

Greater Manchester joint plan for the investigation and control of *Legionella* infection

**Version 2
November 2008**



Association of Greater Manchester Authorities

Public Protection Partnership



Greater Manchester Primary Care Trusts,

Acute Trusts and Foundation Trusts



**Greater Manchester Health Protection Unit and HPA North
West laboratory service**

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Recommended Distribution List

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Health Protection Units

Director and Regional Epidemiologists, HPA North West

HPA Laboratories

All Acute Trust Microbiologists

Any agencies contracted to undertake *Legionella* sampling on behalf of Local Authorities

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1 Introduction

Legionella infection is potentially life-threatening. The infection is not passed from person to person. The public health significance of a case of *Legionella* infection is that the infection may have been acquired from a source which continues to pose a threat to others.

The primary objective of the investigation of *Legionella* infection is the public health imperative to identify and remove the source of infection as soon as possible. A secondary objective may be the enforcement issue of successful prosecution of those who have been negligent.

This document details the joint plan of the Local Authorities, Primary Care Trusts (PCT), Acute and Foundation Trusts and the Health Protection Unit for Greater Manchester to manage sporadic cases and outbreaks of *Legionella* infection.

This plan incorporates the guidance contained in

- the “Memorandum of understanding for the investigation and control of *Legionella* Infection in the North West Region” (October 2002)
- HPA guidelines for investigating single cases of Legionnaires’ disease

This plan considers in detail issues which are specific to *Legionella* infection. It does not outline in detail generic issues on the management of outbreaks e.g. outbreak control rooms, media liaison *etc.* This plan should therefore be read in conjunction with the joint plan for outbreaks of infectious diseases and, where appropriate, the major incident plans of the relevant organisations.

Contact details of the key personnel and agencies are given at appendix 1. A schematic overview of the investigation of suspected *Legionella* infection (taken from the Memorandum of Understanding) is shown at appendix 2.

From the Local Authority perspective, the investigation and control of *Legionella* infection is complex in that

- (i) the Local Authority may be assuming two roles (public health investigation and enforcement under Health and Safety at Work legislation)
- (ii) the lead investigating authority may be the Health and Safety Executive (HSE). Where this is the case officers may assist the HSE in their investigations, however, relevant decisions must be taken by the HSE, not Local Authority officers. In cases where the HSE is the lead investigating authority for health and safety issues, the Local Authority will always retain its public health responsibilities.
- (iii) the legislation pertaining to the control of *Legionella* infection is enshrined in a number of Acts and Regulations. These are listed in appendix 3.

The lead authority for the purposes of health and safety will be determined by the Health and Safety Enforcing Authority Regulations. In the case of a local authority facility, this will be the Health and Safety Executive (HSE). In these cases, Local Authority officers should ensure that they do not enter a situation where there would be a conflict of interest between an investigation and their role as a Local Authority employee. In such a situation, advice may be required from the Local Authority's legal service.

Guidance and Codes of Practice relevant to *Legionella* infection are shown at appendix 4.

Ownership

Representatives of the agencies listed below have signed and approved this document. The covering signatory document is held at Greater Manchester Health Protection Unit.

- Greater Manchester Local Authorities
- Greater Manchester Primary Care Trusts
- Greater Manchester Health Protection Unit
- Greater Manchester NHS Acute and Foundation Trusts
- Health Protection Agency Northwest Laboratory Service
- Health Protection Agency Northwest

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2 Legionella Infection

The environmental, clinical, epidemiological and microbiological aspects of *Legionella* infection are summarised in table 1.

Causative organism	<i>Legionella</i> species but Legionnaires Disease is caused predominantly by <i>Legionella pneumophila</i> Serogroups 1-6 Most cases and outbreaks are caused by serogroup 1
Incubation period	(i) Legionnaires' disease Median 5 days; up to 14-20 days (ii) Pontiac fever Median 36 hrs; 5-66 hrs
Environment	Reservoir - environmental water; survives in water stored between 0 and 60°C. Normally present in low concentrations in many water supplies, in fresh water and in soil. Survives normal levels of chlorination Growth at 25-45°C (optimum 30-40°C) Aided by sediment & commensal microflora Dormant <20°C Survival time at 50°C – hours; 60°C – 1 minute; 70°C – nil. Destroyed by common disinfectants e.g. phenol, glutaraldehyde, hypochlorite
Transmission	Inhalation of infected aerosols or droplet nuclei of water
Clinical features	Two clinical pictures (i) Legionnaires' disease Flu-like symptoms – malaise, fever, myalgia, anorexia, headache Dry cough, difficulty breathing +/- diarrhoea, abdominal pain, confusion, focal neurological signs CXR may show patchy or focal areas of consolidation (ii) Non-pneumonic <i>Legionella</i> infection (includes Pontiac fever) Flu-like symptoms – malaise, fever, myalgia, anorexia, headache Usually self-limiting within 2-6 days (<i>The attack rate in Pontiac fever is usually very high (>90%) and the disease affects previously healthy, and often young, individuals.</i>)
Mortality	Sporadic cases of Legionnaires' disease: 10-12% Lower in outbreaks
At-risk groups	Smokers Elderly History of excess alcohol consumption Immuno-compromised (e.g. corticosteroids, organ transplant) Chronic lung or renal disease

	Commoner in men, although this may be due to greater exposure (occupationally)
Diagnosis	<p>(i) Urinary antigen for serogroup 1 only Rapid immunochromatographic and ELISA tests – result in few hours and early in illness.</p> <p>(ii) Serology ELISA and immunofluorescent antibody test (IFAT) May take 3-6 weeks (possibly up to 12+ weeks for diagnostic rise in titre)</p> <p>(iii) Culture Possible if correct specimens are taken prior to treatment, but difficult – low yield.</p> <p>(iv) PCR Increasingly used for diagnosis of clinical cases and in assessing environmental samples <i>Legionella spp</i></p>
Risk factors	<p>Hot water systems Wet cooling systems (e.g. cooling towers, evaporative condensers) Whirlpool spas Fountain/sprinkler systems (indoor & outdoor) Humidifiers Respiratory therapy equipment Coolant fluids used with industrial grinders/disk cutters</p>
Epidemiology	<p>200-300 cases per year in UK Peak June-October Most cases are sporadic Approx. 15% linked to outbreaks Approx. 50% acquired abroad Approx. 2% hospital acquired</p>
Notable outbreaks	<p><i>London 1988</i>: 70 confirmed cases, 25 probable cases; 3 deaths. BBC building; cooling tower; aerosol thought to have travelled up to 500 metres</p> <p><i>Netherlands 1999</i>: 133 confirmed cases, 55 probable cases; 21 deaths. Spa pool display at flower show</p> <p><i>Murcia, Spain 2001</i>: 449 confirmed cases, estimated likely total 636-696; 6 deaths. Hospital cooling towers</p> <p><i>Barrow-in-Furness, UK 2002</i>: 179 confirmed cases; 6 deaths. Cooling tower, town centre</p> <p><i>Hereford, UK 2003</i>: 28 cases; 2 deaths. Cooling tower in cider plant</p>

For further background reading see “Legionella and the prevention of legionellosis: WHO 2007”¹

¹ http://www.who.int/water_sanitation_health/emerging/legionella.pdf

3. Case definitions

3.1 Sporadic cases

Legionnaires' disease

(i) Confirmed

A clinical case of pneumonia with laboratory evidence of one or more of the following:

- Isolation of a *Legionella* species from a clinical specimen
- Positive *Legionella* PCR from a clinical specimen
- Seroconversion - a four-fold or greater rise in titre determined using a validated indirect immunofluorescent antibody test (IFAT)
- The presence of *L. pneumophila* serogroup 1 antigen in urine determined using validated reagents/kits

(ii) Presumptive

A clinical case of pneumonia with laboratory evidence of one or more of the following:

- A single high titre of 128 using IFAT as above
- A positive direct fluorescence (DFA) on a clinical specimen using validated monoclonal antibodies

Non-pneumonic *Legionella* infection

(i) Confirmed

An acute non-pneumonic flu-like illness with laboratory evidence of *Legionella* infection as for confirmed Legionnaires' disease.

(ii) Presumptive

An acute non-pneumonic flu-like illness with laboratory evidence of *Legionella* infection as for presumptive Legionnaires' disease.

3.2 In the context of an outbreak

Legionnaires' disease

(i) Confirmed

A clinical case of pneumonia with a link in time and place and with laboratory evidence of one or more of the following:

- Isolation of *Legionella* species from clinical specimen
- Detection of *Legionella* spp by PCR on a clinical specimen
- Seroconversion - a four-fold or greater rise in titre determined using a validated indirect immunofluorescent antibody test (IFAT) incorporating a monovalent *L. pneumophila* serogroup 1 antigen
- The presence of *L. pneumophila* urinary antigen determined using validated reagents/kits

(ii) Presumptive case

A clinical case of pneumonia with a link in time and place and with laboratory evidence of one or more of the following:

- A single high titre of 64 using IFAT as above
- A positive direct fluorescence (DFA) on a clinical specimen using validated monoclonal antibodies

Non-pneumonic *Legionella* infection

(i) Confirmed

An acute non-pneumonic flu-like illness with laboratory evidence of *Legionella* infection as for confirmed Legionnaires' disease.

(ii) Presumptive

An acute non-pneumonic flu-like illness with laboratory evidence of *Legionella* infection as for presumptive Legionnaires' disease.

3.3 In an outbreak situation the following should be suspected as having Legionnaires Disease

- (i) Community acquired pneumonia *i.e.* patients who have been admitted to hospital with a clinical diagnosis of pneumonia or where it is shown on a chest X-Ray.
- (ii) Patients identified with flu-like illnesses and acute chest infections.
- (iii) Patients identified with fever or pyrexia with no other cause.
- (iv) Patients identified with fever and respiratory illness and acute confusion.

4. Roles and responsibilities of agencies

4.1 Clinician

- Immediately inform the Consultant in Health Protection, sometimes referred to as Consultant in Communicable Disease Control (CHP/CCDC) and Consultant Microbiologist when a case of *Legionella* infection is suspected

4.2 Consultant in Health Protection (CHP/CCDC), Greater Manchester Health Protection Union

- Will usually lead the investigation and management, acting on behalf of the relevant Primary Care Trust
- Convene and chair Incident Management Team (IMT) / Outbreak Control Team (OCT)
- Ensure appropriate data are collected in a timely fashion
- Ensure that all cases and actions are documented and all appropriate records maintained
- Inform and liaise with Local Authority
- Inform the Regional Epidemiologist
- Inform the Director of Public Health and Infection Control Nurse of the relevant PCT
- Inform the Director &/or Consultant Microbiologist/Virologist at the HPA regional laboratory to arrange appropriate testing and contribute to outbreak management
- Inform the Strategic Health Authority
- When appropriate, inform and liaise with neighbouring Health Protection Units and PCTs
- Ensure the appointment of an appropriate press spokesperson. The press spokesperson should be supported by appropriate press officer(s) who may be from any of the agencies involved.
- Assist in the surveillance of *Legionella* infection

4.3 The Primary Care Trust

- Assist in the surveillance of *Legionella* infection
- Support the CHP/CCDC in the investigation and management of the incident
- Make available all required resources

- Membership of the Incident Management Team/OCT when appropriate
- Inform the Strategic Health Authority
- When appropriate, inform and liaise with neighbouring PCTs

4.4 THE METROPOLITAN BOROUGH COUNCIL

- Assist in the surveillance of *Legionella* infection
- The Local Authority may have to take on a dual role,
 - (i) enforcement of the Health And Safety At Work Act in premises allocated to them under the Health and Safety at Work Enforcement Authority Regulations.
 - (ii) assisting the CHP/CCDC
- Membership of Incident Management Team / OCT
- Visit relevant commercial premises and check water maintenance records of water systems in accordance with the relevant legislation.
- Identify location of cooling towers, visit and check maintenance records of water systems in accordance with the relevant legislation.
- In consultation with the CHP/CCDC consider checking relevant domestic water systems.
- Check other relevant premises
- Arrange for appropriate water samples to be taken. Contact Food, Water and Environmental laboratory at Preston to discuss sampling and testing arrangements.
- Oversee environmental sampling and examine the risk assessments and sampling protocols of any nominated sampling contractors (where the Local Authority is the lead Health and Safety enforcement agency).
- Inform and liaise with neighbouring local authorities when appropriate
- An administration officer should be appointed to ensure the collation and compilation of documentation required during the investigation and in any subsequent proceedings.
- Consider prosecution when appropriate

- A summary of the officer's powers appears at appendix 3.

