

Water Hygiene

An Update for Biological Safety Officers

Richard Borthwick

Senior Project Engineer

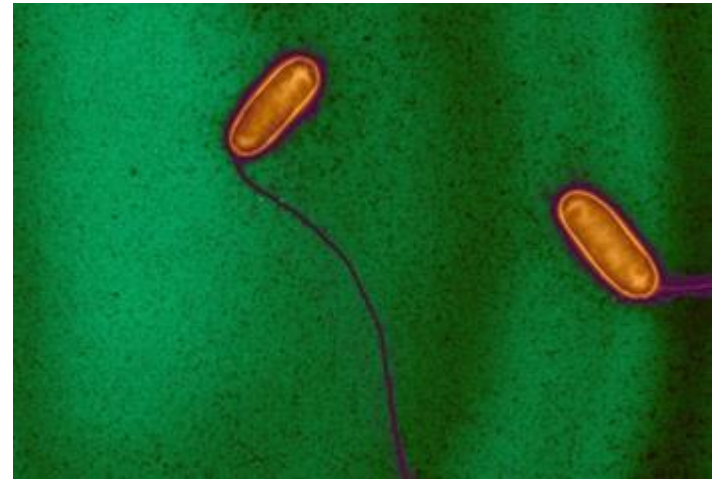
Estate Management

Presentation Overview

- Legionella Background
- Statutory Obligations
- Progress since May 2017
- Looking Forward
- Questions

What are Legionella?

- Legionella are a naturally occurring bacteria
- Found in natural and artificial water systems
- They are aerobic bacteria which means they require oxygen.
- Require specific nutrients
- Can survive under a wide variety of temperatures, between 6° C to 60° C



L8 Guide to Successful Control

Requires:

- Management Regime in place
- Risk Assessments
- Control Regime
- Maintenance and Upgrade
- Review



Nutrients in a CWS Tank

Legislation: Statutory Documents

- Health and Safety at Work etc. Act
- HSE - Approved Code of Practice and Guidance, L8 - Legionnaires Disease
- The Control Management of Health & Safety at Work Regulations
- Control of Substances Hazardous to Health (COSHH)
- RIDDOR.
- The Notification of Cooling Towers and Evaporative Condensers
- Water Supply (Water Fittings) Regulations



Legionnaires' disease

The control of legionella bacteria in water systems

Approved Code of Practice and guidance on regulations



L8 (Fourth edition)
Published 2013

This book is aimed at dutyholders, including employers, those in control of premises and those with health and safety responsibilities for others, to help them comply with their legal duties in relation to legionella. These include identifying and assessing sources of risk, preparing a scheme to prevent or control risk, implementing, managing and monitoring precautions, keeping records of precautions and appointing a manager to be responsible for others.

This fourth edition of the ACOP and guidance on regulations contains revisions to simplify and clarify the text. The main changes are removing Part 2, the technical guidance, which is published separately as HSG274 at www.hse.gov.uk/pubns/books/hsg274.htm, and giving the following issues ACOP status:

- risk assessment;
- the specific role of an appointed competent person, known as the 'responsible person';
- the control scheme;
- review of control measures;
- duties and responsibilities of those involved in the supply of water systems.

Review - Current Issues (May 2016)

- Inconsistent approach
- Management Procedures
- Risk Assessments
- High number of engineering remedial works
- Uncontrolled works on water systems
- Communication
- Water Hygiene Log Book

Review - What Estate Management is doing (May 2016)

- Updating of Management Procedures
- Water Hygiene Standard in process of being updated
- Water Hygiene Log Book being revised and to be re-issued.
- Programme in place to Risk Assess all buildings by end Q4 2017
- Programme of identified remedial works in place to reduce risk
- Training Programme for Nominated Persons and Tradespersons
- Water Hygiene Consultant engaged to assist EM

Progress To Date

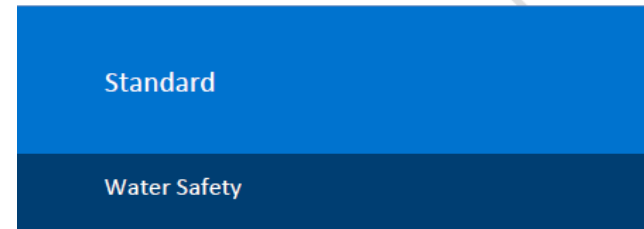
- Gap Analysis completed 11/2017
- Water Standard submitted to Sub Committee – 04/2017
- Procedures to support Standard – 04/2017
- Written Scheme – 04/2017
- Log Book – 04/2017
- Plan for implementation of Written Scheme – 04/2017
- Additional Resource – 06/2017 (TBC)
- Revision of Safety Office Leaflet – 05/2017

