

BOHS

British Occupational
Hygiene Society

The Chartered
Society for Worker
Health Protection

P901 Proficiency Qualification

Legionella - Management and Control of Building Hot and Cold Water Services

Qualification Specification

Contents

		Page
Section 1	About BOHS	2
Section 2	P901 at a glance	3
Section 3	Background to the qualification	4
Section 4	Key features of the qualification	5
Section 5	Delivering the qualification	7
Section 6	Syllabus	8
Section 7	References and further reading	11
Section 8	Achieving the qualification	12
Section 9	Quality assurance	15
Section 10	Offering the qualification	16
Section 11	Other qualifications	17

Section 1

About BOHS

BOHS - The Chartered Society for Worker Health Protection

BOHS is the Chartered Society for Worker Health Protection. Our vision is to create a healthy working environment for everyone by preventing exposure to hazardous substances in the workplace.

Founded in 1953, we have developed over the years into a highly respected and influential body on workplace health issues, working closely with organisations in the UK and overseas to promote our vision. We are a registered charity, professional society and a member of the International Occupational Hygiene Association which is recognised as a non-government organisation by the International Labour Organisation (ILO) and the World Health Organization (WHO).

We were awarded a Royal Charter in 2013 in recognition of our pre-eminent role in protecting worker health.

BOHS is a membership organisation, open to anyone who has an interest in workplace health issues.

BOHS courses and qualifications – the quality choice

We are the leading awarding body in our field. Our UK courses and qualifications are recognised and respected by independent agencies such as the Health and Safety Executive (HSE) and the United Kingdom Accreditation Service (UKAS) and further afield by industry and employers worldwide. Over 50,000 people have taken one of our qualifications through our network of training providers which offer engaging, challenging and practical courses.

Our qualifications are overseen by a team of highly experienced professionals who are dedicated to developing the competence and career opportunities for the many thousands of people who play a key role in protecting worker health, in diverse fields such as asbestos, legionella and control technologies.

Information about all our courses and qualifications is available from our website:

www.bohs.org/qualifications-training/bohs-qualifications/

Section 2

P901 at a glance

What is the objective?

To provide an overview of legionella bacteria risk, and how it can be controlled in hot and cold water systems in compliance with regulatory requirements.

Who is it for?

- Water system technicians and operatives.
- Responsible persons for domestic hot and cold water systems (e.g. building and facilities managers, duty holders, maintenance staff).
- Legionella consultants.
- Occupational hygienists and health and safety managers.

What are the entry requirements?

Candidates should have:

- Prior knowledge of controlling legionella risk in domestic hot and cold water systems. Completing the P900 Foundation course would also fulfil this requirement.
- A basic understanding of the following HSE guidance documents:
 - L8 (latest version), Legionnaires' disease: The control of legionella bacteria in water systems
 - HSG274 (latest version), Legionnaires' disease Part 2: The control of legionella bacteria in hot and cold water systems

What are the main subject areas?

- ☒ Introduction and history of the legionella organism.
- ☒ Legislation and guidance.
- ☒ Risk assessment of water systems.
- ☒ Operational control.
- ☒ Outbreak investigation procedures.
- ☒ Record keeping.

How long does it take?

1 day.

What level is it?

Level 4 in the BOHS qualifications framework.

How do candidates pass it?

Candidates must pass a Written Theory examination.

Section 3

Background to the qualification

BOHS aims to protect worker health through promoting the science and practice of occupational hygiene. By identifying and controlling hazardous substances in the workplace, we can reduce the levels of occupational ill health.

Legionella proliferation is still a serious health risk in both domestic and non-domestic water systems. Exposure to legionella bacteria through inhalation of contaminated water droplets can result in serious health effects for workers, which in some cases can be fatal. The Legionnaires' disease outbreak in Edinburgh in 2012 highlighted just how serious it can be; it caused four deaths and 92 cases of serious illness.

BOHS' suite of legionella qualifications gives candidates the knowledge to identify and control legionella risk in water systems, to a standard which reduces ill health. *P901 - Legionella – Management and Control of Building Hot and Cold Water Services* teaches candidates about the risk of legionella infection in domestic type hot and cold water systems, the ill health effects it can cause, and how it can be controlled in order to reduce the risk of ill health in the workplace.