4.5 **Health and Safety Executive (HSE).**

- Enforcement of the Health And Safety At Work Act in premises allocated to them under the Health and Safety at Work Enforcement Authority Regulations.
- Membership of the Incident Management Team / OCT when appropriate
- Examine the risk assessments and sampling protocols of any nominated sampling contractors (where the HSE is the lead Health and Safety enforcement agency)
- A summary of the officer's powers appears at appendix 3.

4.6 **Consultant Microbiologist/ hospital infection control team**

- Inform the CHP/CCDC of laboratory confirmed cases of *Legionella* infection immediately.
- Provide rapid urinary antigen testing of suspected cases of *Legionella*
- Report results to the CHP/CCDC immediately by telephone, and by written report in a timely fashion
- Membership of the Incident Management Team / OCT when appropriate
- When appropriate, assist in the gathering of data e.g. completion of the surveillance questionnaire if the case is an in-patient.
- Ensure that all testing procedures comply with CPA accreditation standards and allow as much traceability as is reasonably practicable. In particular, ensure that:
 - all diagnostic specimens received comply with the local specimen acceptance policy,
 - all diagnostic specimens are tested using documented validated laboratory procedures
 - all information is recorded on the laboratory's IT system.

4.7 Regional Consultant Epidemiologist (RE)

- Take an overview of the surveillance and control of Legionnaires' disease cases occurring throughout the region.
- Receive surveillance data gathered by CHP/CCDCs during investigations
- Review the data and advise relevant CHP/CCDCs and other REs on the need to explore any geographical or temporal links between other cases occurring elsewhere in the North West.
- Share surveillance data with HPA CfI Colindale to contribute to national and European surveillance of Legionnaires' disease (EWGLI). CfI Colindale will advise the RE of the need to explore any geographical or temporal links between cases occurring elsewhere in the U.K.
- Chair an Incident Management Team when appropriate e.g. cross-boundary incidents

4.8 Health Protection Agency laboratory service

- Provide a testing service for clinical specimens from suspected cases in the investigation of an outbreak, including PCR and antibody testing at appropriate stages
- Provide access to a full laboratory service for testing water and environmental samples.
- Report all results to the CHP/CCDC immediately by telephone and by written report in a timely fashion.
- Advise on the technical aspects of sampling
- Provide advice to the CHP/CCDC and the Incident Management Team / OCT
- Membership of the OCT when appropriate
- Inform the Regional Microbiologist

4.9 Strategic Health Authority

- Support the Primary Care Trust
- Ensure deployment of adequate NHS resources to deal with the outbreak.

5 Action in the event of a single case with no clear link to a source

- 5.1 The microbiologist/virologist or clinician will inform the CHP/CCDC immediately.
- 5.2 CHP/CCDC will inform the relevant LA officer, the PCT Infection Control Nurse and the DPH.
- 5.3 Data will be gathered from the case using the HPA North West Surveillance form (appendix 4). This may be completed by the LA officer, the CHP/CCDC, a member of the hospital infection control team or any other personnel deemed appropriate by the CHP/CCDC.
- 5.4 If the case is not interviewed initially by a LA officer, it may be necessary for the case to be interviewed by a LA officer subsequently.
- 5.5 The CHP/CCDC will inform the RE.
- 5.6 The RE will advise the CHP/CCDC of any potential links with other cases.
- 5.7 The RE will inform HPA Cfl Colindale.
- 5.8 If a case is attributed to foreign travel, HPA Cfl Colindale will determine through liaison with the European Working Group for *Legionella* Infections (EWGLI) whether it is an isolated case or one of cluster associated with the same resort or hotel. Cfl Colindale will then decide whether to make arrangements to contact the appropriate party e.g. tour company, hotel etc.
- 5.9 If the case is not clearly travel-related the LA officer will check the Register of Notification of Cooling Towers and Evaporative Condensers.
- 5.10 Effort should be made to identify exposure to any possible source (using the surveillance form) and to identify any other individuals with respiratory symptoms that could be associated with the case e.g. respiratory illness in co-residents.
- 5.11 Environmental sampling in the home of a single case is not, in most areas, routinely undertaken. The decision to undertake household sampling should be taken after consultation between the LA officer and the CHP/CDC and any other relevant personnel. Guidelines for the investigation of single cases of Legionnaires' disease have been published². Household sampling is likely to be important if, for example:

² Available on the HPA website
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1204186179377?p=1191942128213

- the case has spent some (but not all) of the incubation period in hospital
- the case is a resident in a residential/nursing home
- the case has been exposed to a spa pool or similar device at home.

5.12 When there is no obvious link with any known source or other case, the LA will inform their local HSE Enforcement Liaison Officer (ELO) as a matter of courtesy and direct him/her to the CHP/CCDC for further information.

6 Action in the event of a single case with a clear link to HSE enforced premises (for health and safety purposes)

- 6.1 Actions outlined in sections 5.1 to 5.7 will apply
- 6.2 The LA officer or CHP/CCDC will inform the local HSE ELO. The HSE Officers will then determine their action in liaison with the LA Officer and the CHP/CCDC.
- 6.3 The HSE and LA should liaise closely and agree where appropriate to undertake joint visits to consider further action. The LA officer should be authorised by HSE to accompany their inspector under the Health and Safety at Work Act 1974, if the LA officer is assisting with an HSE investigation. Otherwise the LA officer can use his/her own powers of entry under the Environmental Protection Act (EPA).
- 6.4 The appropriate officer will examine the maintenance records and assess the management of cooling towers and other suspected systems.
- 6.5 Environmental sampling is recommended whenever possible as long as
 - this does not result in a significant delay in public health action
 - the decision to sample is taken as a result of a risk assessment based on the specific circumstances of the incident
 - personnel taking the samples are competent and appropriately equipped
- 6.6 The CHP/CCDC and LA officer, with advice from HSE and other appropriate agencies, will decide whether environmental samples should be taken. Refer to section 8 for further discussion on environmental sampling.
- 6.7 Appropriate action must be taken to reduce the risk to the public from suspected sources whilst sampling is awaited e.g. shutting down the systems, dissemination of relevant information etc
- 6.8 Disinfection will take place as soon as possible after sampling (when appropriate) and after discussion with the CHP/CCDC. Disinfection is the responsibility of the owners of the premises. In circumstances which render it necessary, the local authority can commission disinfection and claim reimbursement from the owners.
- 6.9 Relevant information gathered during investigations will be fed back to the CHP/CCDC (and ultimately the RE) by the HSE inspector or LA officer.
- 6.10 HSE will decide on prosecution in respect of Health and Safety legislation. The Local Authority will decide on prosecution in respect of the Environmental Protection Act.

- 7. Action in the event of a single case with a clear link to LA enforced premises.**
- 7.1 Actions outlined in sections 5.1 to 5.7 will apply.
- 7.2 In these circumstances the LA will carry out both functions of securing the public health and investigating any breaches of the Health and Safety at Work Act 1974.
- 7.3 LAs may request the assistance of HSE's specialists via ELOs or other local HSE contacts. These specialist inspectors should also be authorised to accompany the LA officer otherwise their opinions may not be admissible as evidence.
- 7.4 The appropriate officer will examine the maintenance records and assess the management of cooling towers and other suspected systems. Any premises regarded as a possible source should be visited; a telephone interview with a responsible person is not sufficient.
- 7.5 The CHP/CCDC and LA officer, with advice from HSE and other appropriate agencies, will decide whether environmental samples should be taken. Refer to section 8 for further discussion on environmental sampling.
- 7.6 Disinfection will take place as soon as possible after sampling (when appropriate) and after discussion with the CHP/CCDC. Disinfection is the responsibility of the owners of the premises. In circumstances which render it necessary, the local authority can commission disinfection and claim reimbursement from the owners.
- 7.7 Appropriate action must be taken to reduce the risk to the public from suspected sources whilst sampling is awaited e.g. shutting down the systems, dissemination of relevant information etc
- 7.8 Relevant information gathered during investigations will be fed back to the CHP/CCDC (and ultimately the RE) by the HSE inspector or LA officer.
- 7.9 The LA will decide on appropriate legal action.
- 7.10 In the event of a cross-boundary incident a lead PCT and Local Authority should be identified.

8 Environmental sampling from suspected sources

- 8.1 Environmental sampling is recommended whenever possible as long as
- this does not result in a significant delay in public health action
 - the decision to sample is taken as a result of a risk assessment based on the specific circumstances of the incident
 - personnel taking the samples are appropriately trained and equipped
- 8.2 Each sampling exercise must be subject to an individual risk assessment by a competent person before commencement. The necessity for environmental sampling and the equipment needed should be decided after a risk assessment of the circumstances of the incident. The decision is likely to be based on:
- The degree of certainty of the putative source
 - The importance of ensuring that the true source has been identified (epidemiology alone is not likely to be sufficient for this)
 - The speed of development of the incident
 - The time taken to undertake sampling versus the urgency of eliminating any potential source
- 8.3 Environmental samples, when deemed necessary, should be taken as a matter of urgency.
- 8.4 Sampling is the responsibility of the Local Authority.
- 8.5 Contact the HPA Food, Water and Environmental laboratory at Preston for guidance on sampling and testing arrangements.
- 8.6 Sampling should be undertaken by appropriately trained, experienced and equipped staff only. In some circumstances it may be appropriate for Local Authority staff who are suitably trained to take the samples. In other circumstances (e.g. if the water system is particularly complex) it will be more appropriate for a contracted agency to provide trained samplers. This decision will be taken by the Local Authority officers. In Greater Manchester a commercial company has been contracted to provide a rapid sampling service. This company will respond to requests in legionella incidents (other than routine monitoring) relating to any type of suspect water source. The contact details are shown in appendix 5. The company should be alerted as early as possible to the potential need for sampling, even if sampling is not subsequently required.
- 8.7 The sampler, if not a Local Authority officer, should obtain samples after consultation with the Local Authority officer to ensure that an appropriate sampling strategy has been adopted. HPA laboratory personnel will be available to provide advice on and support with sampling strategies. In Greater Manchester, the Local Authority and the HPA laboratory will supply the contracted sampler with the correct equipment. Initial liaison between the Local Authority, laboratory and

contracted sampler will be necessary to determine the logistics of obtaining the appropriate equipment in a timely fashion. Sample bags, evidence tags and forms will be supplied by the Local Authority. An Ilog number should be obtained from the laboratory; all specimens and forms must be clearly marked with the Ilog number.

- 8.8 A schematic diagram of the water installation should be obtained, and the site engineer or person responsible for system maintenance should be identified to assist with familiarisation with the system.
- 8.9 In Greater Manchester at least one officer from each Local Authority has received enhanced training on Legionella issues. The contact details for these officers are shown in appendix 5. In the event of a Legionella incident, the relevant lead officer for that borough should be contacted. If the officer with enhanced training on sampling and water systems is not available, assistance can be sought from the comparable officer in another authority. Mutual aid has been agreed by the Association of Greater Manchester Authorities.
- 8.10 LA officers are authorised under The Environmental Protection Act 1990 to enter premises to determine if there is a statutory nuisance and may take samples for this purpose. There is provision within the legislative framework for non-local authority personnel to be authorised to enter the premises. Care should be taken that all personnel are appropriately authorised.
- 8.11 Samples must be labelled by site of origin and with the date and time taken. At all stages, the chain of evidence must be maintained. Guidance on issues around the chain of evidence is given at appendix 7. It is important that all personnel involved in sampling are aware of these issues.
- 8.12 A sampling protocol is given at appendix 5 and guidance on sampling at appendix 6.
- 8.13 While HSE will co-operate with sampling, HSE inspectors are not permitted to sample where *Legionella* may be present as microbiological evidence is not required to support enforcement action. However, if samples are obtained, HSE will be interested in the results. There is therefore no need for HSE to authorise LA officers to accompany them to take samples.
- 8.14 If legionella is isolated from a monitoring environmental sample a risk assessment should be undertaken by a competent person.
- 8.15 In addition to legionella sampling, the contracted samplers will undertake the following:
 - temperature
 - conductivity

- pH
 - chlorine concentration (when appropriate)
 - separate sample for chemical analysis if conductivity is high
 - sample for additional bacteriological analysis for pools or similar settings (to include total count, faecal coliforms, *Staphylococcus* spp, *Pseudomonas* spp)
- 8.16 The contracted company will photograph the water installation and sampling points. It is, however, advisable for Local Authorities also to take photographic evidence.
- 8.17 Consideration will need to be given to general health and safety issues (e.g. noise, heat, working at height). Systems causing aerosolisation must be switched off before sampling. The site owner or representative is responsible for the health and safety of personnel on site. A representative of the site owner must accompany the sampler throughout the visit. Local Authority officers and other personnel must work in accordance with their standard health and safety policies for site visits.

