

# CODE OF PRACTICE AND GUIDELINES RELATING TO PREVENTION OR CONTROL OF LEGIONELLOSIS INCLUDING LEGIONNAIRES DISEASE



THIS CODE OF PRACTICE AND GUIDELINES MUST BE READ IN  
CONJUNCTION WITH THE APPROVED CODE OF PRACTICE RELATING TO  
THIS ISSUE

The East Riding of Yorkshire Council accepts that the Health and Safety at Work Act 1974, the COSHH (Control Of Substances Hazardous to Health 2002), Management of Health & Safety at Work Regulations 1999, Legionnaire's Disease and The Control of Legionella Bacteria in Water Systems L8 place a duty on it to ensure compliance with the Regulations and that suitable assessments of work equipment are carried out and that adequate and sufficient training will be given to employees.

Directors will be responsible for ensuring that this Code of Practice and Guidelines are complied with.

Lead Directorate/Service	Property Services
Effective Date:	1 <sup>st</sup> December 2004 (date of approval)
Review Date:	December 2006
Contact Officer:	David Porter
Contact Number:	01482 395962
Approved by:	Corporate Management Team

Safety Services Unit (01482) 391117  
Ref SSU / 24

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### Code of Practice on the Prevention or Control of Legionella Bacteria in Water Systems

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**East Riding of Yorkshire Council**  
**Code of Practice and Guidance**  
**Code of Practice on the Prevention or Control of Legionella Bacteria**  
**In Water Systems**

In keeping with East Riding of Yorkshire Council's commitment to provide safe, healthy conditions in each of its premises for which it is responsible, this committee has reviewed the current position with regard to the above regulations and decided that the following policy is necessary: -

1. The Council fully endorses and supports the Health & Safety Executives (HSE) Document L8 Approved Code of Practice (ACoP) and Guidance – Control of Legionella Bacteria in water systems.
2. Records of examinations, maintenance and instructions will be kept by the Director of Operational Services Department.
3. All new premises which come under the control of East Riding of Yorkshire Council will be examined to ensure compliance with the above policy.
4. All relevant existing and new systems will comply with the guidelines attached to this policy.
5. The councils code of practice and guidance must be read in conjunction with the HSE ACoP document L8.

## CODE OF PRACTICE AND GUIDELINES

### 1.0 Introduction – What is Legionellosis?

Legionella, is the bacteria which causes Legionnaires Disease and is commonly found in surface water such as ponds and rivers and it is likely that it exists in most water systems. There are three requirements for a risk of an outbreak of Legionnaires Disease:

- i. The presence of a susceptible person or people
- ii. A source of water that is heavily contaminated with Legionella bacteria.
- iii. A means of dispersing that water as an aerosol in the atmosphere with droplet size small enough to be inhaled into the lungs.

If one or more of these conditions can be avoided, then the risk from Legionella can be eliminated.

In practice, for the majority of situations, the prevention of Legionnaires Disease centres on the latter two requirements.

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, immunosuppression, smoking etc. and may be fatal. Legionella can also cause less serious illnesses which are not fatal or permanently debilitating but which can affect all people.

Infection is attributed to inhaling legionella, either in those water droplets which are small enough to penetrate deeply into the lung, or in droplet nuclei (the particles left after the water has evaporated). Legionella are widespread in natural sources of water. They may enter man-made systems or water services, where they can multiply under certain conditions, and if there is a means of creating and transmitting water droplets, people in the vicinity may be at risk. Most cases and outbreaks of legionellosis have been attributed to water services in buildings, cooling towers and whirlpool spas.

### 2.0 System Design

2.1 The following criteria ensures that the requirement to minimise the potential for colonisation and multiplication of bacteria is provided by the system design. The system and appliances should be designed to comply with the following: -

- i. Water supply (Water Fittings) Regulations 1999
- ii. Water Research Council Water Fittings and Materials Directory
- iii. British Standard 6700: 1987
- iv. Chartered Institute of Building Services Engineers (C.I.B.S.E.) Technical Memoranda 13
- v. Health and Safety Executive publications HSE L8 Approved Code of Practice – Control of Legionella Bacteria in Water Systems.

## **2.2 Protection from Contamination**

Hot and cold water distribution systems must be well enclosed to prevent the entry of foreign matter. Particular points to observe are: -

- i. Water storage cisterns must be fitted with a lid with over lapping edges, which are secured to the cistern. (Must comply with Water Supply (Water Fittings) Regulations 1999).
- ii. Overflows and vents must be protected by fine mesh screens.
- iii. The tanks should be manufactured from approved material (WRAS – Water Regulations Advisory Scheme).

## **2.3 Protection of Cold Water Systems from Heat**

Care must be taken to avoid situations in which cold water systems can become warmed by external sources. As far as practicable, the low supply temperature must be preserved. Points to observe are: -

- i. Where the cistern is located external to the building, it must be screened from direct sunlight and painted with a reflective paint such as aluminium.
- ii. For cisterns installed inside a roof, the roof space must be well ventilated and the cistern be thermally insulated.
- iii. Cisterns and pipework must not be positioned close to sources of heat.
- iv. Mains cold water and cold water storage temperature should not exceed 20°C within two minutes of opening outlet point.