P901 also educates employers on their legal duties for controlling legionella risk in domestic hot and cold water systems, in accordance with regulatory requirements such as the Health and Safety at Work Act, COSHH Regulations and Management of Health and Safety At Work Regulations.

Section 4

Key features of the qualification

Objective

The qualification is designed to improve the knowledge and skills required by water systems operatives, up to a standard which is recognised as preventing ill health by minimising the risk of exposure to legionella bacteria.

Target audience

The qualification is suitable for anyone who is:

- Responsible for maintaining domestic type hot and cold water systems. This includes:
 - Water system technicians and operatives.
 - Building and facilities managers.
 - Duty holders and other responsible persons.
 - Maintenance staff.
- Responsible for controlling legionella bacteria risks or for controlling health risks in the workplace. This includes:
 - Legionella consultants.
 - Occupational hygienists.
 - Health and safety practitioners or health and safety managers.

Entry requirements

Before taking the qualification, candidates should have a basic understanding of legionella risk control principles. Candidates are recommended to take the P900 Foundation course if they have no prior experience of controlling or managing legionella risk in water systems, although it is not a compulsory pre-requisite.

Candidates should also have a basic understanding of the following guidance documents:

- L8 (latest version), Legionnaires' disease: The control of legionella bacteria in water systems
- HSG274 (latest version), Legionnaires' disease Part 2: The control of legionella bacteria in hot and cold water systems

Candidates will also need basic literacy and numeracy skills.

Age range

There is no age restriction on candidates taking the qualification.

Level

The level of a qualification indicates the relative complexity and depth of knowledge and skills required to attain the qualification.

This qualification is set at level 4 in the BOHS qualifications framework, equivalent to NVQ Level 4 and HNC level.

Achievement at Level 4 reflects the ability to identify and use the relevant understanding, includes methods and skills to address problems that are well defined but complex and non- routine. It includes taking responsibility for overall course of action as well as exercising autonomy within fairly broad parameters. It also reflects understanding of different perspectives and approaches within an area of study or work.

Fees

The examination fee for each candidate is published on the BOHS website:
www.bohs.org/qualifications-training/examination-fees/

Section 5

Delivering the qualification

Teaching and learning time

The P901 course normally runs on one day and includes six hours of teaching.

Tutors

The course should be taught by tutors who are experienced and qualified/certified legionella consultants or occupational hygienists. As a guide, tutors will typically have:

- At least three years' **current** experience in preventing and controlling legionella risk;
- A recognised legionella qualification or a professional occupational hygiene qualification/certification such as:
 - BOHS Certificate of Competence (Legionella);
 - BOHS Certificate of Operational Competence;
 - BOHS Diploma of Professional Competence.

This list is not necessarily exhaustive or definitive.

Teaching resources

Training providers must have drawings and photographs of relevant installations, water sampling and test equipment, as working examples for candidates.

Support for teaching and learning

BOHS provides sample examination questions for tutors.

Language

The examinations are currently only provided in English.

Section 6

Syllabus

The qualification is structured into seven sections, each with an indicative time allocation:

	Topic	Time allocation
1.	Introduction and history of the organism	15%
2.	Legislation and guidance	15%
3.	Risk assessment of systems	25%
4.	Operational control	20%
5.	Outbreak investigation procedures	10%
6.	Record keeping	5%
7.	Case studies	10%

1. Introduction and history of the organism (15%)

Educational objectives

Candidates should learn about:

- The origins of legionella and the factors which allow it to proliferate to hazardous levels in man-made water systems.
- The main practical and theoretical conditions which cause legionella infection to occur in susceptible individuals.

- 1.0.1 The occurrence of legionella, sources and primary cause of growth in man-made water systems.
- 1.0.2 Types and significance of the bacteria.
- 1.0.3 The infection chain, susceptibility to infection, symptoms, treatment and prognosis.
- 1.0.4 Health effects on exposed people.
- 1.0.5 Review of data gathered by Public Health England (PHE) and others.

2. Legislation and guidance (15%)

Educational objectives

Candidates should understand the key pieces of legislation and guidance which underpin best working practice in managing and controlling legionella risk.

- 2.0.1 Acts of Parliament.
- 2.0.2 Approved codes of practice, regulations, HSE guidance notes, British Standards.
Other industry accepted good practice sources of information.