9 Action in the event of two or more linked cases

9.1 When an outbreak is suspected

- 9.1.1 That is, when two or more cases are suspected, or when there is one confirmed and there is one or more suspected cases, and there is an association in time and place leading to strong clinical suspicion of an outbreak with a probable local source but without definitive laboratory confirmation (see section 3 for case definitions).
- 9.1.2 The CHP/CCDC will ensure that steps are taken to obtain laboratory confirmation of the diagnoses.
- 9.1.3 The CHP/CCDC will inform the appropriate Local Authority officer, the PCT Infection Control nurse and DPH as soon as possible.
- 9.1.4 Clinicians will be informed of the possibility of an outbreak and will be requested that:
- (i) Specimens are marked urgent;
 - (ii) Telephone notification is made to the CHP/CCDC immediately on suspicion of *Legionella* infection;
 - (iii) Repeated testing is undertaken when results are equivocal, or as requested by the laboratory.
- 9.1.5 The Local Authority will inform the Health and Safety Executive if appropriate.
- 9.1.6 The CHP/CCDC will ensure that the following are informed of a suspected but unconfirmed outbreak i.e. strong clinical suspicion without laboratory confirmation:
- (i) Chief Environmental Health Officer, Local Authority
 - (ii) Director of Public Health, the PCT
 - (iii) Consultant Microbiologist, Acute or Foundation Trust
 - (iv) Chief Executive, the PCT
 - (v) Regional Epidemiologist
 - (vi) Director or consultant microbiologist at the Regional HPA Laboratory, Manchester
 - (vii) HPA Communicable Disease Surveillance Centre
 - (viii) Person responsible for engineering services: suspected sites
 - (ix) Health and Safety Executive
 - (x) HPA NW press officer
 - (xi) The PCT press officer
 - (xii) Strategic Health Authority
 - (xiii) Government Office North West
 - (xiv) Department of Health
 - (xv) Other persons and organisations as appropriate
- 9.1.7 The appropriate agency (Local Authority or Health and Safety Executive) will instruct the appropriate Site Officer that no

environmental treatments should be undertaken until authorised. Before these instructions are given the CHP/CCDC must be informed.

- 9.1.8 If it is decided that environmental sampling is appropriate they will be taken as soon as possible after suspect locations are identified. Refer to section 8 on environmental sampling.
- 9.1.9 All personnel taking or handling samples must be mindful of chain of evidence issues if criminal prosecutions may result from the investigation (appendix 7).
- 9.1.10 The CHP/CCDC will convene an Outbreak Control Team meeting to review all available information and consider the need for further investigation and action (appendix 2). The location of the meeting will be agreed by the team in accordance with local plans.
- 9.1.11 The OCT will include some or all of the following or their representatives

- (i) CHP/CCDC, Greater Manchester HPU
- (ii) Environmental Health Officers, The Council
- (iii) Nurse Consultant in Health Protection / Infection Control, Greater Manchester HPU
- (iv) Consultant Microbiologist, Acute or Foundation Trust
- (v) Regional Microbiologist and/or Director or consultant microbiologist at the Regional HPA Laboratory, Manchester
- (vi) Director of Public Health of the PCT
- (vii) Infection Control Nurse, at the PCT
- (viii) Clinicians as appropriate
- (ix) Health and Safety Executive

This is not an exhaustive list. Other members may be invited or co-opted as appropriate with particular consideration being given to including the following:

- (i) Person responsible for engineering services on the suspected site
- (ii) General manager from the suspected site
- (iii) HPA Communicable Disease Surveillance Centre
- (iv) HPA +/-or PCT press officer

Police representation on outbreak control teams.

The police have been represented on some outbreak control teams after the first death had occurred. The police can serve a useful function in large and high profile incidents, particularly in relation to the handling and transport of specimens and the maintenance of the chain of evidence. There is no necessity to invite the police to join the outbreak control team, and all the relevant issues need to be carefully considered.

9.1.12 The terms of reference of the OCT are to:

- (i) establish case definitions
- (ii) establish the extent of the outbreak
- (ii) co-ordinate all arrangements for the investigation of the source and cause of the outbreak
- (iv) co-ordinate the control measures to be employed
- (v) take all necessary steps for the continuing clinical care of the patients during the outbreak
- (vi) ensure that adequate communication channels are established
- (vii) assess the need for additional resources, including staff
- (viii) consider the need for outside help and expertise
- (ix) provide clear instructions and/or information for staff
- (x) provide information for general practitioners and members of the public
- (xi) ensure communication with the HPA North West, HPA Cfl Colindale, PCT Directors, Local Authority Directors and elected members, Strategic Health Authority, Government Office North West, Department of Health and any other appropriate agency.
- (xii) ensure prompt, accurate and adequate information is available to the media
- (xiii) meet as frequently as necessary in the circumstances of the particular outbreak and to maintain a written record of all meetings
- (xiv) define the end of the outbreak and state the lessons learned
- (xv) prepare for the consideration of the relevant local and Health Authorities a preliminary report, ideally within 48 hours, interim reports if necessary and a final report
- (xvi) ensure investigating staff are appropriately protected against infection
- (xvii) appoint a media spokesperson

9.1.13 The CHP/CCDC will alert clinical colleagues and ask to be informed immediately by phone of any further suspected cases. The Consultant Microbiologist will reinforce the message as the opportunity arises.

9.1.14 In the event of enquiries from the media, there will be one contact person from the OCT. The OCT will identify the most appropriate person to liase with the media.

9.1.15 The CHP/CCDC will seek advice from the HPA Communicable Disease Surveillance Centre and/or the HPA Laboratory Service, Manchester.

9.1.16 The Local Authority and the Health and Safety Executive will provide a list of possible sources of infection in the relevant locations. This list would be compiled using the Local Authority's register and also if considered appropriate by the OCT by a telephone survey of establishments in the area where the source of the outbreak is likely to exist.

9.1.17 The lead officers will, in liaison with the CHP/CCDC and the Director of the HPA laboratory, consider whether an inspection team should visit any of these establishments. Membership of the inspection teams will be decided by these officers.

9.1.18 In the event of a cross-boundary incident the lead PCT and Local Authority should be identified at the outset.

9.2 When an outbreak is confirmed

9.2.1 That is, when two or more confirmed cases have occurred with an association in both time and place (see section 3 for case definitions).

9.2.2. The CHP/CCDC will ensure that the following are informed:

- (i) Chief Environmental Health Officer, Local Authority
- (ii) Director of Public Health at the PCT
- (iii) Consultant Microbiologist, Acute or Foundation Trust
- (iv) Chief Executive of the PCT
- (v) Regional Epidemiologist
- (vi) Director or consultant microbiologist at the Regional HPA Laboratory, Manchester
- (vii) HPA Communicable Disease Surveillance Centre
- (viii) Person responsible for engineering services: suspected sites
- (ix) Health and Safety Executive
- (x) Relevant hospital clinicians
- (xi) Local General Practitioners
- (xii) HPA NW press officer
- (xiii) The PCT press officer
- (xiv) Strategic Health Authority
- (xv) Government Office North West
- (xvi) Department of Health
- (xvii) Other persons and organisations as appropriate

9.2.3 The CHP/CCDC will discuss with the Regional Epidemiologist +/- HPA Communicable Disease Surveillance Centre the conduct of the investigation and the need for assistance

9.2.4 The OCT as detailed in section 8.1.11 will meet and will ensure that immediate action is taken to eliminate infection from the source (as soon as this has been identified).

9.2.5 The OCT will co-ordinate investigations and call other meetings as required

9.2.6 The CHP/CCDC and Consultant Microbiologist(s) will initiate a case finding exercise. Ward admission books will be examined to identify potential cases. The co-operation of all general practitioners and Consultants in the District will be enlisted in identifying and reporting

promptly further possible cases. Where appropriate occupational health reviews will be undertaken amongst workers potentially at risk. The relevant agencies in neighbouring districts, throughout the region and possibly nationally will be alerted so as to identify cases who are not resident locally but may have been exposed.

9.2.7 Model case definitions will be used as given at section 3.

9.2.8 Cases will be interviewed and a detailed questionnaire completed, as at appendix 5. When it is deemed appropriate, cases may be interviewed by telephone; this may assist in a fast-moving investigation. A written record must be kept of all interviews regardless of the method.

9.2.9 Environmental Investigations

The Environmental Health and Trading Standards Service or the Health and Safety Executive will conduct environmental investigations as appropriate with the advice and help of the Director of the Regional HPA Laboratory Service. Once the source of infection has been identified immediate arrangements will be made to eliminate it by appropriate treatment of the affected equipment.

9.2.10 The OCT will meet regularly during the outbreak to share information, review the progress of the outbreak and the effectiveness of the control measures being taken.

9.2.11 The OCT will arrange regular liaison with the media through the CHP/CCDC or nominated spokesperson.

Appendix 1 – Contact Details

Contact Numbers

HEALTH PROTECTION AGENCY	
Health Protection Agency North West Out of hours: (answering machine with on-call Consultant's details)	Tel: 0151 482 5688 Fax: 0151 482 5689 Tel: 0151 482 5688
Cheshire and Merseyside Health Protection Unit Cheshire (inc Wirral) Merseyside (Liverpool, Sefton, St Helens & Knowsley) Out of hours: Mersey Regional Ambulance HQ (ask for HPA Consultant on call)	Tel: 01244 366766 Fax: 01244 366782 Tel: 0151 290 8360 Fax: 0151 290 8366 Tel: 0151 264 6922
Cumbria and Lancashire Health Protection Unit (incl Preston, Accrington and Ormskirk) Out of hours (ask to speak to the on-call consultant): Preston Royal Hospital OR Blackpool Victoria Hospital	Tel: 01257 246450 Fax: 01257 246451 Tel: 01772 716565 Tel: 01253 300000
Greater Manchester Health Protection Unit Out of hours: Tameside General Hospital switchboard (ask for the Greater Manchester Health Protection Unit on-call rota)	Tel: 0161 786 6710 Fax: 0161 707 9686 Tel: 0161 331 6000
Regional HPA Press Officer	Tel: 0151 482 5688 Mobile: 07764 906508 Home: 01704 877024 Pager: 08700 555500 (ask for NWR130)
Centre for Infections (Cfl)	Tel: 0208 200 6868
CHEMICAL HAZARD & POISONS DIVISION	Main Office No: 0121 414 3368 Fax No: 0121 414 3827 Hotline No: 0870 606 4444
Andrew Kibble (Head of Unit)– Andrew.kibble@hpa.org	Office No: 0121 414 6547 Mob: 07776 234596 Pager: 07623 973771
Dr Toby Smith (Environmental Scientist) – toby.smith@hpa.org.uk	Office No: 0121 414 8519 Mob: 07799 335792 Pager: 07623 953965

Paul Fisher (Environmental Scientist) – paul.fisher@hpa.org.uk	Office No. 0121 414 8634 Mob: 07770 863113 Pager: 07623 907196
John Dyer (Environmental Scientist) – john.dyer@hpa.org.uk	Office No: 0121 414 7581 Mob: 07771 631730 Pager: 07623 973766
Dr Ivan Browne (Specialist Trainee) – ivan.brown@hpa.org.uk	Office No: 0121 414 8635
Carol Richards (Senior Administrator) - carol.Richards@hpa.org.uk	Office No: 0121 414 3368 Mob: 07788 798430
Acute Incidents	
West Midlands/North West – Incident Contact Line	Office Hours: 0121 414 8636
ChaPD 24 Hour National Hotline Rota	Out of Hours: 0844 892 0555
CENTRE FOR RADIATION, CHEMICAL AND ENVIRONMENTAL HAZARDS	
HPA Centre for Radiation Chemical and Environmental Hazards (CRCE) reception. (PLEASE DO NOT GIVE THIS NUMBER TO ANYONE OUTSIDE OF THE HPA)	Office Hours: 01253 – 831818 (Mon-Thurs 08:00-16:50, Fri 08:00 – 16:10) Outside of Office Hours: 01253 831818 Emergency on-call duty officer at CEPR – 01980 6132100 (24 Hr Number)
HPA COLLABORATING LABS	
National (Colindale)	Tel: 0208 200 4400
Carlisle	Tel: 01228 814641
On call microbiologist	Tel: 01228 523444
Chester	Tel: 01244 366770
HPA NW Laboratory Service, MRI	Tel: 0161 276 8788/8854
Out of hours	Tel: 0161 276 1234
Liverpool	Tel: 0151 529 4900
Preston	Tel: 01772 522100
Liverpool School of Tropical Medicine	Tel: 0151 708 9393