## **2.4 Minimisation of System Residence Time**

The water system must be designed so that the water is not allowed to stand undisturbed for excessive periods. In particular, the following requirements must be observed: -

- i. Cisterns, calorifiers and pipes must be sized appropriate to the requirements of the system
- ii. Where two or more cisterns are required to serve the same system, they must be piped in series
- iii. Storage cistern capacity must not exceed one day's normal supply requirements.(Reference through C.I.B.S.E. Guides)
- iv. In exceptional circumstances, the storage capacity of the cistern may need to be designed to take into account the water shutdown requirements of special process or plant
- v. If the systems or part of the system is used only intermittently, it must include isolating valves and low-point drains to permit complete draining of the system. Drain points must be sufficiently large to permit the removal of sludge.

## **2.5 Access for Cleaning**

Parts of the system, such as cisterns and calorifiers where sludge, scale, debris and other organic and inorganic matter can accumulate, must be readily accessible for cleaning. Adequate access provision must be made for the cleaning process and works shall be undertaken in compliance with ERYC Policy on Lone Working and H&S arrangements for working in enclosed environments.

## 2.6 Temperature for Hot Water Systems

Temperature control, along with cleanliness, is the main protection against multiplication of Legionella in a hot water system. The system design must address the following factors: -

- i. The temperature in any calorifier or hot water storage tank must be capable of maintaining a temperature of a least 60°C.
- ii. The bulk storage temperature must be reasonably uniform throughout, a re-circulation pump may be necessary to achieve this criterion.
- iii. The calorifier must be capable, occasionally of being heated to 70°C for a period of one hour throughout its entire volume for the purpose of pasteurisation whilst isolated from the system.
- iv. The water outlet temperature at hot water taps (without mixing) must be a minimum of 50°C or attain 50°C within one minute of opening the outlet. For large systems, a pumped continuous circulation system may be necessary to achieve this at all points in the system
- v. Storage volumes and recovery rates must be designed in accordance with the Water Systems Guide, Section B4 of the Chartered Institute of Building Service Engineers
- vi. Terminal point fittings (e.g. Showers, mixer taps, etc) must be fitted with a thermostatic fail-safe mixing valve close to the outlet or alternatively, mains-fed, thermostatically-controlled heating appliances must be used. In either case, drain valves must be fitted so that the control valves are drained when the appliance is taken out of service.
- vii. In hot water systems where hot water is provided by a point of use appliance and the water distribution pipework is not configured as a circulating system, then pipework lengths must be limited. The pipework length from appliance to outlet must be limited and the radial pipe must be insulated to ensure that water temperatures in the pipework are maintenance above 50°C. The length of pipework must be of a length to ensure that the discharge temperature at the outlet tap achieves 50°C within one minute of opening the valve. Trace heating shall be fitted to pipework where the discharge temperature would not otherwise reach 50°C in one minute.
- viii. Thermometer/immersion pockets shall be fitted on the flow and return to the calorifier and in the base of the calorifier. These shall be in addition to the control equipment.

## 2.7 Humidifiers

Unless it is impracticable, all humidifiers must be of the steam injection type. The temperatures are then sufficiently high to kill any Legionella organisms in the water supply. If direct steam injection is not a practicable option, then water sprays must be supplied direct from the mains rather than using re-circulated or stored water.

Any scheme design must reduce the risk of Legionella proliferation in the system and enable routine maintenance and cleaning schedule to be administered: -

- i. Ensure water side of the system can be cleaned
- ii. If the humidifier does not require the presence of a pond of water, ensure that the drain points are kept free to avoid water stagnation

- iii. Ensure that rust, scale or silt deposits do not build up in the system.
- iv. Use an effective biocide during cleaning. Sodium hypochlorite at 50 P.P.M for one hour is satisfactory or the system can be treated with caustic soda to pH11 in the presence of a bio-dispersant
- v. Allow sufficient contact time during cleaning to ensure complete disinfection
- vi. The pond in mobile humidifiers when operating should be monitored to check for the proliferation of bacteria and legionella and cleaned and dosed as required by the assessment.

## **2.8 Air Conditioning Systems**

Wet cooling must not be used for cooling air conditioning system refrigerants, air coolers must be used as a matter of course. Even when using air cooling the design must address the following points: -

- i. The air intake of the system must be located such that there is no risk of drawing in spray from wet cooling towers in the vicinity
- ii. The duct-work must be designed so that water from sources such as condensation cannot accumulate in the system
- iii. Where water is discharged from the duct-work into a common pipe or drain the discharge must incorporate an air break or other suitable device to prevent potentially contaminated water from being drawn back into the ventilation or air conditioning system.

### **2.8.1 Air Cooled Systems**

If the system does not involve the use of a water cooling system, then there is no risk of Legionellosis occurring from the system itself. However, the air intake to all air conditioning systems must be checked for its potential to draw in spray from other cooling systems

### **2.8.2 Systems Incorporating Wet Cooling Towers**

If any existing air conditioning systems involve the use of wet cooling towers, the replacement by air cooling units must be considered as the long-term aim.