Gap Analysis

- Undertaken 11/2016
- 18 Buildings plus Estate Management audited
- 11 key risks highlighted
- Key findings presented to Sub Committee

Water Standard

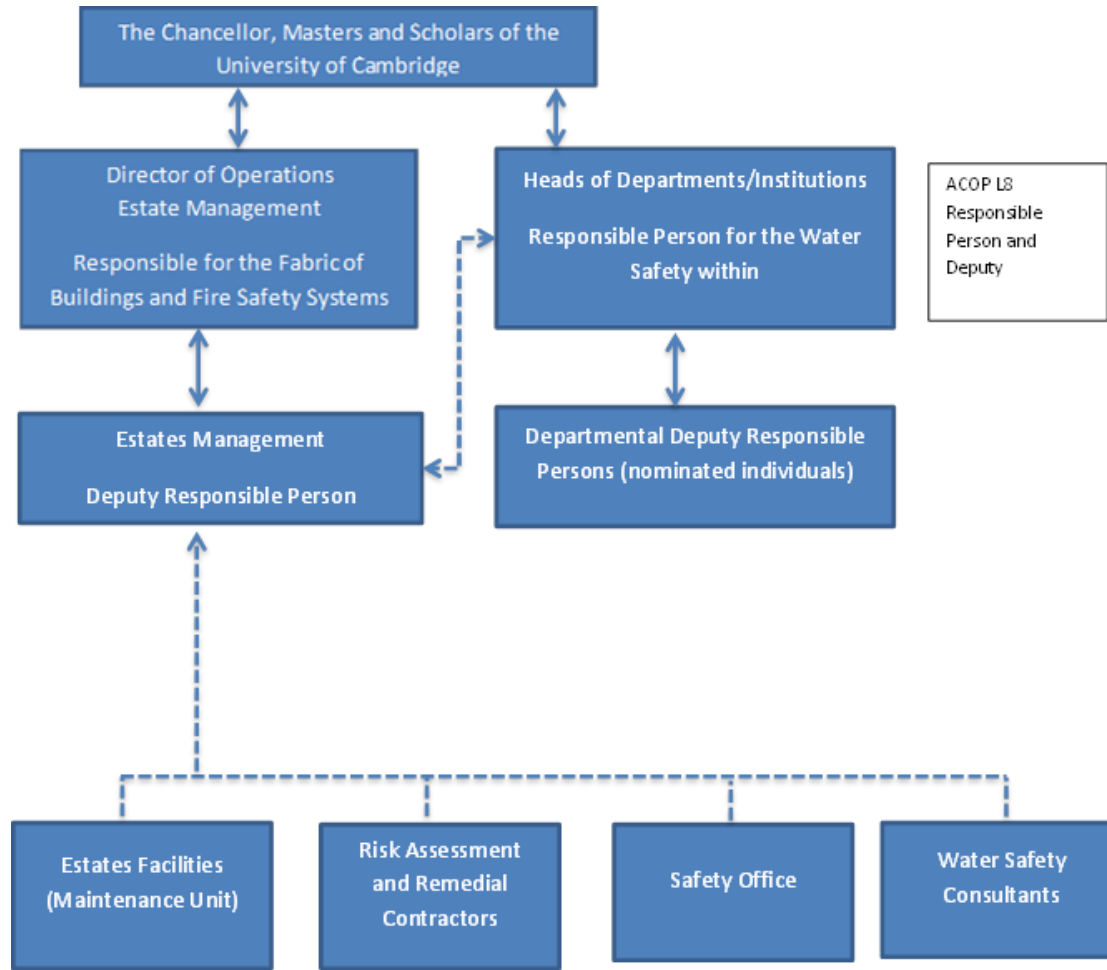
- Sets out at high level
- How University of Cambridge will manage Water Safety
- Arrangements



Revision		Date	
Status			
Repeals			
Prepared by		Authorised by	

THIS IS THE PROPERTY OF THE UNIVERSITY OF CAMBRIDGE
COPY FOR REFERENCE ONLY – NOT FOR CIRCULATION OR REDISTRIBUTION

Responsibility Structure



Demarcation of Responsibilities

- Estate Management responsible for services to taps, showers
- Departments responsible for temperature checks, little used and sentinel outlets, shower heads.
- Departments responsible for items of plant and systems dedicated to research i.e. ice machines, process water for use in experiments