ENVIRONMENTAL HEALTH DEPARTMENTS		
Cheshire & Merseyside	Office Hours	Out-of-Hours
Chester CC	01244 402310	01244 324324
Congleton MBC	01270 769480	01270 883999
Crewe MBC	01270 537404	01270 537777
Ellesmere Port & Neston MBC	0151 356 6789/6654	0151 355 0202
Halton MBC	0151 424 2061	0151 424 4857
Knowsley MBC	0151 443 4737	1 st line: 0769 972 8920 2 nd line: 0769 972 8922

Liverpool CC	0151 225 4028	0151 233 3000
Macclesfield MBC	01625 500500	01625 511495
Sefton MBC	0845 140 0845	0151 922 6107
St. Helens MBC	01744 456347	01744 23044/01744 456728
Vale Royal MBC	01606 862862	01606 862862
Warrington BC	01925 442575	01925 444400
Wirral MBC	0151 666 4989	0151 647 7810
Cumbria & Lancashire	Office Hours	Out-of-Hours
Allerdale Borough Council	01900 326333	01900 871080
Barrow Borough Council	01229 894260	01229 833311
Blackburn with Darwen Borough Council	01254 585393	01282 416387/0773 6029082
Blackpool Borough Council - Emergency	01253 478444/ 01253 478456	01253 477600
Burnley Borough Council	01282 664535	01254 384940
Carlisle City Council	01228 817325	–
Chorley Borough Council	01257 515720	01257 515142
Copeland Borough Council	01946 598347	0774 008 9034/0776 959 7909
Eden District Council	01768 864671	01768 867468
Fylde Borough Council	01253 658658	01253 712137
Hyndburn Borough Council	01254 388111	0800 587 5273
Lancaster City Council	01524 582701	01524 67099
Pendle (Borough of)	01282 661199	01282 661999
Preston City Council	01772 906163	01772 253421
Ribble Valley Borough Council	01200 425111	01200 444448
Rosendale Borough Council	01706 217777	01706 853121
South Lakeland District Council	01539 733333	Kendal: 0762 695 7236 Lakes Area: 0762 697 9114 Ulverston Area: 0762 697 9022
South Ribble Borough Council	01772 421491	01772 625499
West Lancashire District Council	01695 577177	01695 577177
Wyre Borough Council	01253 891000	01253 895116
Greater Manchester	Office Hours	Out-of-Hours
Bolton MBC	01204 336500	01204 336900 (No Environmental Health out of hours number)
Bury MBC	0161 253 6639	0161 253 6639
High Peak MBC	0845 129 7777	01663 752099/01298 813395
Manchester CC	0161 234 5000	0765 912 5657 (Pager)

Oldham MBC	0161 770 4580 (Control Room)	0161 628 2000 (Ex-Directory)
Rochdale MBC	0845 121 2971	0845 121 2975
Salford CC	0161 794 4711 (Switch)	0161 794 8888/0161 728 2200 (Major Incident)
Stockport MBC	0161 474 4344	0161 474 5554
Tameside MBC	0161 342 8355	0161 342 3999/ 2222 (Major Incident)
Trafford MBC	0161 912 4174	0161 912 4191
Wigan & Leigh MBC	01942 404040 (Control Room)	01942 404040 (Ask for Environmental Health Officer)

MAJOR INCIDENT NOTIFICATION NUMBERS

Organisation	Normal Working hours	Out-of-Hours
NHS North West	0161 223 4732	0161 223 4732
North West Ambulance Service	0161 223 4732	0161 223 4732
Lead PCT CEO On Call rota	0161 223 4732	0161 223 4732
Colin Kelsey – GM Asst Director Emergency Preparedness	01204 462139 Mob 07918 721455	N/A

PARTNER AGENCIES

Greater Manchester Health Protection Unit	0161 786 6710	0161 331 6000 (ask for HPU on-call)
Greater Manchester Police	0161 856 1671	0161 856 1671
Greater Manchester Fire & Rescue	0161 736 5866	0161 736 5866
Bolton Metropolitan Borough Council	01204 336 900	01204 336900
Bury Metropolitan Borough Council	01204 521568	01204 521568
Manchester City Council	0161 223 9999	0161 223 9999
Oldham Metropolitan Borough Council	0161 770 4580	0161 770 4580
Rochdale Metropolitan Borough Council	01706 925436/924757	0845 121 2975
Salford City Council	0161 728 2200	0161 728 2200

Stockport Metropolitan Borough Council	0161 474 5554	0161 474 5554
Tameside Metropolitan Borough Council	0161 342 3999	0161 342 3999
Trafford Metropolitan Borough Council	0161 912 2020	0161 212 2020
Wigan Metropolitan Borough Council	01942 404040	01942 404040
Derbyshire County Council	01629 585394	01629 585123 (ask for the Duty Emergency Planning Officer).

EMERGENCY PLANNING

Greater Manchester	Office Hours	Out-of-Hours
Bolton MBC	01204 336993	01204 336900
Bury MBC	0161 253 6639	0161 253 6639
High Peak MBC	0845 129 7777	01663 752099/01298 813395
Manchester CC	0161 234 5000	0161 223 9999 (Ex- Directory)
Oldham MBC	0161 770 4580 (Control Room)	0161 628 2000 (Ex-Directory)
Rochdale MBC	0845 121 2971	0845 121 2975
Salford CC	0161 794 4711 (Switch)	0161 794 8888/0161 728 2200 (Major Incident)
Stockport MBC	0161 474 5599	0161 474 5554
Tameside MBC	0161 342 8355	0161 342 3999/ 2222 (Major Incident)
Trafford MBC	0161 912 4191	0161 912 4191
Wigan & Leigh MBC	01942 404040 (Control Room)	01942 404040

UNITED UTILITIES EMERGENCY PLANNING

Greater Manchester	Office Hours	Out-of-Hours
Niall Clarke niall.clarke@uuplc.co.uk Risk & Response Manager	01925 464564 Fax: 01925 463528	07785 778250

Paul Roberts (Paul.Roberts@uuplc.co.uk) Risk Control Manager	01925 463303 Fax 01925 463528	0790 9537959
Irene Jenkinson (Irene.jenkinson@uuplc.co.uk) Risk Control Analyst	01925 464730 Fax: 01925 463528	0771 388 7303
Gail Patullo (gail.pattullo@uuplc.co.uk) Risk Control Analyst	01925 464712 Fax: 01925 463528	0771 388 7300
LOCAL AUTHORITIES (CHIEF EXEC/SWITCHBOARD)		
Cheshire & Merseyside		
Chester CC	01244 324324	
Congleton MBC	01270 763231	
Crewe and Nantwich MBC	01270 537777	
Ellesmere Port & Neston MBC	0151 356 6789	
Halton MBC	0151 424 2061	
Knowsley MBC	0151 443 2804/2823/2433	
Liverpool CC	0151 233 3000	
Macclesfield MBC	01625 500500	
Sefton MBC	0151 922 2057 (Chief Exec office)	
St. Helens MBC	01744 456101	
Vale Royal MBC	01606 867804	
Warrington BC	01925 444400	
Wirral MBC	0151 606 2000	
Cumbria & Lancashire		
Allerdale Borough Council	01900 326333	
Barrow Borough Council	01229 894900	
Blackburn with Darwen Borough Council	01254 585585	
Blackpool Borough Council - <i>Emergency</i>	01253 478444	

Burnley Borough Council	01282 425011
Carlisle City Council	01228 817000
Chorley Borough Council	01257 515151
Copeland Borough Council	01946 852585
Eden District Council	01768 864671
Fylde Borough Council	01253 658658
Hyndburn Borough Council	01254 388111
Lancaster City Council	01524 582000
Pendle (Borough of)	01282 661129
Preston City Council	01772 906000
Ribble Valley Borough Council	01200 414401
Rosendale Borough Council	01706 217777
South Lakeland District Council	01539 733333
South Ribble Borough Council	01772 421491
West Lancashire District Council	01695 577177
Wyre Borough Council	01253 891000
Greater Manchester	
Bolton MBC	01204 333333
Bury MBC	0161 253 5000
High Peak MBC	0845 129 7777
Manchester CC	0161 234 5000
Oldham MBC	0161 770 3000
Rochdale MBC	01706 647474
Salford CC	0161 794 4711
Stockport MBC	0161 480 4949
Tameside MBC	0161 342 8355
Trafford MBC	0161 912 1212
Wigan & Leigh MBC	01942 244991

PRIMARY CARE TRUSTS - INFECTION CONTROL NURSES and DIRECTORS OF PUBLIC HEALTH

Cheshire & Merseyside	Community Infection Control Nurse	Director of Public Health
Bebington & West Wirral PCT	0151 678 7272	0151 643 5416
Birkenhead and Wallasey PCT	0151 651 3946	0151 651 0011
Central Cheshire PCT	01606 564001	01270 415300
Central Liverpool PCT	0151 300 8076/0151 300 8090	0151 285 2345
Cheshire West PCT	01244 364858	01244 650300
Eastern Cheshire PCT	01625 661769	01625 508300
Ellesmere Port & Neston PCT	01244 364858	0151 373 4900
Halton PCT	01928 593690	01928 593663
Knowsley PCT	0151 292 3519	0151 443 4914
North Liverpool PCT	0151 300 8076 / 0151 300 8090	0151 293 1900
South Liverpool PCT	0151 300 8076 / 0151 300 8090	0151 234 1000
South Sefton PCT	0151 478 1239	0151 478 1249
Southport and Formby PCT	01704 553543	01704 387026
St Helens PCT	01744 620377	01744 457298
Warrington PCT	01925 664000	01925 843600
Cumbria & Lancashire	Community Infection Control Nurse	Director of Public Health
Blackburn with Darwen PCT	01254 263611	01254 267061
Blackpool PCT	01253 651030	01253 651026
Burnley, Pendle & Rossendale PCT	01282 607014	01282 610250
Carlisle & District PCT	01228 814393	01228 603608
Chorley & South Ribble	01772 644479	01772 644459
Eden Valley PCT	01228 814393	01228 603542
Fylde PCT	01253 306483	01253 306456
Hyndburn & Ribble Valley PCT	01254 263555	01254 380400
Morecambe Bay PCT	01539 583769	01539 797820
Preston PCT	01772 645625	01772 645587
West Cumbria PCT	01228 814393	01900 324220
West Lancashire PCT	01695 598155	01695 598180
Wyre PCT	01253 303247	01253 306311
Greater Manchester	Community Infection Control Nurse	Director of Public Health
Ashton, Wigan & Leigh PCT	01942 481730	01942 481729
Bolton PCT	01204 462356	01204 907725
Bury PCT	0161 272 4058	0161 272 4062