In the meantime, the cooling tower must be subject the same controls as those described in ACOPS L8 Guidance. In addition, the system must be shut down, cleaned and disinfected at least twice per year (in the spring and autumn). This must be carried out and certified by an approved person.

#### **Note**

The Notification of Cooling Towers and Evaporative Condensers Regulations 1992 (statutory instruments 1992 No.2225) came into force on the 2<sup>nd</sup> November, 1992 and place a duty to inform local Authorities of any notifiable devices under these regulations.

A notifiable device is briefly defined as an Evaporative condenser incorporating a heat exchanger or a cooling tower, both of which cool by passing water through a stream of air.

Full details of the regulations can be found in the above statutory instrument or on the web site [http://www.legislation.hmso.gov.uk/si/si\\_1992/Uksi\\_19922225\\_en\\_1.htm](http://www.legislation.hmso.gov.uk/si/si_1992/Uksi_19922225_en_1.htm)

At the time of writing this guidance, it is understood that no such devices are currently in use within the East Riding of Yorkshire Council.

This note has been included however to remind designers of the need to register such devices if required in future designs.

## **2.9 Commissioning**

Before any new hot or cold water system is brought into service the system must be flushed to remove all debris and then disinfected, drained and then disinfected again in accordance with British Standard 6700 Specification for the Design, Installation, Testing and Maintenance of Service Supplying Water for Domestic use within Buildings or their Curtilages (BS6700: 1987). The disinfectant procedure must use chlorine as the disinfecting agent. On no account may proprietary biocides be used on hot or cold water services. See Appendix 4 for method statements for disinfectant. All works undertaken on water systems shall be recorded in the Water System Hygiene logbook.

### **3.0 ERYC Guidance and Procedures**

The Approved Code of Practice (ACoP) L8, The Control of Legionella Bacteria in Water Systems, came into effect on 8 January 2001 and replaced the old ACOPS “The Prevention or Control of Legionellosis” and technical guidance HSG70.

The purpose of the ACoP is to ensure that adequate precautions are taken against the risk of anyone contracting Legionnaires Disease, using old or new water systems, available at all premises.

The ACoP has been made under the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 1999 concerning the risk from exposure to Legionella Bacteria. The regulations introduce the concept of Legionella Risk Assessments of Water Systems and impose duties on the person responsible for the control of the premises or systems where the risk is present to ensure the safety of work activities on water systems. Where a risk is identified then a written scheme for controlling the risk of exposure must be implemented and managed.

The guidance and procedures define the persons responsible and its purpose is to provide clear guidance on the roles and responsibilities and so help in the achievement of high standards of legionella safety by compliance with the duties imposed.

### **3.1 ERYC Code of Practice**

The Authority will, as far as is reasonably practicable, ensure the provision of a safe working environment in respect to all water systems installations and prevention of legionella bacteria which the Council has responsibility for and control of.

This will ensure full compliance with the ACoP L8. The policy and supporting document will form an integral part of the Council’s Safety Management System, and will apply to all Directorates, Managers, Head Teachers, Council employees etc and the Council’s appointed agents.

### **3.2 Scope**

The ACoP will apply to:

- all Council owned buildings, the water systems installations for which the Council has responsibility and control.
- all buildings, occupied, but not owned by the Council, the water installations for which the Council has responsibility and control.
- all Council leased buildings, the water systems installation for which the Council has responsibility and not covered in a tenant agreement.
- any other independent water installation for which East Riding of Yorkshire Council has responsibility.

- Note – domestic dwellings are not included in the legislation other than domestic complexes comprising sheltered accommodation. This only relates to the communal areas of the complex (hall, kitchen etc) and not to each dwelling. However, the authority owe a common law duty of care to persons other than persons at work and as such generic risk assessments will be carried out on a sample of the different type of housing stock to establish the level of risk to its tenants.

### 3.3 **Roles and Responsibilities**

The document defines and details the statements, management instructions, procedures and working documents which will be used by Managers/Headteachers to ensure compliance with the ACoP L8.

#### 3.3.1 **Directors** - are responsible for implementing the policy and will ensure that appropriate managers undertake the following steps: -

- the setting of standards covering all aspects of water services design, installation, maintenance, inspection, testing and recording systems, for all sites and/or installations owned and/or managed by East Riding of Yorkshire Council.
- the setting of standards for qualifications, experience and training all staff engaged on these activities (whether or not under the direct control of the responsible person).
- the agreement (with respective directorates) of roles and responsibilities of appointed Responsible Persons and the systems required tracking and monitoring defined functions.
- the monitoring of these standards and reporting annually to the Chief Executive on the Council's compliance with the Approved Code of Practice – Control of Legionella Bacteria in Water Systems.

#### 3.3.2 **Responsible Person** – is the person Manager/Headteacher who is in control of the premises, or systems in connection with work where a risk is present from systems within the premises.

