	×			
				Sampling, Testing and Monitoring Regimes				
			×	British Standards for hot and cold-water sampling and testing	×			
			×	Techniques for the sampling and inspection of water storage vessels.	×			
			×	Temperature measurements for hot and cold water systems.	×			
			×	Requirements for microbiological analysis	×			
				Maintenance, Disinfection and Cleaning				
			×	Overview of cleaning and maintenance regimes for domestic hot and cold water systems.	×			
			×	The principles involved in cleaning regimes for hot and cold water system plant, appliances and fittings. Definition of 'disinfection'.	×			
			×	Overview of special considerations for healthcare and care homes with susceptible 'at risk' individuals.	×			
			×	**Record Keeping**				
			×	Regulatory requirements for record keeping.	×	×	×	×
			×	Water services logbook for the recording of water system inspections, maintenance tasks, temperatures, water quality monitoring and corrective actions.	×			
				History of the Legionella organism				
			×	The occurrence of legionella, sources and primary cause of growth in man-made water systems.		×		
			×	Types and significance of the bacteria.		×		
			×	The infection chain, susceptibility to infection, symptoms, treatment and prognosis.		×		
			×	Health effects on exposed people. .		×		
			×	Review of data gathered by Public Health England (PHE) and others		×		

				Risk assessment of systems				
			×	Role of the named duty holder and responsible person(s).		×		
			×	Definition of competent responsible person.		×		
			×	Key components of the management and control systems.		×		
			×	Design and operation of domestic type hot and cold water systems.		×		
			×	Importance of schematic diagrams and sentinel outlets.		×		
			×	Sentinel points on hot water systems with a circulation		×		
			×	Significance of dead legs, blind ends and inaccessible parts of the water system.		×		
			×	Examples of other miscellaneous systems (e.g. emergency showers).		×		
				Operational control				
			×	Duties and responsibilities of responsible person(s).		×		
			×	The role, risks and responsibilities when subcontracting part of the task of the control strategy.		×		
			×	The written scheme of precautions, including routine temperature checks and routine condition inspection.		×		
			×	Other control strategies: ionisation, ClO^2, etc.		×		
			×	The role of general bacteriological testing as part of the control strategy.		×		
			×	Corrective or remedial actions.		×		
			×	Record keeping, the details required for effective management control and retention of monitoring data.		×		
				Cooling tower design and operation				
			×	Types of cooling towers: natural draught, evaporative condensers, evaporative fluid condensers, open evaporative cooling towers.			×	
			×	Heat rejection mechanism.			×	
			×	The principal components of a cooling tower water system.			×	
				Risk assessment				
			×	Roles of the named duty holder and responsible person.			×	
			×	Key components of the risk assessment including system schematic.			×	
			×	Adiabatic enhancement of dry coolers and hybrid coolers.			×	
			×	General design considerations.			×	
			×	Risk assessment-led approach to fill pack removal for cleaning.			×	
				Water treatment				
			×	Routine cleaning and disinfection.			×	
			×	Scale control, the hardness cycle and base exchange softening.			×	
			×	Corrosion control including common corrosion inhibitors.			×	
			×	Dissolved solids control including concentration factor and system bleed.			×	
			×	Microbiological control including oxidising/non-oxidising biocides, alternative treatment techniques.			×	
				Operational control				
			×	COSHH requirement for elimination			×	
			×	Weekly, monthly, quarterly, six monthly, and annual tasks.			×	
			×	Precautions for units on standby.			×	
			×	Free cooling.			×	
			×	Requirements for monitoring for legionella bacteria.			×	
			×	Routine bacteriological testing with assessment of limitations of this data and control levels.			×	
			×	Records: the detail required and retention.			×	
				Other risk systems				
			×	Industrial spray humidifiers and misting systems.			×	
			×	Air Handling Units (AHU's) and humidifier systems.			×	

			×	Deluge and sprinkler systems and other fire suppression systems.			×	
			×	Emergency showers.			×	
			×	Wet scrubbers used for treatment of fume, dust, paint, gas etc. Vehicle and component wash down systems including power jet wash systems.			×	
			×	Machine and lathe cooling systems			×	
			×	Water softeners, and other such systems wherever a respirable water-based aerosol can be created.			×	
				Leisure and Therapy Pools Design and Operations				
			×	Types and designs of spa pools including hot tubs (domestic version of a spa pool), whirlpool baths and contrast to swimming pools.				×
		×		Hydrotherapy pools.				×
		×		NHS premises requirements (HTM 04).				×
			×	Systems using thermostatic mixing valves [TMV].				×
			×	Multi head sports halls systems.				×
			×	Emergency showers.				×
				Risk Assessments				
			×	Roles of the named duty holder and responsible person.				×
			×	Key components of the risk assessment including system schematic.				×
				General design considerations.				
			×	Water Treatment				×
			×	Routine cleaning and disinfection.				×
			×	Scale control, the hardness cycle and base exchange softening.				×
			×	Corrosion control, including common corrosion inhibitors.				×
			×	Water chemistry, pH control, use of biocides.				×
			×	Dissolved solids control including concentration factor and system bleed.				×
			×	Microbiological control including oxidising/non-oxidising biocides and alternative treatment techniques.				×
				Operational Control				
			×	COSHH requirement for elimination				×
			×	Weekly, monthly, quarterly, six monthly, and annual tasks.				×
			×	Routine bacteriological testing with assessment of limitations of this data and control levels				×
				Other Risk Systems *[The techniques used for spa and hydrotherapy pools would be extended to show how they would be directly applied to other risk systems. This should include systems below]*				
			×	Air handling units and humidifier systems.				×
			×	Fountains and water features.				×
		×		Solar & heat recovery systems.				×
		×		Car and other vehicle [Road, Rail etc,] washing and power jet systems.				×
			×	Large domestic systems.				×