PRIMARY CARE TRUSTS - INFECTION CONTROL NURSES and DIRECTORS OF PUBLIC HEALTH		
Manchester PCT	0161 946 8242	0161 219 9428
Heywood, Middleton & Rochdale PCT	01706 652818	01706 652876
Oldham PCT	0161 484 3839	0161 622 6606
Salford PCT	0161 212 4958	0161 212 4819
Stockport PCT	0161 426 5488	0161 426 5031
Tameside & Glossop PCT	0161 308 3171	0161 304 5342
Trafford PCT	0161 873 6024	0161 873 9588
Ashton, Wigan & Leigh PCT	01942 772711	01942 244000
PRIMARY CARE TRUSTS – Emergency Contact Numbers – For Out of Hours ask for Directors Rota		
Greater Manchester	Office Hours	Out of Hours
Bolton PCT	01204 462000	01204 390390
Bury PCT	07966079733	07966079733
Manchester PCT (Health Control hold up-to-date on call rotas for M/cr PCT's)		
North Locality	07973 138303	0161 223 4732
Central Locality	07973 138303	0161 223 4732
South Locality	07973 138303	0161 223 4732
Heywood, Middleton & Rochdale PCT	01706 652876	0161 223 4732
Oldham PCT	0161 956 0007 (ask for Oldham PCT Director on call to be paged)	0161 956 0007 (ask for Oldham PCT Director on call to be paged)
Salford PCT	0161 212 4800/4811	First instance page 07659 581787/Page 07659 584525
Stockport PCT	07798 877322 (24 Hrs)	07798 877322 (24 Hrs)
Tameside & Glossop PCT	0161 304 5300	0161 331 6000
Trafford PCT	First ring 0161 873 9500 and ask for manager on call if no response ring 07813 319345 (24 Hrs)	First ring 0161 748 4022 and ask for PCT manager on call if no response ring 07813 319345 (24 Hrs)

ACUTE TRUSTS		
Cheshire & Merseyside		
Aintree Hospital (University Hospital Aintree, also known as Fazakerley Hospital), Liverpool	Liverpool	0151 525 5980
Alder Hey Hospital (Royal Liverpool Children's NHS Trust), Liverpool	Liverpool	0151 228 4811
Arrowe Park Hospital, Wirral	Wirral	0151 678 5111
Ashworth Hospital, Liverpool	Liverpool	0151 473 0303
Broadgreen Hospital, Liverpool (Royal Liverpool & Broadgreen Hospital)	Liverpool	0151 282 6000
Cardiothoracic Centre, Liverpool	Liverpool	0151 228 1616
Clatterbridge Centre for Oncology, Wirral	Wirral	0151 334 1155
Clatterbridge Hospital, Wirral	Wirral	0151 334 4000
Congleton War Memorial Minor Injuries Unit, Congleton	Congleton	01260 272227
Countess of Chester Hospital, Chester	Chester	01244 365000
Ellesmere Port Hospital, Wirral	Ellesmere Port	01244 362986
Fazakerley Hospital, Liverpool (University Hospital Aintree, also known as Aintree Hospital)	Liverpool	0151 525 5980
Halton General Hospital, Runcorn	Runcorn	01928 714567
Hollins Park Hospital, Warrington	Warrington	01925 664000
Knutsford & District Community Hospital, Cheshire	Knutsford	01565 632112
Leighton Hospital, Crewe	Crewe	01270 255141
Liverpool Women's Hospital, Liverpool	Liverpool	0151 708 9988
Macclesfield District General Hospital, Macclesfield	Macclesfield	01625 421000
Regional Infectious Diseases Unit, Royal Liverpool Hospital, Liverpool	Liverpool	0151 706 2432/2436 0151 706 2000
Royal Liverpool Hospital, Liverpool (Royal Liverpool & Broadgreen University Hospital)	Liverpool	0151 706 2000
Smithdown Road Paediatric Minor Injuries Unit, Liverpool	Liverpool	0151 733 4644
Southport Hospital, Southport, Merseyside	Southport	01704 547471
St Catherine's Hospital, Wirral	Wirral	0151 678 7272
Victoria Central Hospital, Wallasey, Merseyside	Wallasey	0151 678 7272

ACUTE TRUSTS		
Victoria Infirmary, Northwich, Cheshire	Northwich	01606 564000
Walton Hospital, Liverpool	Liverpool	0151 525 3611
Warrington Hospital, Warrington	Warrington	01925 635911
Whiston Hospital, St Helens & Knowsley	Liverpool	0151 426 1600
Cumbria & Lancashire		
Blackburn Royal Infirmary	Blackburn	01254 263555
Burnley General Hospital	Burnley	01282 425071
Cumberland Infirmary	Carlisle	01228 523444
Furness General Hospital	Barrow in Furness	01229 870870
Ormskirk & District General Hospital	Ormskirk	01695 577111
Royal Lancaster Infirmary	Lancaster	01524 65944
Royal Preston Hospital	Preston	01772 716565
Victoria Hospital	Blackpool	01253 300000
West Cumberland Hospital	Whitehaven	01946 693181
Greater Manchester		
Birch Hill Hospital	Rochdale	01706 377777
Booth Hall	Manchester	0161 795 7000
Central Manchester Trust Hospitals (MRI, St Mary's, Eye Hospital)	Manchester	0161 276 1234
Fairfield Hospital	Bury	0161 956 0007
Salford Royal	Salford	0161206 7373
North Manchester General Hospital	Manchester	0161 956 0007
Royal Albert Edward Infirmary	Wigan	01942 244000
Royal Bolton Hospital	Bolton	01204 390390
Royal Manchester Children's Hospital	Manchester	0161 794 4696
Royal Oldham Hospital	Oldham	0161 956 0007
Stepping Hill Hospital	Stockport	0161 483 1010
Tameside General Hospital	Tameside & Glossop	0161 331 6000
Trafford General Hospital	Trafford	0161 748 4022

ACUTE TRUSTS

South Manchester Foundation Trust (Wythenshawe)	Manchester	0161 998 7070
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NHS WALK-IN CENTRES**Greater Manchester**

Lever Chambers, 27 Ashburner Street, Bolton, BL1 1SQ	Bolton	01204 872725
18 Parsons Lane, Bury, BL9 0JZ	Bury	0161 763 2460
Fairfax Road, Prestwich, M25 1BT	Bury	0161 773 7832
Leigh Infirmary, The Avenue, Leigh, Lancs, WN7 1HS	Leigh	01942 264000
Burnage Health Centre, 347 Burnage Lane, Manchester, M19 1EW	Manchester	0161 443 0600
Manchester Royal Infirmary, Oxford Road, Manchester, M13 9WL	Manchester	0161 276 1234
Terminal 1, Manchester Airport	Manchester	0161 489 2109
1 st Floor Gateway House, Station Approach, Piccadilly South, Manchester, M1 2GH	Manchester	0161 233 2525
Wythenshawe Health Care Centre, Stancliffe Road, Manchester, M22 4PJ	Manchester	0161 946 9400
Withington Hospital, Nell Lane, Manchester, M20 2LR	Manchester	0161 217 3015
Lindley House, 1 John Street, Oldham, OL8 1DF	Oldham	0161 785 7500
90 Whitehall Street, Rochdale, OL12 0ND	Rochdale	0161 217 3015

NHS General		
Greater Manchester		
NHS Direct North West Second Floor Sefton House Northgate Close Middlebrook Horwich BL6 6PQ	General Telephone No: 01204 478700 Fax: 01204 478785 Contact for Health Alert: Office Hours – General Manager, Operations – Joanne Birkett (01204 478709 or 07880 500875	Out of Hours: Operational Supervisor – 01204 - 478750
NHS North West Communications On-call To contact the SHA Communications On-Call Manager (It is the role of the SHA Director on-call to activate communications support as appropriate	07824 463578	07824 463578
NHS North West	0161 223 4732 (Office Hours)	0161 223 4732 (Out of Hours)

Mental Health NHS Trusts		
Greater Manchester		
	Normal Working Hours	Out of Hours
Bolton, Salford & Trafford Mental Health NHS Trust	0161 772 3622	0161 773 9121
Manchester Mental Health & Social Care Trust	0161 882 1359	07966 658813
Pennine Care Mental Health Trust	0161 604 3000 (ask for the CEO's office)	0161 331 6000

EMERGENCY SERVICES		
Cheshire & Merseyside		
Police	Cheshire Merseyside	Tel: 01244 612270 (duty insp) Tel: 0151 777 4999
Fire	Cheshire Merseyside	Tel: 01606 868953 Tel: 0151 296 5263 (control) Tel: 0151 296 4000 (switch)
Ambulance	Merseyside & Cheshire	Tel: 0151 260 5220 (control)
Cumbria & Lancashire		
Police	Cumbria Lancashire	Tel: 01768 891999 (main) Tel: 01768 213814 (duty insp) Tel: 01772 614444 (main) Tel: 01772 410001 (duty insp)
Fire	Cumbria Lancashire	Tel: 01900 822503 Tel: 01772 866820
Ambulance	Cumbria Lancashire	Tel: 01228 596016 (control) Tel: 01772 865965 (main) Tel: 01772 773093 (duty mgr)
Greater Manchester		
Police	Greater Manchester	Tel: 0161 856 1671
Fire	Greater Manchester	Tel: 0161 736 5866
North West Ambulance Service		Tel: 0161 223 4732
Ambulance	Greater Manchester Ambulance Service Out of Hours and Weekend	Tel: 0161 438 4168 (24 hour control – ask to speak to Control Manager)

PUBLIC NUMBERS	
UNITED UTILITIES:	
Water	Tel: 0845 746 2200
Electricity (no supply) in United Utilities area	Tel: 0800 195 4141
Sewer / waste water problems (24 hrs)	Tel: 0845 602 0406
TRANSCO: National Grid	
Gas – Emergencies	Tel: 0800 111 999

UNITED UTILITIES DIRECT NUMBERS	
<i>These are direct numbers used by their operatives in the field and should not be used for anything less than dire/life threatening emergencies.</i>	
<i>Not for public information/circulation.</i>	
Ops Centre Urgent – Cheshire & Mersey (West Desk)	Tel: 01925 714812 (direct)
Emergency Only	Tel: 01925 714813
Ops Centre Urgent – Cumbria & Lancashire (North Desk)	Tel: 01925 714810 (direct)
Emergency Only	Tel: 01925 714809
Ops Centre Urgent – Greater Manchester (East Desk)	Tel: 01925 714807 (direct)
Emergency Only	Tel: 01925 714806

UNITED UTILITIES EMERGENCY CONTACT NUMBERS		
Water & Wastewater 24 hours ex directory contact numbers (not for general public use)	Ask for Duty Manager	Tel: 01925 714806 (East) Tel: 01925 714809 (North) Tel: 01925 714813 (West) Tel: 01925 714983 (Fax)
Electricity 24 hours – life & death issues	Cumbria/Lancashire/Greater Manchester and parts of Cheshire	Tel: 0161 236 6320 (ex directory)

Electricity general public and business numbers 24 hours For customer calls about loss of electricity supply only. All other queries should be directed to customer's supplier	(Cumbria/Lancashire, Greater Manchester and parts of Cheshire)	0800 195 4141
Electricity 24 hours general power outages	Cumbria/Lancashire/Greater Manchester and parts of Cheshire	Tel: 0800 1954141 Fax: 01925 463528

GREATER MANCHESTER HEALTH CONTROL	Tel: 0161 223 4732
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STRATEGIC HEALTH AUTHORITIES	
North West Strategic Health Authority	Tel: 0161 223 4732 (Manchester Health Control)

GOVERNMENT OFFICE NORTH WEST

Government Office North West

Tel: 0161 952 4000
Fax: 0161 952 4099

Emergency Response Contact Arrangements

Tel: 0161 952 4095

Fax: 0161 952 4006

Out of Hours

Pager: 0765 955 1103

Regional Resilience Team Contact Information

Tel: 0161 952 4146 Mobile: 07771 978920

Kathy Settle Regional Resilience Director

Tel: 0161 952 4226 Mobile: 07818 015860

Julie Dawber Regional Resilience Team Leader

Tel: 0161 952 4345 Mobile: 07771 815226

Graham Scott Regional Resilience Manager

Tel: 0161 952 4135 Fax: 0161 952 4090

General Enquiry Point

Email: rrt.gonw@go-regions.gsi.gov.uk

Address: Government Office for the North West, City Tower, Piccadilly Plaza, Manchester M1 4BE

0161 223 4732 (If no response within 1 minute ring:

Strategic Health Control Desk (24 Hours)

0161 866 2505

(In the event of an emergency rendering Strategic Health Control out of Action a back-up copy of the rota is held at the Royal Liverpool Hospital Switchboard)