### 3.4 **Existing Systems**

#### 3.4.1 **Initial Risk Assessment**

All existing hot and cold water systems, including water softeners, must be assessed by a suitable-trained competent person who will carry out a risk assessment relative to the design criteria for new systems as detailed in Section 2.1.

The written report on this assessment must then be considered and actioned by the Responsible Person with overall control of the building or system (hereafter designated as the responsible person) who is appointed by the relevant Chief Officer with a view to:

-

- i. Determining whether any system modifications are required to reduce the risk of Legionella contamination and proliferation.

- ii. Determining if the system requires special attention on a routine basis, over and above the minimum annual inspection and maintenance requirements.

### **3.4.2 System Modifications**

In considering the approval of the modification, the measures to control risk from Legionellosis described in Section 2 must be addressed. Particular attention must be given to avoiding any dead-legs in pipework being created as a result of modifications. Any modifications or repairs to the system other than to terminal fitting shall be disinfected with chlorine solutions as required by BS6700 and the relevant Water (bylaws) Authority Regulations and shall be noted and modified on the risk assessment and other records.

ALL ORDERS placed for alterations or modification to hot and cold water systems shall be accompanied with the appropriate method statement from Appendix 4 (Chlorination of Domestic and Industrial Hot and Cold Water Services) and COSHH assessments or other relevant risk assessments that should be undertaken and recorded.

### **3.5 Premises Register (Legionella Risk Assessment)**

All premises owned, occupied and leased by the Authority must have a Legionella Risk Assessment document which has been undertaken by a suitably competent person. The competent person must be, suitably trained in conducting Legionellosis Risk Assessments or be an Independent Consultant registered with the Water Management Society (WMS) or British Association for Chemical Specialists.

A risk assessment will be compiled from a site survey of the water system, or systems, and will include an evaluation of the items or parts of the water system that may pose a risk to persons at work or other persons visiting the premises. The assessment document will include:

- Identification of the site – (photo etc)
- Objectives
- Systems Surveyed
- Responsibility
- General System Description
- Asset Register – compiled as appropriate
  - Part 1 - Mains Cold Water
    - Remedial Works
  - Part 2 - Cold Water Storage and Distribution
    - Remedial Works
  - Part 3 - Domestic Hot Water Systems
    - Remedial Works
  - Part 4 - Cooling Tower and Evaporative Condensers
    - Remedial Works
- Temperature Checks
- Maintenance Programme
- Risk Overview
- Water Systems Schematic

A typical risk assessment check sheet is illustrated in Appendix 2.

The risk assessment document, (Premises – Legionella Risk Assessment) must be kept on the site and the Responsible Person must keep the document in a safe place. An electronic copy of the document will be kept on proprietary software by the Building and Related Services Department. This shall be updated in accordance with the statutory requirements.

The risk assessment action plan will outline the relevant control measures which must be implemented at the site to ensure continued compliance with the ACoP

The method and process involved in conducting the risk assessment is set out in Appendix 1. The document illustrates the process which must be used to conduct an internal risk assessment or to commission independent consultants to undertake the risk assessment on behalf of the Authority.

Building and Related Services Department will maintain a central record of all risk assessments which will be kept on a central computer database and be readily accessible to the client. All risk assessments must be reviewed at least every two years to verify that the risk assessment is still consistent with the services on the premises and no major changes have occurred. The review shall be executed using the Legionella Risk Assessment Review document, which is illustrated in Appendix 3. Any changes in the use of the premises and services will require a review and the production of a valid risk assessment. All risk assessments will be retained throughout the period for which they remain current and for at least two years after that period. All other records and documents will be retained for at least five years.

The review of the risk assessment shall be undertaken when:

1. There are changes to the water system or its use.
2. Changes to the use of the building in which the water system is installed.
3. New information about risks or control measures is made available.
4. A situation when results of checks indicate the control measures are no longer effective.
5. A case of Legionnaires' disease is associated with the system.

The process and results of the risk assessments for the premises and systems will be communicated to employees. The measures, actions and recommendations to control any risks will be displayed in the building. Where the assessment demonstrates that there is no reasonably foreseeable risk, then no further assessment or measures are necessary during this period, unless any changes to the water systems occur. Where the assessment shows that there is a reasonably foreseeable risk and it is reasonably practicable to control the risk from exposure then a written scheme for controlling that risk will be implemented and managed by the Building and Related Services Department.

### **3.6 Written Scheme for Controlling the Risk**

Where the Risk Assessment demonstrates a risk to health then a written scheme of control shall be implemented commensurate with the site services and level of risk. Where appropriate a site shall be provided with a Water Systems Hygiene Log Book (WSHLB). The WSHLB will be controlled under a Measured Term Contract framework

agreement which has been agreed with an external contractor. The contract documentation will be kept by Building and Related Services and will be available to view and record. The contractor will ensure that all sites are provided with a copy of the WSHLB and will describe the procedures for controlling and properly managing the risk at the site.

A WSHLB provided at the site will include:-

1. Up to date schematic plan layout of the plant or system.
2. A description of the correct and safe operation of the system.
3. The precautions to be taken.
4. Checks to be carried out to ensure efficacy of the scheme and the frequency of checks and monitoring.
5. Remedial action to be taken in the event that the scheme is shown not to be effective.
6. The management and operational aspects of the site detailing specific responsibility for system temperature check and maintenance check.

