

GUIDE TO LEGIONELLOSIS

- Risk Assessment

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The logo for BSRIA, consisting of the letters 'BSRIA' in a large, bold, serif font.

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PREFACE

Ever since the recognition of legionellosis and its causes in the early late 1970s the UK has been at the forefront of those countries offering practical advice for industry on risk control measures. As a result of the guidance provided by HSE, CIBSE, BSRIA and others and regulatory initiatives such as the 1995 *Approved Code of Practice for the prevention or control of legionellosis* (ACOP) and the registration of cooling towers, the levels of awareness amongst the building services community are high and cases are much less frequent than they might otherwise be. In fact, of the 200-250 cases of legionnaires' disease which are reported each year, approximately half are contracted abroad.

During 1998 several organisations including HSE, CIBSE, WMS and BSRIA independently decided to review their published advice in the light of 20 years' operational experience, new legionellosis control options and new research findings.

The aim of this guide is to provide a structured framework for legionellosis risk assessment which may be carried out in house by suitably experienced staff or by specialist consultants. It must be read and acted upon in conjunction with the new HSC *Approved Code of Practice and Guidance: Legionnaires' Disease: The control of legionella bacteria in water systems*, which details the overall requirements for risk assessment and risk management of water related systems.

EXECUTIVE SUMMARY

The guide briefly summarises the regulatory situation with respect to legionellosis and then describes the practical application of the risk assessment process as outlined in the new HSC *Approved Code of Practice and Guidance: Legionnaires' Disease: The control of legionella bacteria in water systems* (ACOP). The guide is intended to be read in conjunction with the ACOP which should be readily available to all those involved in the management, operation and maintenance of water systems.

The ACOP states that persons who carry out the assessment and who draw up and implement precautionary measures should have such ability, experience, instruction, information, training and resources as to allow them to carry out their tasks competently and safely. For many buildings the risk assessment will require the services of an experienced specialist contractor. This guide is definitely not a DIY manual but it is a standardised approach to carrying out legionellosis risk assessments including standard survey protocols and record keeping systems. It is also an information resource for risk assessors and the building managers who may employ them

The guide is supported by a number of other BSRIA documents relating to the management and control of the risk of legionellosis in buildings including:

- *Guide to legionellosis - Operation & maintenance*
- *Legionellosis control logbook*
- *Guide to legionellosis: Temperature measurements for hot and cold water services*
- *Standard specification for water hygiene risk assessment.*

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1 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide a standardised approach to carrying out legionellosis risk assessments including standard survey protocols and record keeping systems. It will assist the risk assessor to gauge the risk posed by legionellosis in a wide range of situations, and where necessary make recommendations to reduce and control that risk. The resulting risk assessment and evidence of implementation of the recommendations allow the responsible person to demonstrate compliance with the relevant health and safety legislation.

1.2 BACKGROUND

Legionellosis is the term used for infections caused by *Legionella pneumophila* and other bacteria from the family Legionellaceae. Legionnaires' disease is a pneumonia that principally affects those who are susceptible due to age, illness, immuno-suppression, smoking etc. and may be fatal. Legionellae can also cause less serious illnesses such as Pontiac and Lochgoilhead fevers which can affect all people. Infection is attributed to inhaling legionellae, in those water droplets which are small enough (<5 µm) to penetrate deeply into the lung. This organism is of particular concern because it is widespread in natural water sources and multiplies rapidly in the conditions found in some building water systems. It is released into the air in water droplets and so may be spread by a number of systems commonly found in buildings.

Systems which can harbour legionella and release contaminated droplets into the air include cooling towers, evaporative condensers, humidifiers, domestic water systems, spa baths, sprinklers, hose reels, lathe coolants, fountains, car washes and horticultural misting.

As a result of a number of outbreaks of legionellosis, resulting in multiple fatalities, along with a regular reporting of cases (200 to 300 a year) many of which are contracted overseas, the Health and Safety Commission deemed it necessary to define the requirements of the *Control of Substances Hazardous to Health Regulations 1988* by means of an Approved Code of Practice (ACOP) which has a specific legal status.