Guidance

- Supports the Standard
- Adds detail
- Dynamic document



Guidance

Water Safety Procedures Including Written Scheme

Revision		Date	
Status			
Repeals			
Prepared by		Authorised by	

Master Procedures

Demarcation of Responsibilities

SUMMARY OF DOMESTIC HOT AND COLD SERVICES TASKS									
PROGRAM TASKS/TESTS	BY WHOM	One off task	Daily	Weekly	Monthly	Quarterly	6-Monthly	Annually	Every three Years
Legionella risk assessment / review	Estate Management	AS REQUIRED							
Legionella risk assessment validation	Estate Management							X	
Legionella training	Water Hygiene Consultant								X
Audit (or as instructed by EM)	Water Hygiene Consultant							X	
MONITORING TASKS:									
Flush infrequently used outlets	Department			X					
Sentinel and representative hot and cold outlet temps	Department				X				
Supply temps to TMV's (if applicable i.e. a sentinel outlet)	Department				X				
Dismantle, clean and descale removable parts, heads, inserts and hoses of "hose and head" style showers and spray taps	Department					X			
Dismantle, clean and descale removable parts, heads, inserts and hoses of fixed showers and spray tap	Estate Management					X			
Hot Water Raising Equipment supply and return (if applicable) temps	Department				X				
TMV Service	Estate Management							X	
Temperature reading from mains	Estate Management						X		
Incoming water main temp at ball valve	Estate Management						X		
Temperature of cold water storage cistern - remote from ball valve	Estate Management						X		

SUMMARY OF DOMESTIC HOT AND COLD SERVICES TASKS (cont.)									
PROGRAM TASKS/TESTS	BY WHOM	One off task	Daily	Weekly	Monthly	Quarterly	6-Monthly	Annually	Every three Years
Calorifier vessel blowdown	Estate Management							X	
Internal calorifier inspection (if accessible)	Estate Management							X	
Cold water storage cistern, including any integral cisterns, internal inspection	Estate Management							X	
Cold water storage cistern clean and disinfection	Estate Management	AS REQUIRED							
Legionella sampling	Estate Management	AS REQUIRED							
Risk assessment and management of department equipment that uses or contains water e.g. ice machines and scientific equipment	Department	Risk assessment and subsequent management and reviews in line with HSG 274 part C							

Written Scheme

- Supports the Standard
- Based on industry standards
- Unique to a building
- Dynamic document