The maintenance checks as described in the Measured Term Contract Inspection and Maintenance of Water System Hygiene Services document will be undertaken by the maintenance contractor. Other day to day checks, e.g. water temperature checks to be undertaken on a routine basis must be carried out by the site staff, as appropriate.

The management of the Water System Hygiene Services Framework Agreement will be monitored by Building and Related Services personnel, who will conduct a 10% inspection of the documentation and systems during the progress of the contract. Corrective measures where appropriate will be brought to the attention of the site manager and contractor and recorded.

The responsible person for the site (e.g. manager) must make themselves familiar with the WSHLB and keep the document in a safe place and available for reference and record. All activities undertaken on water systems, whether by external contractors or ERYC staff, must be recorded in the WSHLB. All persons executing works on the site must sign the WSHLB to record what activities have been undertaken.

### **3.7 Record Keeping**

The following records must be kept by the responsible person who undertakes the inspection/assessment and an up to date copy of the record for the system will be provided to be kept on the premises and be available for inspection at all Council controlled commercial, office and industrial premises.

- i. The initial risk assessment and any modifications arising from the assessment (Risk Assessment Document)
- ii. Any further modification to the system (Water Systems Hygiene Log Book)
- iii. Inspection Reports (Water Systems Hygiene Log Book)
- iv. Records of any cleaning schedule identified as necessary by the initial system assessment (Water Systems Hygiene Log Book)
- v. Details of disinfection and/or water treatment carried out (Water Systems Hygiene Log Book)

### **3.8 Delegated Responsibilities**

It will be the duty of the Responsible Person (Site Manager) to ensure that all activities and monitoring processes delegated to site staff which can be integrated with daily routine activities will be executed and recorded in accordance with the procedure statements. The range of delegated activities will depend on the complexity of the site and water system and will be commensurate with the level of skill and training provided to the staff. No employee must undertake duties for which they have not been trained. Appropriate training and supervision will be provided to all staff required to undertake activities scheduled in the Water Systems Hygiene Log Book. The type of delegated works to be performed by suitably trained staff shall be:-

#### **3.8.1 Public Buildings including Schools, Residential Homes, Leisure Centres etc**

The Manager/Head Teacher will nominate the appropriate person e.g.(Caretaker) to:-

1. Carry out temperature checks at water outlets and water storage vessels.
2. Report any problem in the operation of the services to the Building and Related Services Department.
3. Undertake the pasteurisation of the hot water supply where required.

#### **3.8.2 Training**

Employers are obliged to provide such information, instruction, training and supervision as is necessary to ensure the health and safety at work of employees. Specific training for work in water systems will depend on an individuals previous experience and the type of work they will be doing. The training should cover:

- An awareness of the HSE L8 approved code of practice
- An understanding of the work to be undertaken, the hazards, and the necessary precautions
- An understanding of safe systems of work
- How emergencies arise, the need to follow prepared emergency arrangements, and the dangers of not doing so

The ERYC shall provide and maintain a training programme for personnel engaged in works on water system services.

Only persons who have certificates of competency or have attended relevant training courses shall be allowed to work on water systems.

The training shall also take into account the practical use of safety features and equipment, the identification of defects and, where appropriate, it should involve demonstrations and practical exercises. It is important the trainees are familiar with both equipment and procedures prior to working for the first time on equipment.

Practical refresher training shall be organised and available. Refresher training should be carried out at regular intervals of no more than 5 years.

### **3.9 Inspection and Maintenance**

All hot and cold water systems, including water softeners, shall be inspected as specified in the Risk Assessment Document and all maintenance works shall be controlled in the Water Systems Hygiene LogBook. The responsible person will ensure that the inspections are carried out and that any items identified for corrective maintenance are attended to without delay and all activities are recorded and signed by appropriate persons in the tick boxes or space provided.

### **3.10 Maintenance Works on Water Systems**

Building and Related Services Department will arrange for all maintenance work to be undertaken on water systems and will commission suitably qualified contractors to undertake works as required. They will also compile a maintenance document describing and setting out all the activities of work which must comply with the approved ACoP. This document will also include information identified through a Legionella Risk Assessment whether there is a reasonably foreseeable risk of exposure and the appropriate control measures to be implemented.

### **4.0 Help and Advice**

If you require any further guidance or assistance regarding legionellosis, please contact:

Safety Services Unit

Telephone no: 391117

Operational Services Department  
(Building and Related Services)

Telephone no: 395990

Health and Safety Executive  
(Sheffield Office)

Telephone no: 0114 291 2300

South Yorkshire and Humberside Area, Edgar Allen House, 241 Glossop Road,  
Sheffield S10 2GW.