3. Risk assessment of systems (25%)

Educational objectives

Candidates should understand:

- The roles of people responsible for managing and controlling legionella risk.
- The different components of hot and cold water systems.
- The practical and theoretical principles of assessing the risk of exposure to legionella in domestic hot and cold water systems.

- 3.0.1 Role of the named duty holder and responsible person(s).
- 3.0.2 Definition of competent responsible person.
- 3.0.3 Key components of the management and control systems.
- 3.0.4 Design and operation of domestic type hot and cold water systems.
- 3.0.5 Importance of schematic diagrams and sentinel outlets.
- 3.0.6 Sentinel points on hot water systems with a circulation.
- 3.0.7 Significance of dead legs, blind ends and inaccessible parts of the water system.
- 3.0.8 Examples of other miscellaneous systems (e.g. emergency showers).

4. Operational control (20%)

Educational objectives

Candidates should have a detailed practical and theoretical understanding of how to implement legionella control regimes with suitable monitoring programmes and records.

- 4.0.1 Duties and responsibilities of responsible person(s).
- 4.0.2 The role, risks and responsibilities when subcontracting part of the task of the control strategy.
- 4.0.3 The written scheme of precautions, including routine temperature checks and routine condition inspection.
- 4.0.4 Other control strategies: ionisation, ClO², etc.
- 4.0.5 The role of general bacteriological testing as part of the control strategy.
- 4.0.6 Corrective or remedial actions.
- 4.0.7 Record keeping, the details required for effective management control and retention of monitoring data.

5. Outbreak investigation procedures (10%)

Educational objectives

Candidates should be able to identify a legionella outbreak and analyse, interpret and evaluate all relevant information in a hot and cold water system, and initiate the appropriate action to take in this instance.

- 5.0.1 The appointment and role of a Proper Officer and Incident Control Team.
- 5.0.2 Definition of an outbreak.
- 5.0.3 The roles of the investigating organisations (HSE, PHE, local authority).
- 5.0.4 Control and Investigation phases.
- 5.0.5 Interpreting the patterns of cases to trace the source; interpreting the microbiology to trace the source and the role of sequence-based typing (SBT).

6. Record keeping (5%)

Educational objectives

Candidates should understand which records they are required to keep for their water systems, in order to comply fully with legislation.

- 6.0.1 Regulatory requirements for record keeping.

7. Case studies (10%)

Candidates should be shown real-life case study examples of:

- 7.0.1 Causes of recent Legionnaires' disease outbreaks and the suspected water system sources.
- 7.0.2 Prosecutions.

Section 7

References and further reading

1. BS 7592 (2008), Sampling for Legionella bacteria in water systems - Code of practice, BSI

2. BS 8580 (2010), Water quality - Risk assessments for Legionella control - Code of practice, BSI

3. HSG220 (2014) Health and Safety in care homes (2nd edition), HSE

4. HSG274 (2014), Legionnaires' disease - Part 2: The control of legionella bacteria in hot and cold water systems, HSE

5. HTM 04-01 (April 2017), Safe water in healthcare premises, GOV.UK

6. INDG 458 (2012), Legionnaires' disease: A brief guide for dutyholders, HSE

7. L8 (2013), Legionnaires' Disease: The control of legionella bacteria in water systems - Approved Code of Practice and guidance on regulations (4th edition), HSE

8. The Water Supply (Water Fittings) Regulations 1999, GOV.UK

HSE guidance is reviewed and revised periodically. Training providers should check that the publications listed above are the current versions.

Useful websites

All the Health and Safety Executive (HSE) publications listed above are available as free downloads from the HSE website: www.hse.gov.uk/legionnaires

Section 8

Achieving the qualification

Candidates are required to pass a Written Theory examination in order to be awarded the qualification.

Written Theory examination

The Written Theory examination enables candidates to demonstrate that they have attained the breadth and depth of knowledge which necessarily underpins good legionella risk assessment and control practice in domestic hot and cold water systems.

The examination comprises 20 short-answer questions to be answered in one hour. Short-answer questions require candidates to give brief answers, sometimes as bullet points or calculations.

All questions are worth 4 marks and candidates may be awarded between 0 and 4 marks per question. Candidates should attempt all questions as no marks are deducted for incorrect answers.