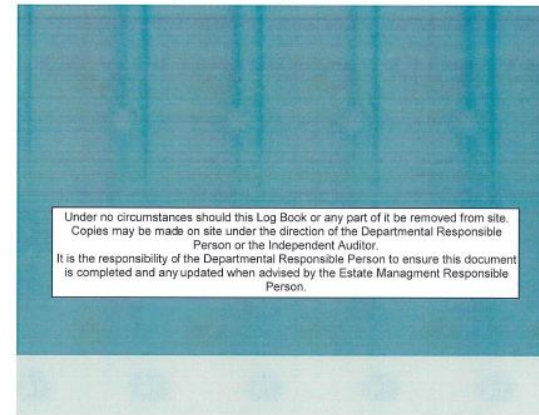
SFG20 Pro	Asset	Changes to Procedure Made By Employer	Departmental Responsibility	EM Responsibility	Quantity
29-06	Plate Heat Exchangers			All Task Items	0
29-08	Heating Calorifiers - MTHW, HTHW or Steam			All Task Items	0
32-02	Hot Water Services - General		Task Items No's 2 (Flushing), 3 and 4	Task Items No's 1, 5 to 6 inclusive	0
32-03	Introductory Procedures - Calorifier Types			All Task Items	0
32-04	Introductory Procedures - Calorifier			All Task Items	0
32-05	Calorifier Heated by LTHW			All Task Items	0
32-06	Hot Water Calorifiers Heated by MTHW, HTHW or Steam			All Task Items	0
32-07	Hot Water Supply Calorifiers		Task Item No 1	Task Items No's 2 - 11 inclusive	0
32-08	Calorifier and Heat Exchange Controls			All Task Items	0
32-09	Hot Water Cylinders		Task Item No 1	Task Items No's 2 - 11 inclusive	0
32-10	Unvented Hot Water Systems		Task Item No 1	Task Items No's 2 - 11 inclusive	0
32-11	Thermal Storage Cylinder (Individual Dwellings for DHWS)		Task Item No 1	Task Items No's 2 - 10 inclusive	0
32-12	Expansion Vessels	Task Item No. 5 reduced to 3 months	Task Item No 1 and 5	All Remaining Task Items	0
32-13	Direct Fired Water Heaters			All Task Items	0
32-14	Instantaneous Electric Water Heaters (Non Drinks Type)		Task Item No 1	Task Items No's 2 - 5 inclusive	0
32-15	Packaged Electric Water Heaters - Cistern Type (Non Drinks)		Task Item No 2	Task Items No's 1, 3 - 11 inclusive	0
32-16	Vented Hot Water Systems		Task Item No 1	Task Items No's 2 - 9 inclusive	0
33-01	Cold Water Evaporator - Drum Type			All Task Items	0
33-02	Direct Steam Injection Type			All Task Items	0
33-03	Humidifiers - Electrode Boiler			All Task Items	0
33-04	Humidifiers - Compressed Air type			All Task Items	0
33-05	Humidifiers - Ultrasonic			All Task Items	0
33-06	Humidifiers - Resistance Heater			All Task Items	0
33-08	Humidifiers - Spray			All Task Items	0
35-01	Thermal Insulation			All Task Items	0
40-03	Trace Heating - Electrical			All Task Items	0
40-11	Steam Services			All Task Items	0
40-12	Flash Steam Vessel			All Task Items	0
40-16	Water Buffer Surge Tanks			All Task Items	0
40-17	Water Services - Above Ground	Procedure Task frequency reduced to 12 months		All Task Items	0
40-25	Pressurisation Units			All Task Items	0
45-12	Cold Water Booster			All Task Items	0
48-08	Water Saving Devices and Meters	Task Item Nos 7 and 11 removed Task Item Nos 5 and 12 frequency reduced to 12 months		All Remaining Task Items	0
51-01	Showers		Task Item No 4 (Employer responsible for removable spray heads only, Contractor responsible for fixed heads)	Task Items No's 1 - 2 and 5 - 10 inclusive	0
56-01	Introductory Procedures - Storage Tanks			All Task Items	0
56-02	Cold Water Storage Tanks and Cisterns		Task Item No 1 and 2	Task Items No's 3 - 14 inclusive	0