Regional Director of Public Health Office – NHS North West

0161 237 2725

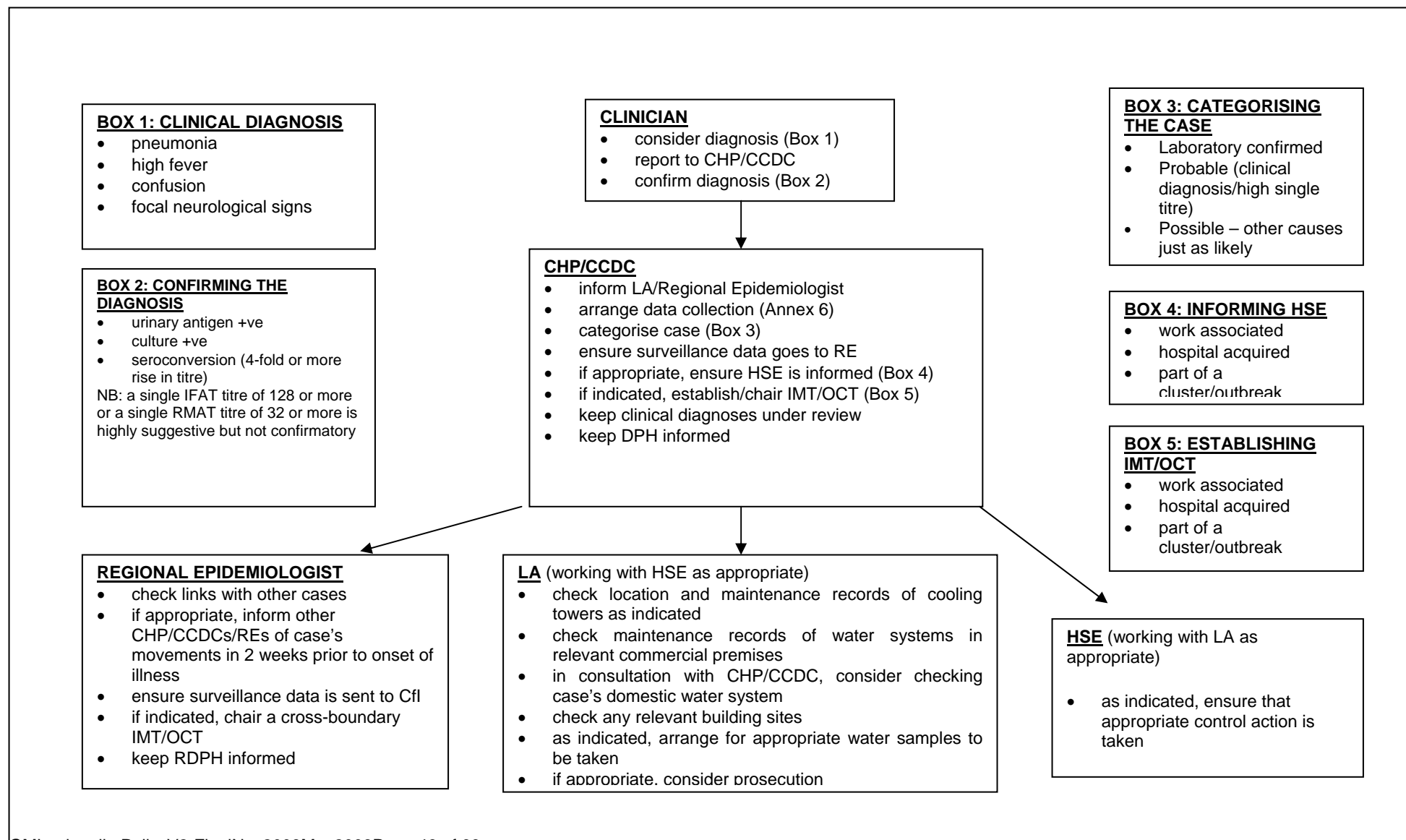
Royal Liverpool Hospital Switchboard

0151 706 2000

GOVERNMENT OFFICE NORTH WEST**GOVERNMENT AGENCIES**

Environment Agency (General Public)e.g. pollution incidents Dedicated Emergency Line	Tel: 0800 80 70 60 Tel: 0845 8503518 Fax: 0800 587 6032 Email: Incident_Communication_Service@environment-agency.gov.uk
DEFRA Animal Health Office Out-of-hours	Tel: 01772 861 144 Ring above number for pager number for duty officer Fax: 01772 861798
Department of Health, London (Duty Officer) Out of hours	Tel: 0207 972 5000 Tel: 0207 210 5371
Food Standards Agency Switchboard Emergency only/out of hours	Tel: 0207 276 8000 Tel: 0207 276 8960
NHS Direct Public number Management	Tel: 0845 46 47 Tel: 01204 599502
NHS Direct (Cumbria, Lancashire & Mersey)	Tel: 01772 773 130 (control)
NHS Direct (Greater Manchester, Cheshire & Wirral)	Tel: 01204 599 502 (control)
Health & Safety Executive	
Carlisle (Cumbria)	Tel: 01228 634100
Preston (Lancashire)	Tel: 0161 952 8200
Manchester (Cheshire, Mersey & Greater Manchester) Out-of-hours	Tel: 0161 952 8200 Tel: 0151 922 9235

Appendix 2 – Overview of investigation of suspected *Legionella* infection



Appendix 3 – Legislation relevant to *Legionella* control and the powers of officers

Legislation relevant to Legionella control and the powers of officers

Text in plain font is extracted from “Memorandum of understanding for the investigation and control of *Legionella* Infection in the North West Region” (October 2002).

Italicised text is additional comment

1 Health and Safety at Work etc. Act 1974

The most appropriate legislation to use to deal quickly with a source of Legionnaires’ disease is the Health and Safety at Work etc. Act 1974; this enables inspectors appointed under the Act to take all the necessary steps immediately to compel an occupier to clean and disinfect plant which is not being maintained to the standard required by the Approved Code of Practice and to prosecute if appropriate.

“According to the officer’s appointment and authorisation he or she may, subject to certain criteria:

- Enter appropriate premises at any reasonable time to carry out duties under the Act and associated statutory provisions
- Take a police constable
- Take another appropriately authorised person
- Take equipment and materials
- Carry out appropriate examinations and investigations
- Direct that premises or part of them are not disturbed
- Take measurements and photographs
- Take samples of articles or substances
- Subject any article or substance to test
- Take possession and detain any article or substance
- Expect truthful answers to questions
- Require production and, if appropriate, copies of records
- Require provision of facilities and assistance

All HSE inspectors possess the above powers.”

The duties in sections 2(1) and 3(1) extend to risks from Legionella. Employers and self-employed people are under a duty to conduct their undertaking so far as is reasonably practicable to protect the Health and Safety of people who may be affected by their undertaking (business) (sect2(1) & sect3(1)).

When considering “reasonably practicable”, precautions should be considered proportionate to the possible health impacts and risks. As these are significant, costly preventative measures are justified.

2 Environmental Protection Act 1990

The Environmental Protection Act allows properly authorised persons from the LA to enter premises, regardless of Health and Safety responsibilities, to investigate whether the premises are either prejudicial to health or a nuisance. In those circumstances any remedial work could only be undertaken by following a cumbersome notice procedure but this process does have the advantage of the LA being able to carry out work in default and recover costs.

“Section 79(1)(a) defines ‘any premises in such a state as to be prejudicial to health or a nuisance’ as a ‘statutory nuisance’. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or recur, an abatement notice may be served under Section 80(1). A 21-day appeal period to magistrates’ court is allowed, although in the case of an outbreak of Legionnaires’ disease it is possible that the notice may not be suspended pending the appeal. The powers of officers are set out in Schedule 3 of the Act. These include entry into non-residential premises at any reasonable time:

- To ascertain whether or not a statutory nuisance exists or to execute works
- To take other persons and equipment as may be necessary
- To carry out inspections, measurements and tests as considered necessary to discharge responsibilities under Part III of the Act. For example, to establish the existence of a statutory nuisance prior to service of an abatement notice
- To take away any samples or articles considered necessary for that purpose”

Entry into residential properties would require a warrant issued by magistrates:

3 Management of Health and Safety at Work Regulations 1999.

These regulations require all employers and self-employed to carry out risk assessments. Where 5 or more people are employed all significant risks are to be recorded.

The risk assessments should extend to the management and operation of susceptible services (air conditioning units, cooling towers, water systems etc).

4 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995. (RIDDOR).

Cases of Legionnaire’s disease are reportable under RIDDOR if a doctor notifies the employer and if the employee’s work involves work relevant water systems.

5 Notification of Cooling Towers and evaporative Condensers Regulations 1992.

http://www.opsi.gov.uk/SI/si1992/Uksi_19922225_en_1.htm

The Local Authority must be notified of relevant plant.

Note: Public Health (Control of Disease) Act 1984

“Legionnaires’ disease is not defined as a notifiable disease under the above legislation, and therefore LA officers would not be able to use the provisions of the Act in the investigation or control of a case or outbreak of the disease. Officers would not have the power of entry into premises, or the power to require the cleaning and disinfection of premises or articles. However, there is the provision under Section 16 of the Act, which enables LAs by order to direct that other diseases become notifiable. This action can only be taken in the event of an emergency and the order would have to be approved by the Secretary of State.

Again the PublicHealth (Infectious Diseases) Regulations 1988 do not cover Legionnaires’ disease.

The Public Health (Control of Diseases) Act 1984 would appear to be of very little use in the context of Legionnaires’ disease.

Appendix 4 – Guidance and codes of practice etc relevant to the prevention and control of *Legionella* infection

Guidance and codes of practice etc relevant to the prevention and control of *Legionella* infection

1 Legionnaires' Disease - the control of *Legionella* bacteria in water systems”.

Revised Approved Code of Practice under HASAWA. Reference L8. ISBN 0-7176-1772-6. Version no. LA01/2001

This ACOP gives practical advice on the requirements of the HASAWA and the COSHH Regulations. The ACOP also gives guidance on compliance with the relevant parts of the MHSWR Regulations.

Issues considered include:

- Risk assessment
- Training and competence
- Controlling risks
- Record keeping
- Responsibilities of manufacturers, importers, suppliers and installers

A copy of the “employers guide” is attached to this appendix.

2 HELA Guidance

- (i) HSE Operational circular OC255/12 LA version 02/02 – Control of *Legionella*: Investigation of Outbreaks (and single cases) of Legionellosis from water systems incorporating cooling towers and evaporative condensers.

<http://www.hse.gov.uk/lau/lacs/46-4.htm>

This circular is based on HSE operational guidance and provides a framework for conducting investigations into cases.

- (ii) HELA Circular 46/1 – Legionnaires' Disease

<http://www.hse.gov.uk/lau/lacs/46-1.htm>

General guidance for enforcement officers responsible for enforcing Health and Safety legislation at premises where there is a risk of legionellosis.

- (iii) HSE Operational Circular OC255/11 LA version 01/2001 – Control of *Legionella*: Revised code of practice.

Sets out details of the revised ACOP (L8) describing the most significant changes.

- (iv) HELA Circular 46/3 – Control of *Legionella* in wet cooling systems.

<http://www.hse.gov.uk/lau/lacs/46-3.htm>

This circular provides an audit pro-forma to use in assessing duty-holders compliance with the COSHH Regulations and the ACOP.

3 “Minimising the risk of Legionnaires’ Disease”

<http://www.cibse.org/index.cfm?go=publications.view&PubID=37&L1=164>

Chartered Institute of Building Service Engineers’ Code of Practice TM13. ISBN 900953-52-7.

4 “The control of legionellae in healthcare premises – a code of practice”

NHS Estates 1994. Health Technical Memorandum HTM 2040. HMSO.

5 parts:

- Management policy ISBN 0-11-321679-7
- Design considerations ISBN 0-11-321679-3
- Validation and verification ISBN 0-11-321681-5
- Operational management ISBN 0-11-321682-3
- Good practice guide ISBN 0-11-321683-1

5 “Safe hot water and surface temperatures”- Health Guidance note.

NHS Estates 1998. ISBN 0-11-3221584-4.