## APPENDIX 1

### **THE WRITTEN ASSESSMENT SHALL INCLUDE: -**

#### **Legionella Risk Assessment and written scheme of examination: -**

##### **A. Risk Assessment which shows: -**

1. Details of the source(s) of risk and the results of the assessment
- 1 The precautions to be implemented.
- 2 The name of person responsible for overseeing and implementing precautions.
- 3 Management responsibilities for carrying out the precautions and procedures which must be agreed and adhered to
- 4 Monitoring Procedures

##### **b. Written Scheme where records must be kept showing:-**

1. A complete, up to date plan showing the layout, including parts temporarily out of use (a schematic plan would suffice).
2. A description of the correct and safe operation, as determined during design and commissioning.
3. The assessment of risk
4. Reference to the scheme and precautions to be carried out
5. Monitoring procedures
6. Remedial work required and the date it was completed
7. The person with overall responsibility
8. The person who carries out the assessment
9. The person or persons who carry out precautionary measures



## Legionella Risk Assessment Content Check Sheet

Title		
Property Address		
Property Reference		
Item	It expected that items shown in bold will be included in all risk assessment folders	Present ✓ or N/A
1	<b>Photograph of site</b>	
2	<b>Objectives</b>	
3	<b>Systems Surveyed</b>	
4	<b>Responsibility</b>	
5	<b>General System Description</b>	
6	<b>Asset Register</b>	
<b>N.B.</b> Parts 1 to 4 will depend on items identified in the Asset Register		
	Part 1 <i>Mains Cold Water Remedials</i>	
	Part 2 <i>Cold Water Storage and Distribution Remedials</i>	
	Part 3 <i>Domestic Hot Water Systems Remedials</i>	
7	<b>Temperature Checks</b>	
8	<b>Maintenance Programme</b>	
	Part 4 <i>Cooling Towers and Evaporative Condensers Remedials</i>	
9	<b>Risk Overview</b>	
10	<b>Water System Schematic</b>	
Items Missing from Contents		

Checked By: (signature) \_\_\_\_\_ Print name: \_\_\_\_\_  
Date: \_\_\_\_\_





**APPENDIX 3/2**

**LEGIONELLOSIS RISK ASSESSMENT REVIEW  
HOT WATER SUPPLY SYSTEMS – PART 3**

LOCATION DETAILS ..... DATE: .....  
.....  
..... TIME: .....

COLD WATER APPLIANCE DETAILS: .....

CONSTRUCTION OF STORAGE VESSEL	SIZE (mm)	NOMINAL CAPACITY	INSULATION DETAILS	COVER DETAILS
MATERIAL:	LENGTH	LITRES	MATERIAL:	MATERIAL:
	WIDTH/DIA	RECOVERY RATE:	THICKNESS	
GENERAL CONDITION: GOOD/FAIR/POOR	HEIGHT	hrs    mins	CONDITION: GOOD/POOR	CONDITION: GOOD/POOR

TEMPERATURE OF HOT WATER STORAGE VESSEL:                      TOP:                      °C  
   MIDDLE:                      °C  
   BOTTOM:                      °C

CAN VESSEL BE RAISED TO 70°C FOR PASTEURISATION?                      YES/NO

HOT WATER TEMPERATURE AT TERMINAL FITTINGS                      COMPLETE (A3/3)

TEMPERATURE OF WATER AT SHOWERS                      COMPLETE (A3/3)

SECONDARY HOT WATER PUMPS: YES/NO    MAKE: .....    TYPE: .....

LOCATION OF ANY DEADLEGS FOUND – MARKED ON DRAWING                      YES/NO

FITTINGS – ALL WRC APPROVED                      YES/NO

ANY MODIFICATION SINCE LAST INSPECTION – RECORDS UPDATED                      YES/NO

CLEANING AND DISINFECTION RECORDS – UP TO DATE                      YES/NO

CLEANING OR DISINFECTION REQUIRED: .....

CORRECTIVE ACTION REQUIRED: .....

DATE TO BE COMPLETED BY: .....

INSPECTED BY: .....    RECEIVED BY RESPONSIBLE PERSON: .....  
SIGNATURE: .....    SIGNATURE: .....    DATE: .....  
PRINT NAME .....    PRINT NAME .....

ACTIONS TAKEN/AUTHORISED BY RESPONSIBLE PERSON:  
.....  
.....

(PRINT NAME) .....    SIGNATURE: .....    DATE: .....



APPENDIX 3/4

**LEGIONELLOSIS RISK ASSESSMENT REVIEW  
AIR CONDITIONING SYSTEMS – PART 4**

LOC. CODE .....

LOCATION DETAILS ..... DATE: .....

..... TIME: .....

SERIAL NUMBER: .....

**AIR CONDITIONING SYSTEMS:**

- |    |  |         |
|----|--|---------|
| 1. | TYPE OF COOLING FOR REFRIGERANT:                               | WET/DRY |
| 2. | POSITION OF AIR INTAKES – RISK OF SPRAY INGRESS:               | YES/NO  |
| 3. | DUCTWORK DESIGN – WILL CONDENSATE ACCUMULATE?                  | YES/NO  |
|    | ARE DUCT DRAINS CLEAR?   | YES/NO  |
|    | AIR BREAK ON DRAINS  | YES/NO  |
| 4. | ARE RECORDS OF WATER TREATMENT AND DISINFECTION<br>UP TO DATE? | YES/NO  |
| 5. | ANNUAL INSPECTION CARRIED OUT:                                 | YES/NO  |

CLEANING OR DISINFECTION REQUIRED: .....

