Contents

Course objectives

This training course aims to:

- Give a comprehensive overview of the main legislative and guidance documents relative to the control of Legionnaires' disease and the disinfection of water systems.
- Briefly describe the basic properties of water.
- Explain what is meant by the term Legionellosis, Legionnaires' disease and Legionella bacteria, including:
  - The background to the disease.
  - What is the cause of the disease and how it is transmitted.
  - Sources of the bacteria.
  - How to manage and control the risk of Legionellosis.
- Provide information on how to carry out the cleaning and disinfection of cold and hot water systems.
- Explain the basic cold and hot water design principles and risks associated with Legionella.
- Provide practical guidance on how to carry out a risk assessment of a cold and hot water system in a building and make recommendations to rectify the problems.
- Give guidance on how to collect, transport and submit water samples to be analysed for Legionella bacteria

Introduction

Section 1:

Legislation covering the control of Legionella bacteria in water systems

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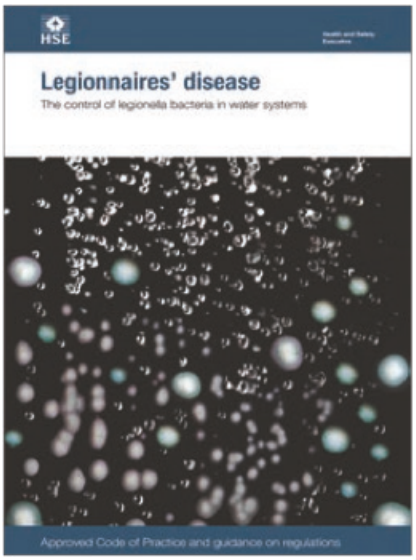
As with most other aspects of your work as a mechanical services engineer, legislation and guidance influences what you do. Similarly, it is important that you are aware of the main legislation and guidance covering Legionella and what we are required to do in order to prevent Legionella from growing in a water system. The key documents related to this topic is "The Approved Code of Practice 4th edition Legionnaires' disease: The control of Legionella bacteria in water systems" (ACOP L8) and the HSG274 part 2: The control of Legionella bacteria in hot and cold water systems, illustrated in figure 1.

Figure 1: The key documents for Legionella control and prevention



Previously, the ACOP L8 "Approved code of practice and guidance" contained both the legislation and guidance for the control of Legionella in hot and cold water systems. The new version which was published in 2013 separates the legislation from the guidance. The guidance is also further divided further into Cooling Water Systems (part 1), Hot and Cold Water Systems (part 2) and Other Risk Systems (part 3).

The ACOP outlines the legislation for the control of Legionella bacteria and gives practical advice on the requirements of the Health and Safety at Work etc Act (HSWA) and the Control of Substances Hazardous to Health Regulations (COSHH).

The HSG274 part 2 was produced in April 2014 and provides technical guidance on the management and control of Legionella in hot and cold water systems.

Other general legislation related to the control of Legionella includes:

- The Management of Health and Safety at Work Regulations 1999
- The Provision and Use of Work Regulations 1992
- Statutory Instruments No. 2225 (1992). The notification of Cooling Towers and Evaporative Condensers Regulations
- Legionnaires' Disease: A Guide for Employers
- Legionnaires' Disease: Essential Information for Providers of Residential Accommodation

The revised 4th edition of the ACOP and HSG publications replace the former ACOP L8 Approved Code of Practice and Guidance, HSG70, and it came into effect on 8 January, 2001.

You will probably be familiar with the reference to HSWA and COSHH. If you require further information, health and safety information can be obtained from the HSE Health and Safety Information Service on:

Tel: 08701 545500
Fax: 02920 859260
E-mail: hseinformationservice@natbrit.com

The HSE also produces a free publication entitled: 'COSHH: A brief Guide to the Regulations'. This can be downloaded from the HSE website at www.hse.gov.uk

If you do not have internet access, call HSE books on 01787 881165. Your course tutor will have an electronic version of the booklet.

The new ACOP and HSG 274 part 2 have been produced to accommodate the following key changes:

- Legionella risk assessments should consider both Legionella and scald risks
- New requirements for monitoring secondary and tertiary hot water loops
- New requirements for the monitoring and inspection of thermostatic mixing valves (TMV's), point of use/ combi heaters.
- Legionella risk assessments should be reviewed periodically depending on the level of perceived risk or if there have been sufficient changes in the use or layout of water systems (i.e. not necessarily every two years)

Other legislation and guidance

There is other legislation and guidance that influences the design, installation, service and maintenance of hot and cold water systems in relation to the control of Legionella bacteria.

These would include:

- The Water Supply (Water Fittings) Regulations 1999 (Water Bylaws in Scotland)
- BS 8558 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages
- BS EN 806-5: 2012 Specifications for installations inside buildings conveying water for human consumption. Operation and maintenance
- BS 8580: 2010 Water Quality. Risk Assessments For Legionella Control. Code of Practice
- BS 7592 Sampling for Legionella in Water Systems. Code of Practice

The Water Regulations Advisory Service (WRAS) produces a Water Regulations Guide (ISBN 0-9539708-0-9), which is available in most bookshops and in your local library.

WRAS also publishes the Water Fittings and Materials Directory (ISBN 1 8726 9956 1), which lists approved fittings and materials for use on the UK water supply system. This publication is quite important, because ACOP and the Water Regulations require that only approved water fittings and materials should be used.

If you are a provider of, or have specific responsibility for, cold and hot water systems in residential accommodation, The Corporate Manslaughter and Corporate Homicide Act 2007 means that you are responsible for your buildings and serious breaches can result in seven figure fines.

The following materials should not be used in cold and hot water systems as they have been known to facilitate the growth of Legionella by providing nutrients:

- Natural rubber
- Certain synthetic rubbers such as EPDM
- Hemp
- Linseed oil-based jointing compounds
- Fibre washers (of man-made fibre)

Where possible, low-corrosion materials should be used whenever possible, such as:

- Copper
- Plastic
- Stainless steel

Certain plastic compounds have been associated with the increased growth of bacterial biofilms due to the microscopically rough internal surfaces and may also limit biocide use due to a low tolerance of certain chemicals.

Copper is well documented to have antibacterial properties and should be considered as the primary building material for hot and cold water systems.

It is worthy of note that many push fit and crimp fit pipe fittings contain an EPDM or Butyl “O” ring seal which have also been associated with the growth of bacteria.

Section 6:

Practical demonstration of cold water system disinfection and report

Section 6: Practical demonstration of cold water system disinfection and report

Section 6 will involve observing a practical demonstration of the disinfection of a cold water system.

At the end of this section, you will be required to write a short report (15 to 20 minutes) based on section 5 and what you have observed in section 6. Try to use bullet points rather than large chunks of text, and use diagrams where possible. Here are a few pointers to help you structure your report:

What is the first activity in the process?

In which situations should water systems be disinfected?

Explain which safety precautions should be followed when carrying out disinfection. Which type of disinfection was used in the demonstration?

Describe how you calculate the volume of the system and the chemical dosage.

Explain the process, including:

- Manual cleaning
- System disinfection
- Checking that the residual chlorine level has been achieved
- Post disinfection

Appendix 1:

Legionella Risk Assessment Log Book