The pass mark is 50%.

The examination covers sections 1 to 6 of the content if the qualification in proportion to the time allocation given for each section. This gives a question allocation as follows:

Section		Number of questions
1	Introduction and history of the organism	3
2	Legislation and guidance	3
3	Risk assessment of systems	6
4	Operational control	5
5	Outbreak investigation procedures	2
6	Record keeping	1

The sections are clearly marked in the examination paper.

The written theory examination is a closed-book examination, which means that candidates are not permitted to have access to any material.

Invigilation

The examination is carried out in controlled conditions, to help ensure that all candidates demonstrate their true level of attainment. BOHS will appoint an independent invigilator to oversee the examination.

Marking and results

All examination papers are marked by BOHS. Candidates receive their results in writing from BOHS. The results are reported as pass or fail plus a percentage.

Borderline fail results are automatically re-marked by a second marker.

Training providers are sent a list of results for all candidates on a course.

Feedback

Candidates receive feedback on their examination performance. For example, the feedback for a Written Theory examination in which a candidate scored 61% would be shown as follows:

Syllabus Area		Result	
1	Introduction and history of the organism	6/12	(50%)
2	Legislation and guidance	8/12	(75%)
3	Risk assessment of systems	12/24	(50%)
4	Operational control	20/20	(100%)
5	Outbreak investigation procedures	0/8	(0%)
6	Record keeping	3/4	(75%)
Total		49/80	(61%)

Training providers receive feedback on the performance of all candidates.

Written Exam Performance against syllabus		Number of candidates in each scoring band		
		0-49%	50-75%	76-100%
Written Theory	1. Introduction and history of the organism	1	6	1
Written Theory	2. Legislation and guidance	2	5	1
Written Theory	3. Risk assessment of systems	2	6	0
Written Theory	4. Operational control	1	5	2
Written Theory	5. Outbreak investigation procedures	1	5	2
Written Theory	6. Record keeping	1	5	2

Resits

Candidates may re-sit the Written Theory examination, but must pass within 12 months of the original examination date in order to achieve the qualification.

Certification

Candidates who pass the assessment will be awarded a Proficiency certificate in *P901 - Legionella – Management and Control of Building Hot and Cold Water Services*.

Section 9

Quality assurance

Internal quality assurance

Training providers must operate an internal quality assurance system which evaluates and improves the delivery of the qualification.

External quality assurance

BOHS undertakes desk-based reviews of documents, including teaching materials and formative practical assessment records, and conducts surveys of candidates. We also may inspect training providers.

Section 10

Offering the qualification

Approved Training Providers

Please complete and return the 'Application to Offer Additional Qualifications' form to qualifications@bohs.org. The form is available on the BOHS website.

New training providers

Please send an email to qualifications@bohs.org expressing your interest in offering the qualification and we will advise you about the approvals process.

Section 11

Other courses and qualifications

Candidates who achieve this qualification may wish to take one of the following qualifications:

P903 - Legionella – Management and Control of Evaporative Cooling and other High Risk Industrial Water Systems

Objective

This qualification provides candidates with an understanding of the risks of legionella infection, and how to control legionella in evaporative cooling systems (e.g. cooling towers) and other high-risk industrial water systems.

Target audience

This qualification is aimed at those whose primary role is to manage the legionella proliferation risk in evaporative cooling systems and other industrial water systems. This includes:

- The 'responsible person' for managing a building premises (e.g. duty holder).
- Legionella consultants.
- Water systems operatives and technicians.
- Health and safety practitioners.
- Occupational hygienists.

P904 - Legionella – Management and Control in Leisure, Display, Therapy and other Non-Industrial Water Systems

Objective

This qualification provides candidates with an overview of the health risks of legionella infection, and how it can be controlled in leisure, display, therapy and other non-industrial water systems.

Target audience

This qualification is aimed at anyone who is responsible for assessing and controlling legionella risks in non-industrial water systems. This includes:

- Dutyholders and other responsible persons.
- Legionella consultants.
- Water system operatives and technicians.
- Health and safety practitioners.
- Occupational hygienists.

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Information in this Qualification Specification is correct at the time of issue but may be subject to change.

BOHS
5/6 Melbourne Business Court
Millennium Way
Pride Park
Derby
DE24 8LZ

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