The latest HSC *Approved Code of Practice and Guidance: Legionnaires' Disease: The control of legionella bacteria in water systems* now incorporates both the ACOP and detailed guidance on design and operation of risk systems¹.

BSRIA has also produced its own document *Guide to legionellosis - Operation & maintenance* and associated *Legionellosis control log book*, which are designed to assist building managers and contractors in complying with the ACOP with particular regard to the operation and maintenance of buildings.

¹ This guidance is a substantially expanded version of that which was formerly contained in HS(G)70.

1.3 LEGISLATION

The requirement for a legionellosis risk assessment arises from the *Health and Safety at Work etc Act 1974* and the *Control of Substances Hazardous to Health Regulations 1994* and is embodied in the HSC *Approved Code of Practice and Guidance: Legionnaires' Disease: The control of legionella bacteria in water systems*.

The ACOP applies to any undertaking involving a work activity and to premises controlled in connection with a trade, business or other undertaking where water is used or stored and where there is a means of creating and transmitting water droplets which may be inhaled, thereby causing a reasonably foreseeable risk of legionellosis. In practice, few non-domestic premises where water is supplied escape the need for a risk assessment.

In most buildings with water services, building managers will be required to comply with the ACOP. If the site has wet cooling towers then the *Notification of Cooling Towers and Evaporative Condensers Regulations 1992* will also apply.

The ACOP has special legal status. It states that "If you are prosecuted for breach of health and safety law, and it is proved that you have not followed the relevant provisions of the Code, a court will find you at fault, unless you can prove that you have complied with the law in some other way."

The legionellosis risk assessment is intended to demonstrate compliance with the ACOP and the scope of the risk assessment is defined within the ACOP. In order to comply with their legal duties employers and others should:

- identify sources of risk
- prepare a scheme for preventing or controlling the risk
- implement and manage precautions
- keep records of the precautions implemented
- appoint a person to be managerially responsible.

The detailed methodology and presentation of the risk assessment is however left to the risk assessor who may follow the guidance contained in this guide or other equivalent documents.

In the event of a HSE inspection or investigation, the absence of up to date written risk assessments could be sufficient grounds for prosecution even if the employer's safeguards might otherwise appear satisfactory.

1.4 MANAGEMENT RESPONSIBILITIES

In order to be effective, risk assessment must be carried out within a well-defined management framework which allocates specific responsibilities to named individuals and provides the mechanism for implementing recommendations. These individuals become responsible under the law and therefore must have adequate authority and resources to implement essential risk reduction measures.

In order to comply with the ACOP it may be necessary for the duty holder and appointed person to draw on outside experts with specific training and expertise in legionellosis risk assessment.

It is not possible to transfer legal liabilities under health and safety legislation to a contractor. For example, if a contractor has provided an inadequate or defective risk assessment then the client may still be prosecuted unless he can prove that he took reasonable measures to ensure the competency of that contractor.

1.5 COMPETENCE OF RISK ASSESSORS

The appointed person must ensure that whoever undertakes the risk assessment has such ability, experience, instruction, information, training and resources as to allow them to carry out the tasks competently and safely.

The person who undertakes the risk assessment should have the following minimum knowledge and experience:

- a) An understanding of the systems and equipment to be assessed, including their design and operation, and the characteristics which govern risk and the control of risk.
- b) A full understanding of statutory requirements and the relevant guidance provided by the Health & Safety Executive and Chartered Institution of Building Services Engineers (CIBSE).
- c) Where water treatment is present, an understanding of the principles, properties and implications of the water treatment processes.

Unfortunately, at the present time there are no specific professional qualifications or accreditations which demonstrate that an individual is competent to carry out a legionellosis risk assessment. Satisfactory risk assessors will probably possess qualifications in building services engineering and/or microbiology and be members of relevant professional institutions, but experience is crucial.