CORRECTIVE ACTION REQUIRED: .....

DATE TO BE COMPLETED BY: .....

INSPECTED BY: ..... RECEIVED BY RESPONSIBLE PERSON:

SIGNATURE: ..... SIGNATURE: ..... DATE: .....

PRINT NAME ..... PRINT NAME .....

ACTIONS TAKEN/AUTHORISED BY RESPONSIBLE PERSON:

PRINT NAME ..... SIGNATURE: ..... DATE: .....

DATE OF NEXT INSPECTION (12 MONTHS) .....

APPENDIX 3/5

**LEGIONELLOSIS RISK ASSESSMENT REVIEW  
HUMIDIFIER SYSTEMS – PART 4**

LOC. CODE .....

LOCATION DETAILS ..... DATE: .....

..... TIME: .....

SERIAL NUMBER: .....

**HUMIDIFIERS:**

1. WHAT TYPE OF SYSTEM IS DEPLOYED?

DIRECT STEAM INJECTION	YES/NO
MAINS FEED WATER SPRAYS	YES/NO
RECIRCULATED WATER SPRAYS	YES/NO
WATER TANK SYSTEM	YES/NO
2. IS THE WATER SIDE OF THE SYSTEM CLEANED AT WEEKLY INTERVALS?: YES/NO
3. IS THERE ANY RUST, SCALE OR SILT DEPOSITS? YES/NO
4. IS THERE BIOCIDES TREATMENT FOR WATER TANK SYSTEM? YES/NO
5. ARE RECORDS OF WATER TREATMENT AND DISINFECTION UP TO DATE: YES/NO
6. ARE REGULAR INSPECTIONS CARRIED OUT? YES/NO

CLEANING OR DISINFECTION REQUIRED: .....

CORRECTIVE ACTION REQUIRED: .....

DATE TO BE COMPLETED BY: .....

INSPECTED BY: ..... RECEIVED BY RESPONSIBLE PERSON:

SIGNATURE: ..... SIGNATURE: ..... DATE: .....

PRINT NAME ..... PRINT NAME .....

ACTIONS TAKEN/AUTHORISED BY RESPONSIBLE PERSON:

PRINT NAME ..... SIGNATURE: ..... DATE: .....

**OVERVIEW – ACTION REQUIRED**

**HAVE SITE SERVICES CHANGED SIGNIFICANTLY THAT A NEW RISK ASSESSMENT IS REQUIRED?**

YES  NEW RISK ASSESSMENT TO BE EXECUTED

NO  NO FURTHER ACTION (REVIEW 2 YEARS)

## APPENDIX 4

### METHOD STATEMENT FOR THE CHLORINATION OF DOMESTIC AND INDUSTRIAL SERVICES

#### Part 1

Chlorination of Domestic and Industrial Hot and Cold Water Services to BS6700.

#### Part 2

Chlorination of (Mobile) Humidification Systems to BS6700.

#### Part 3

Chlorination of Domestic and Industrial Hot and Cold Water Services – Disinfection of Repaired Pipework and Installation of Valves and Pipework etc to BS6700.

## APPENDIX 4

### **METHOD STATEMENT 1 CHLORINATION OF DOMESTIC AND INDUSTRIAL HOT AND COLD WATER SERVICES TO BS6700: 1997**

1. Confirm date and time for work to be carried out with Supervising Officer.
2. On arrival, contact person in charge of premises and confirm that work and chlorination can proceed as planned.
3. Inspect risk assessment and drawings for the premises and calculate the capacity of the system to be disinfected.
4. Ensure that all relevant personnel in the building have been informed of the nature of the work being carried out and not to use taps or fittings that are taped or isolated.
5. Post warning notices as appropriate at all taps and outlets that are to be chlorinated. All outlets shall be marked with 'DISINFECTION IN PROGRESS, DO NOT USE'
6. Isolate cistern and drain system, ensure drains are clear, ensure all visible dirt, debris, rust and scale is removed from the cistern. Clean with a solution of low suds good quality detergent. The cistern will then be either wet vacuumed or flushed with clean water, paint if necessary with a WRC approved sealant on clients' instructions.
7. Isolate hot water vessel(s) and drain. Remove inspection covers and clean internally if required, as above.
8. Isolate cistern and fill with clean water. Close supply.
9. Check the pH of the water in the cistern. Don protective clothing before adding a measured amount of sodium hypochlorite, allowing for the correction factor on the pH graph to produce 50PPM of free residual chlorine.
10. Each tap or outlet will then be successfully opened, working progressively away from the cistern. The tap or outlet will be closed when the water discharged begins to smell of chlorine. The cistern shall not be allowed to become dry during this operation. If necessary, it will be refilled and chlorinated to 50ppm. The cistern and pipes shall remain charged for one hour.
11. The tap or outlet furthest from the cistern shall be opened and the level of free residual chlorine in the water discharged shall be measured. If the concentration of free residual chlorine is less than 30PPM, the disinfecting process will be repeated. This shall also be checked at the cistern.
12. The system shall then be neutralised before being thoroughly flushed out with clean water.
13. Should another approved disinfection solution be chosen then manufacturers recommendations shall be followed.