Log Book

- Supports the Standard
- Evidences the Written Scheme

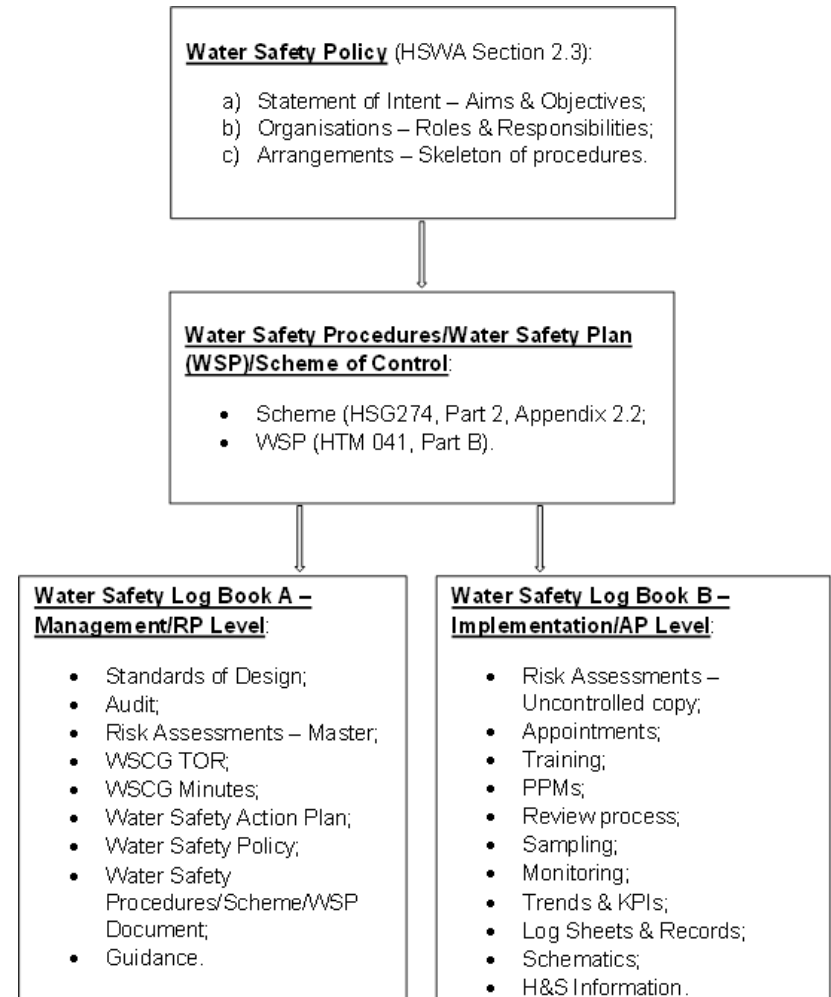


Water Safety Log Book



Log Book

- Part A – Information generic to the Estate
- Part B – Building Specific



Control of Legionella in Departmental Equipment

- 1. Ensure compliance with the requirements of the Approved Code of Practice, L8;
- 2. Ensure that departmental equipment is maintained to the standard necessary for the control of *Legionella*.
- 3. Provide suitable and sufficient resources to enable compliance with the Standard in so far as it affects equipment under their control;
- 4. Keep records of departmental equipment servicing and maintenance;
- 5. Facilitate any monitoring or inspection work;
- 6. Ensure that no modifications/alterations or additions to water systems are carried out.

Log Book – Sample Log Sheets

SITE WATER SERVICES LOG BOOK

MONTHLY TEMPERATURE CHECKS - Electric Water Heaters Including Instantaneous Heaters and Cistern Type Heaters

SFG20 References: 32-14 Task 1 and 32-15 Task 2

Appliance	Room L3-20							Year: 2017				
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
64												
64												
62												
60												
58												
56												
54												
52												
50												
48												
46												
44												
42												
40												
Flow												
Comments												
Signature												

SITE WATER SERVICES LOG BOOK

MONTHLY CHECKS - OUTLETS (Cold)

SFG20 References: 32-02 Tasks 3 and 4 - Temperatures to be <20°C in < 1 minute

Year		January	February	March	April	May	June	July	August	September	October	November	December
Room	Outlet												
L3-01	Domestic Cold (Basin)												
L3-01	Lab Cold (Sink)												
L3-05	Domestic Cold (Basin)												
L3-06	Lab Cold (Fume)												
L3-07	Domestic Cold (Basin)												
L02-11	Lab Cold (Fume)												
L02-15	Lab Cold (Sink)												
L02-18	Domestic Cold (Basin)												
L02-20	Lab Cold (Sink)												
L02-23	Domestic Cold (Basin)												
L02-25	Lab Cold (Sink)												
L02-33	Lab Cold (Fume)												
L02-33	Domestic Cold (Basin)												
L02-33	Mains Water (Eyewash)												
S/P Stop	Comments on general condition, leaks, installation, vent screens & integral exhaust cleanliness												
Signature													

Record Keeping

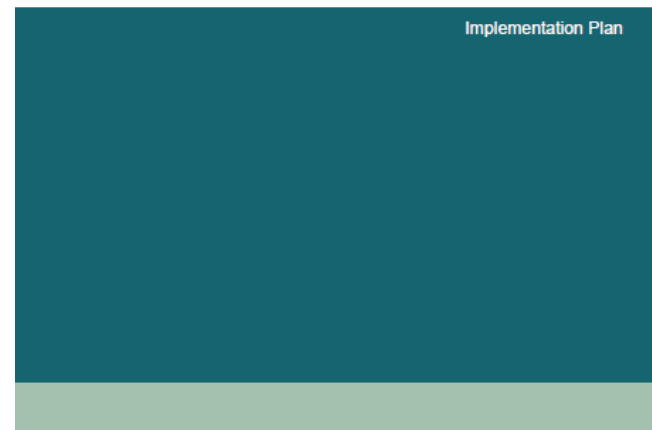
It does not matter what monitoring activities are carried out or how successful they are, if they are not logged in a specific logbook or computerised system, they are not deemed to have been done at all !

Implementation Plan

- To test Written Scheme and Procedures
- Five Representative Buildings



Water Safety Procedures Including Written Scheme



Training

- Two programmes
- Departmental Responsible Person
- Legionella Awareness for operatives

Risk Assessments

Risk Assessments should:

- identify & quantify relevant wet systems plus equipment holding / circulating water
- assess potential for Legionella growth
- identify who is at risk
- assess the potential for bacterial transfer
- quantify and prioritise the risks
- determine suitable means of control



**Property Survey Notes On The Legionella Risk
Assessment Of:**

Name: The University Of Cambridge

Address: Chemistry Building
Lensfield Road
Cambridge
CB2 1EW

Report Date: 25th July 2016



Report Prepared by: Mr Arthur Norbury MWMSoc

Any Questions?