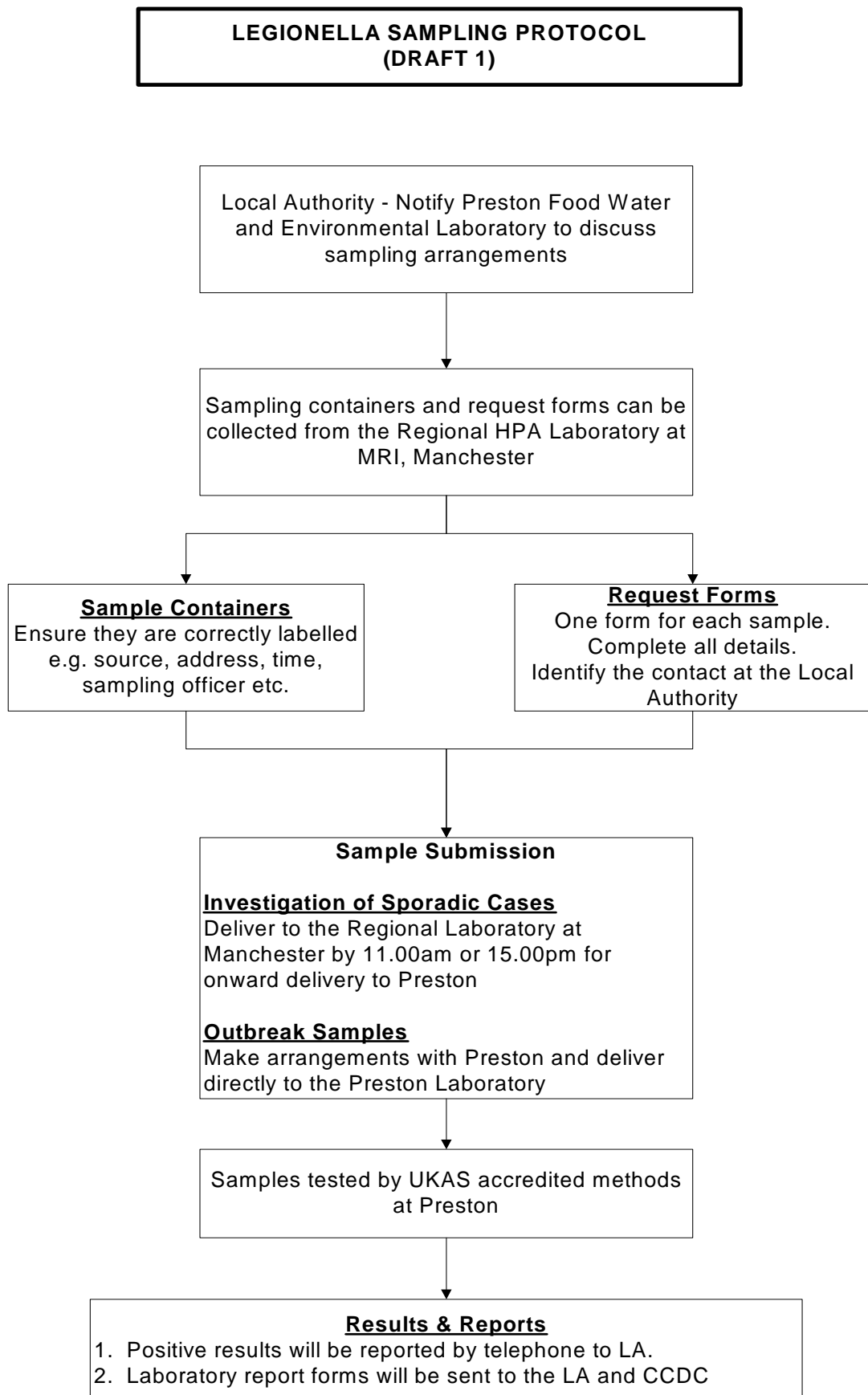
6 BSI 1992. British Standard BS 7592:1992. ISBN 0-580-21101-0

Sampling for *Legionella* organisms in water and related materials.

7 “Legionellae control in health care facilities: a guide for minimising the risk”.

HC Information resources. ISBN 0-9649926-4-7.

Appendix 5 – Sampling protocol and contracted samplers



Contact details of nominated samplers

Casella Winton (through Eurofins) are contracted to provide a rapid environmental sampling service for Legionella incidents, through the Technical Support Team (TST). They should be able to respond within 2 hours.

	Contact
During normal working hours	Casella GMSS - (0161) 868 7600
Outside normal working hours:	GMFS control room - (0161) 736 5866 Or TST mobile phones direct- 07884 235397, 07990 551404, 07884 235396

For general information on the TST contact Mike Shaw at Casella Winton - (0161) 8887100

Contact details of trained LA officers (*if appropriate*)

Within each Local Authority in Greater Manchester, there is at least one officer with enhanced training in *Legionella*. If the designated officer is not available within the Authority in which there is a *Legionella* incident, the trained officers from other Authorities may be called upon to assist.

Local Authority	Lead officer for Legionella	Contact details	Officer with enhanced training	Contact details
Bolton MBC	Barry Whitehead	01204 336534	Sheila Chisholm	
Bury MBC	Natasha Franklin Andrew Johnson	0161 253 5524 0161 253 5514	Natasha Franklin	
Manchester CC	Jenny Davenport Phil Quinlan	0161 234 4911	Samantha Deakin	
Oldham MBC	Steve Turner	0161 911 4454	Andrew Walsh	0161 911 4513
Rochdale MBC	Don Hannant Keith Avery	01706 864123 01706 864133	Gary Parkinson	01706 864138
Salford CC	Nigel Powell	0161 925 1354	Elizabeth Sutcliffe	0161 925 1350
Stockport MBC	Lynn Gee		Grant Cropper	

Tameside MBC	Ian Saxon Robin Monk Elizabeth Hodson	0161 342 2254 0161 342 3470	Sharon Smith	
Trafford MBC	Iain Veitch Nigel Smith Peter Lamb Elizabeth Woloschin	0161 912 4174 0161 912 4530 0161 912 4911 0161 912 4290	Peter Lamb	
Wigan & Leigh MBC	Tony Dickinson	01942 828189	Helen Whittaker	01942 827495

Appendix 6 – Guidance on sampling

Sampling of households for *Legionella* species

Prepared by Dr John V Lee & Dr Susanne B Surman³

PBLS Water and Environmental Microbiology Reference Unit & the London

Food Water and Environmental Laboratory, Food Safety Microbiology
Laboratory,

Health Protection Agency Specialist and Reference Microbiology Division

61 Colindale Avenue, London NW9 5HT

1 Applicable to

Detection of *Legionella* species in the water systems of dwellings (single houses and residential blocks) when investigating cases of Legionnaires' disease.

2 Safety Note

Individuals carrying out sampling should have received training in risk assessment and control of *Legionella*. During the course of an investigation, sampling staff may be exposed to potentially infectious aerosols. Precautions should therefore be taken during sampling to minimise the production of and avoid exposure to aerosols. Taps should be run gently to reduce the amount of splashing. Individuals who are in any of the high-risk groups (immunosuppression, transplant recipients and heavy smokers) should not be involved in sampling.

Samplers should also be trained in safe use of ladders and take appropriate safety precautions to prevent falling through ceilings when entering loft spaces. Individuals should wear personal protective equipment to avoid contact with or inhalation of insulation materials. Individuals should be trained in the recognition of asbestos and specialist advice should be sought if asbestos is present.

3 Equipment and Materials

Step ladder

Torch and batteries

Sterile 2.5 litre sample containers or new plastic containers. These should contain 180 – 200mg sodium thiosulphate to neutralise any chlorine or other oxidising biocides. NB. Some laboratories may require larger samples.

Plastic bags – food grade, new

³ http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947390280

Scissors

Sterile disposable dip samplers or sterile reusable metal dip sampler or sterile siphoning sampling device for sampling tanks.

Assorted spanners and screwdrivers

Stop-watch

Electronic thermometer – calibrated and measuring from about 10°C to 100°C

Rubber bands

Cool box

Disposable paper tissues or towel

Discard bags

Plastic squeeze/wash bottle or suitable alternative containing a disinfectant solution of 1:10 dilution of sodium hypochlorite solution (bleach) or 75% ethyl or isopropyl alcohol

Alcohol wipes

Disposable latex or equivalent gloves

Disposable overalls and other personal protective equipment

Sample request forms

4 Method

Samplers should be aware that samples may need to be divided so as to provide duplicate sub-samples for legal purposes. If this is the case, a minimum of 2 litre samples should be collected.

4.1 *Layout of hot and cold water system*

On entering the property carry out a preliminary survey to establish the layout of the hot and cold water system. Make a schematic diagram of the system that can be used later to clearly indicate where samples were collected. Establish the position of the header tank (if any) and water heater and all hot water outlets (taps, shower heads, etc.) on the system supplied by the hot water heater. Note the materials used for the piping and outlets (copper, galvanised steel, polybutylene, PVC etc). Determine which outlet is the nearest to the water heater (has the shortest length of pipe joining it to the water heater) (has the longest length of pipe joining it to the water heater). In large systems determine if any particular outlets were used by the patient.

In blocks of flats the cold water may come from a communal cold water tank in which case this should also be investigated. Occasionally communal hot

water systems that serve many flats may be encountered. These should be investigated and are akin to investigating systems in hotels or hospitals.

4.2 Water heater

Inspect the water heater. Note the type of heater i.e. electrical immersion; indirect from the central heating hot water; indirect with electrical immersion heater back-up etc. Note the construction materials and insulation. Record the temperature setting on the thermostat and for how long each day the heater is switched on. Follow the piping as much as possible and note where the nearest tap to the water heater is situated and the location of the furthest.

4.3 Hot outlet nearest to water heater

4.3.1 Immediate hot water sample

Record where the outlet is and its type (single tap, mixer tap, shower etc). If it is a shower follow the procedure described in paragraph 4.5 below. If it is a combination mixer tap with a shower outlet collect the following samples from the shower first using the sampling method described in paragraph 4.5 below. Label a sample container indicating the site etc and that this is the immediate sample. Record if the tap has any defects (dripping, leaking glands etc). Collect 1 litre of water and reseal the container. Run the tap for one minute and note the temperature. Precautions should be taken to minimise aerosol or spray production.

4.3.2 Postflush hot water sample

This sample is taken to obtain a sample representative of the pipe work and hot water cylinder rather than the colonisation of the outlet. It is preferable to collect such a sample from a simple tap rather than a mixer tap. If the tap used to collect the sample above was not a simple tap select an alternative if one is available. Clean the outside of the tap with an alcohol wipe or hypochlorite solution and, if the tap has not already been sampled, run the tap for about one minute. Disinfect the inside of the tap by squirting the disinfectant solution up inside the orifice of the tap. Wait for two minutes, turn the tap on and allow it to run for a further minute and then collect the sample without adjusting the flow of the water. Label it "post flush sample" in addition to noting its source etc.

4.4 Hot water tap furthest from hot water cylinder

Also collect an immediate sample from the hot water tap furthest from the hot water cylinder. This will normally be the kitchen tap.

4.5 Sampling showers

Inspect the shower noting its type (mixer connected to hot and cold tap on bath, separate pumped shower, instantaneous electrically heated shower etc) if it has a flexible hose or not and if it has any faults including dripping, scaling and mould growth or other deterioration of the hose and whether the cold

water is supplied to the mains directly. If connected to the hot water system set the temperature to maximum. For instantaneous showers leave the setting at its lowest temperature setting with the heater on (i.e. not on the cold setting where the electrical heater does not operate at all). Label a bottle and remove its cap storing it in a clean new plastic bag. Cut the end or a corner off a new food grade plastic bag. Insert the shower head into the plastic bag and hold the bag closed around the shower hose behind the shower head. Insert the other end of the bag into the open sample container. Keeping the bag closed behind the shower head (a rubber band may be used to facilitate this), carefully turn on the water flow so that a gentle flow is created and the water flows into the container. Alternatively remove the shower head, being careful not to lose any water that may be in the shower head, and collect the sample from the shower hose. Collect one litre of water and; note the temperature after allowing it to flow for one minute as before.

4.6 Header tank

4.6.1 In order not to disturb sludge or biofilm prior to taking the samples as described above, the header tank should be inspected and sampled last.

4.6.2 Inspect the header tank for the domestic hot water system. Be careful you do not confuse it with the central heating header tank. If you are not sure, leave a hot water tap running. The ball valve in the tank feeding the hot water system will eventually operate to let in fresh water. Note how well the tank is insulated, whether it is covered, the materials of construction, and the volume of water stored. Remove or push aside the cover so that the end furthest away from the inlet is uncovered. Take care not to allow dirt to enter the tank. Inspect the inside, noting if it is corroded, dirty etc.

4.6.3 Collect a sample of water from the tank using a sterile dip sampler or siphoning device or simply by dipping the sample bottle into the water. In the latter case particular care should be taken to avoid a cross contamination of samples. Wear a new pair of disposable gloves, disinfect the outside of the bottle with an alcohol wipe and allow the alcohol to evaporate away before collecting the sample. Seal the bottle. Dry the outside of the bottle with a fresh towel and discard the towel. Note the temperature of the water in the tank. Disinfect the thermometer after each use with an alcohol wipe. Change gloves before collecting the next sample.