14. Continue to flush through and drain until residual chlorine concentration at the taps is no greater than that present in the clean water from the water suppliers' mains.
15. Test for free chlorine and take laboratory sample(s) (if required) at points as instructed by the client.
16. Remove all labels and notices from taps and outlet points.
17. Ensure the site is left in a clean and tidy condition.
18. Notify personnel on site that the work is completed and return risk assessment and drawings.
19. Complete all paperwork and certificates of chlorination. Pass on to Supervising Officer for inclusion in appropriate records (Water System Hygiene Log Book).

**METHOD STATEMENT 2**  
**CHLORINATION OF MOBILE HUMIDIFICATION SYSTEM**  
**TO BS6700: 1997**

1. Confirm date and time for work to be carried out with Supervising Officer.
2. On arrival, contact person in charge of premises and confirm that work and chlorination can proceed as planned.
3. Inspect risk assessment and drawings for the humidifier. Calculate the capacity of the system to be disinfected.
4. Ensure that all relevant personnel in the building have been informed of the nature of the work being carried out and not to use humidifiers that are taped or isolated.
5. Post warning notices as appropriate at all mobile humidifiers that are to be chlorinated. These shall read 'DISINFECTION IN PROGRESS, DO NOT USE'.
6. Isolate cistern and drain system. Ensure drains are clear. Ensure all visible dirt, debris, rust and scale is removed from the system. Clean with a solution of low suds good quality detergent. The cistern will then be either wet vacuumed or flushed with clean water.
7. Fill cistern with clean water.
8. Check the pH of the water in the cistern. Don protective clothing before adding a measured amount of sodium hypochlorite, allowing for the correction factor on the pH graph to produce 50PPM of free residual chlorine. Allow to stand for one hour.
9. Test for free chlorine level in the cistern (50PPM).
10. Allow the drum to rotate without the fan running. This will progressively disinfect the drum.
11. After one hour the free chlorine in the cistern shall be checked. If the concentration of free residual chlorine is less than 30PPM the disinfecting process will be repeated.
12. The system shall then be neutralised before being thoroughly flushed out with clean water.
13. Continue to flush through and drain until residual chlorine concentration in the cistern is no greater than that present in the clean water from the water suppliers' mains.
14. Test for free chlorine level and take laboratory sample(s) (if required). Recharge humidifier with a 5PPM chlorine mixture, remove all labels and tapes, return back to service.
15. Ensure the site is left in a clean and tidy condition.
16. Notify personnel on site that the work is completed and return risk assessment and drawings.
17. Complete all paperwork and certificates of chlorination. Pass on to Supervising Officer for inclusion in appropriate records (Water Systems Hygiene Log Book).

**METHOD STATEMENT 3**  
**CHLORINATION OF DOMESTIC AND INDUSTRIAL**  
**HOT AND COLD WATER SERVICES**  
**DISINFECTION OF REPAIRED PIPEWORK**  
**AND INSTALLATION OF VALVES, ETC.**  
**TO BS6700: 1997**

1. Confirm date and time for work to be carried out with Supervising Officer.
2. On arrival, contact person in charge of premises and confirm that work and chlorination can proceed as planned.
3. Inspect risk assessment and drawings for the premises, for location of pipework or valves to be disinfected.
4. Ensure that all relevant personnel in the building have been informed of the nature of the work being carried out and not to use taps or fittings that are taped or isolated.
5. Post warning notices as appropriate at all taps and outlets that are to be chlorinated. These shall read 'DISINFECTION IN PROGRESS, DO NOT USE'.
6. Isolate pipework or valves to be repaired. On completion of repair, disinfect by one of the methods below.
  - 6a. Pipework. A polyurethane foam plug soaked in a strong solution of sodium hypochlorite containing 20ppm shall be passed through the bore.
  - 6b. Valves/fittings shall be cleaned and disinfected by immersion in a strong solution of sodium hypochlorite containing 20ppm before insertion. Any new or repaired pipework from the valve or fitting shall be treated as above.
  - 6c. If pipe work can only be treated under pressure the following procedure applies:

Chlorination shall be carried out through a properly installed injection point at the beginning of the pipework, using a chemical pump until the measure of free residual chlorine at the end of the pipeline is not less than 50ppm.

The chlorinated solution shall be left in the system for not less than one hour and then the whole system thoroughly flushed out with clean water until free residual chlorine in water at the end of the pipework is at the same level as the clean water entering the pipework from the water suppliers' mains.
7. On completion of chlorination, remove all labels and notices from taps and outlet points.
8. Ensure the site is left in a clean and tidy condition.
9. Notify personnel on site that the work is completed and return risk assessment and drawings.
10. Complete all paperwork and certificates of chlorination. Pass on to Supervising Officer for inclusion in appropriate records (Water Systems Hygiene Log Book).