4.6.4 Recover the tank making sure not to allow dirt to enter it.

4.7 Cold water

4.7.1 Bathroom cold tap

Collect an immediate sample of cold water from a bathroom cold tap noting if it is supplied from the cold water header tank or directly from the main. An indication of this can be obtained from the water pressure which should be

high if it is off the main. Measure the water temperature after the water has flowed for two minutes.

4.7.2 *Incoming mains water*

The kitchen tap should be connected to the main water supply. Use this to collect a sample representative of the incoming water. Run the tap for a minute and clean and disinfect it as in paragraph 4.4.2 above and collect a post flush sample.

4.7.3 *Water closets*

Water closet cisterns can become heavily colonised in areas with high ambient temperatures and should not be overlooked as potential sources. Collect a dip sample from the cistern.

If there are several bathrooms or wash hand basins be sure to collect samples representative of the whole system and those outlets most likely to have been used by the patient. In any case be sure to collect, at the very least, a sample from the outlets nearest to and furthest away from the hot water cylinder.

5 Other Potential Sources

Survey the property for other potential sources and collect samples from them. These might include:

- The central heating system particularly if the patient had worked on it in the two weeks prior to the onset of symptoms
- Spray bottles used to spray plants etc
- Greenhouse humidification systems
- Potting compost
- Spa pools

Sampling of commercial and industrial premises for *Legionella* species

Where Environmental Health staff are involved in such sampling it is recommended that similar principles are followed as for domestic properties. However, prior to any sampling commencing, the officer should clearly establish the nature and extent of the water supply services. Due to the complexity of such installations, the assistance of a building services engineer (preferably with site specific knowledge) will be essential. Where sampling proves essential it is recommended that the advice of the HSE is sought.

SAMPLING MUST ONLY BE CARRIED OUT BY TRAINED OFFICERS

Appendix 7 – Chain of evidence issues and practical implementation

INTRODUCTION

This chain of evidence guidance note is intended to provide the forms necessary to document possible medico-legal cases and should be used in conjunction with local guidelines and SOP's. This document contains suggested forms for the collection, transport, laboratory tests and storage of samples and specimens.

Medico-legal cases have become increasingly important. There have been several incidences where cases have been dismissed due to failings in documentation, in particular failure to establish a 'chain of evidence'.

CHAIN OF EVIDENCE

The 'chain of evidence' (or chain of custody) is a legal concept, which requires that the history and origin of any exhibit presented as evidence in a Court of Law must be clearly shown to have followed an unbroken chain from its source to the court. This chain must be intact at every stage to demonstrate that the sample or samples have not been interfered with and that the correct sample was tested and the results relate to the proper specimen. All persons handling the sample and the places and conditions of storage must be identified with times, dates and signatures where appropriate. Once the samples have reached the laboratory, the onus transfers to the microbiology laboratory to ensure that there is a specimen record, which accompanies the sample from its reception to the issue of a final report.

If a person is called as a witness, expert or otherwise, in a Court of Law he or she is permitted to refer to notes, lab books etc as an aide-memoir to his or her evidence. A Chain of Evidence Record as a booklet will negate the need/requirement to have the various documentation collated in order to present the "story" of; the sample being taken; its transit and receipt by the laboratory; the various tests undertaken with details of operators, batch numbers expiry dates of reagents and results in addition to all records of storage and re-testing. All these details will be entered and retrievable from ONE source, the Chain of Evidence Record booklet. The outcome being that ONE piece of documentation will hold ALL details, ONE document will have to be studied to provide the facts in any legal process and that ONE document need be taken and referred-to in court.

COLLECTION AND TRANSPORT

The Chain of Evidence record (CER) is a formal record of the specimen's progress from point of collection of the sample to the issue of the final report. The initiator of the specimen should complete the first part of a Chain of Evidence record (one record for each specimen), seal the sample in a tamper-proof container, label it fully and hand it to the next person in the chain. The Chain of Evidence record should include a fully documented (time, date, place and signatures) chain of persons handling the sample and in addition records the conditions of the specimen's storage.

The sample should be fully labeled and include:

- the name of the person initiating the chain
- description of the sample
- sample site
- the date
- the time (24 hour clock)
- signature of the person initiating the chain
- patient hospital number allowing the sample to be anonymous (if appropriate)

If the results of laboratory investigations are to be used as forensic evidence the Chain of Evidence record must be shown to be intact.

To demonstrate the validity of the chain ALL persons handling the sample should enter the following details on the CER:

- place of storage
- conditions of storage
- date
- time (24 hour clock)
- designation of custodian
- signatures of custodian.

If location of collection and the investigating laboratory are at two different locations the receiving laboratory should be informed that a medico-legal specimen is being sent to the lab. All couriers who handle the specimen(s) must be part of the chain of evidence and sign the record that accompanies the specimen.

NO breakdown or failure of the chain should occur. ALL details MUST be entered into the Chain of Evidence record at EVERY stage of its examination and storage and at every stage of retrieval from storage and re-examination of the specimen.

LABORATORY INVESTIGATIONS

At every stage of the process in the laboratory a record must be kept of who received the specimen, who processed it and how (with a record of the SOP followed), batch numbers of all reagents and kits used and that any equipment has been calibrated, regularly serviced and maintained and a record kept. If the specimen would normally be rejected a signed disclaimer stating 'this sample was processed in good faith by the laboratory' should be appended as a repeat specimen may not be available. The number of staff handling the specimen should be kept to a minimum. If confirmatory tests are indicated enough of these should be done, and of a different type, to prove isolate identity.

REPORTING

All telephone conversations relating to the specimen or isolate should be recorded. The final report should not contain any ambiguities or comment that could be interpreted in more than one way and the final report, together with all request forms, chain of evidence records and other paper work relating to the case should be kept in a locked filing cabinet.

REFERRAL OF SPECIMEN OR ORGANISM(S) TO ANOTHER LABORATORY (e.g. REFERENCE LABORATORY)

If the isolate(s) need to be referred to a reference laboratory for further specialist testing e.g. phage-typing or PFGE this should be fully documented and the reference laboratory informed as the chain of evidence must still be in place. The reference laboratory should be an accredited laboratory.

FINAL STORAGE

Isolates and specimens should be stored at -70°C indefinitely, preferably in a lockable freezer with restricted access.

These procedures represent good practice by the laboratory and tie in with ISO standard 17025:2000 together with CPA standards E3 (specimen collection and handling), E5 (specimen reception), E6 (referral to other laboratories) and F3 (assuring the quality of examinations).

RETENTION OF SPECIMENS AND RECORDS

The Royal College of Pathologists sets out guidelines for retention of routine patient records and pathology samples¹.

Although the ideal is that samples and records be kept indefinitely it is recognised that this is not always possible from a practical perspective. The current guidance states:

"It is established legally that the mere possibility of pathological material or related documentation constituting material evidence in future litigation is not a sufficient ground for the imposition of a duty to store indefinitely (Dobson vs North Tyneside HA [1996]). As litigation can arise very many years after the relevant treatment is complete, maintaining records for extended periods

sufficient to satisfy all potential medico-legal interests is unrealistic. It should be noted, however, that once particular legal proceedings have commenced or there is a reasonable expectation that they are about to commence, any archive destruction policy should be halted as to the documents or specimens relevant to that matter.”

FORMAT OF RETAINED RECORDS

Although written documentation is the preferred format for records it is acknowledged that this is not always possible from a practical perspective. The current guidelines state that electronic documents are acceptable; precise records must be kept of the documentation process (see extract below):

“However, courts are prepared to accept computerised records in civil cases and, provided additional safeguards are complied with, also in criminal cases. In criminal and civil cases, statements contained in documents that are received in evidence may be proven by copies of the original documents, provided that such copies are adequately authenticated. Thus, although original records are desirable, this must be balanced against the convenience and practicality of making copies or preserving them in computerised or microfiche form. However, as a matter of practice, it is necessary to maintain records of the fact of computerisation or of the copying process in relation to any documents, to facilitate subsequent authentication and admissibility.”

- 1 The Royal College of Pathologists. *The retention and storage of pathological records and archives (3rd edition)*. London: The Royal College of Pathologists, 2005

GUIDELINES FOR COMPLETING THE CHAIN OF EVIDENCE RECORD

Completion of this chain of evidence record brings together all the information relating to the collection, transport, laboratory testing and reporting.

All sections must be completed or struck through if not, however if the patients name is omitted for reasons of patient anonymity then the hospital or patient identifier number MUST be used.

All forms should be kept together. Form 2 Laboratory examination of specimens with medico-legal implications may be reproduced if further tests are needed in which case it should be renumbered 'Form 2.1, 2.2 etc'

Separate forms are included for:

- Taking and transport of specimens with medico-legal implications (FORM 1)
- Laboratory examination of specimens with medico-legal implications (FORM 2)
- Storage of specimens with medico-legal implications (FORM 3)

SPECIMEN COLLECTION WITH POTENTIAL MEDICO-LEGAL IMPLICATIONS: FORM 1

Department.....

Hospital.....

BLOCK CAPITALS MUST BE USED EXCEPT FOR THE SIGNATURE. ALL PATIENT AND SPECIMEN DETAILS MUST BE ENTERED BY PERSON TAKING THE SPECIMEN A SEPARATE RECORD MUST BE USED FOR EACH SPECIMEN TAKEN. FORMS 1, 2 AND 3 MUST BE KEPT TOGETHER

Person taking the specimen	
Patient's name (may be omitted if sample is to be anonymous but MUST include Patient's hospital or clinic number)	
Patient's date of birth	
Patient's hospital or clinic number	
Ward or clinic name or number	
Specimen site	
Date specimen taken	
Time specimen taken	
Name of person taking specimen	
Position title and grade of person taking specimen i.e. Doctor grade or Nurse grade	
Signature of person taking specimen	
Clinical details	
What was done with the specimen once taken	
If you as the person taking the specimen handed it to another person please sign in this box →	
If you as the person taking the specimen delivered it to the lab yourself please sign in this box →	
As the recipient of the specimen YOU MUST ENSURE Details on specimen match	
Date specimen received in lab	
Time specimen received in lab	
Name of person accepting specimen	
Position title of person accepting specimen i.e. BMS, MLA or MTO AND grade	
Signature of person accepting specimen	
Transport details of specimen i.e. received at room temperature, on ice etc	
Time lab number assigned	
Name of person assigning lab number	
Position title of person assigning lab number i.e. BMS, MLA or MTO AND grade	

**LABORATORY EXAMINATION OF SPECIMENS WITH MEDICO-LEGAL IMPLICATIONS
SPECIMEN TESTING FORM 2**

Patient and Specimen details	
Patient's name	
Patient's hospital or clinic number	
Specimen lab. Number	

SOP No.	Procedure	Reagent/kit		Operator			Tested		Result
		Lot no.	Expiry	Name	Grade	Signature	Date	Time	
	Final Result								Sent to reference laboratory Y/N Date sent Reference lab. No. Result Final storage location of specimen or isolate

STORAGE OF SPECIMENS WITH MEDICO-LEGAL IMPLICATIONS FORM 3

Patient and Specimen details	
Patient's name	
Patient's hospital or clinic number	
Specimen lab. Number	

	Specimen		Specimen handled		Operator / checker		
	In or out of storage	Temperature held at	Time	Date	Name	Grade	Signature
Operator							
Checker							
Operator							
Checker							
Operator							
Checker							
Operator							
Checker							
Operator							
Checker							

Appendix 8 - Abbreviations

Cfi	Centre for Infections, HPA
CHP/CCDC	Consultant in Communicable Disease Control
DPH	Director of Public Health
ELO	Enforcement Liaison Officer
EPA	Environmental Protection Act
EWGLI	European working group on <i>Legionella</i> infection
GMHPU	Greater Manchester Health Protection Unit
HSE	Health and Safety Executive
HPA	Health Protection Agency
ICN	Infection Control Nurse
LA	Local Authority
MBC	Metropolitan Borough Council
OCT	Outbreak control team
PCT	Primary Care Trust
RE	Regional Epidemiologist

Appendix 9 – *Legionella* infection Northwest investigation form

Available at:

http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947351676