LONDON BOROUGHS' LEGIONELLOSIS INCIDENT PROTOCOL

2018

Introduction

This document aims to clarify the roles, responsibilities and actions to be taken by London local authorities involved in the investigation and control of legionellosis.

Through enhanced co-ordination and clarification of purpose it will contribute to:

- Reducing the incidence of legionellosis acquired in the London Boroughs through more effective risk management, early detection, reporting of cases and identifying/controlling the spread of clusters and outbreaks
- Improving the consistency and efficiency of investigation and management of risk of legionellosis from environmental sources, including appropriate and proportionate enforcement action
- Developing effective platforms and mechanisms for partnership working
- Efficient management of sporadic cases and incidents (clusters and outbreaks)
- Improving public/community and business awareness of legionellosis and supporting risk management strategies and initiatives

Using the protocol

The document stands as an overarching strategy for relevant organisations within the London Boroughs to adopt the protocol and integrate the principles within their own standard operating procedure or work practices including data protection legislation. The protocol links to national strategies for the management and control of legionellosis.

Review

The protocol will be reviewed as necessary following updates in guidance, any significant changes affecting the relevant named protocol stakeholders, or in light of new evidence or experience from managing cases/outbreaks.

Acknowledgments

The document was originally produced through a multi-agency working group in 2012 and was reviewed in 2018. ALEHM thanks the following organisations for their contribution to this document:

Regulatory Services Partnership (Robin Ramen)
City of London (Toby Thorp)
London Borough of Tower Hamlets (Tom Lewis)
London Borough of Havering (Trudi Penman)
Public Health England Health Protection Teams (Ann Lusmore, Sara Atkins, Sudy Anaraki)
Public Health England Food, Water & Environmental Laboratory (Sandra Lai)

with additional thanks to Ella Murray (Regulatory Services Partnership)

All London Local Authorities have signed up to follow the principles of the London Boroughs' Legionellosis Incident Protocol

London Borough of Barking and Dagenham
London Borough of Barnet
London Borough of Bexley
London Borough of Brent
London Borough of Bromley
London Borough of Camden
City of London Corporation
London Borough of Croydon
London Borough of Ealing
London Borough of Enfield
Royal Borough of Greenwich
London Borough of Hackney
London Borough of Hammersmith and Fulham
London Borough of Haringey
London Borough of Harrow
London Borough of Havering
London Borough of Hillingdon
London Borough of Hounslow
London Borough of Islington
Royal Borough of Kensington and Chelsea
Royal Borough of Kingston upon Thames
London Borough of Lambeth
London Borough of Lewisham
London Borough of Merton
London Borough of Newham
London Borough of Redbridge
London Borough of Richmond
London Borough of Sutton
London Borough of Southwark
London Borough of Tower Hamlets
London Borough of Waltham Forest
London Borough of Wandsworth
London Borough of Westminster

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1. Roles and responsibilities of agencies and organisations

Table 1. Roles and responsibilities of agencies and organisations in the investigation of legionellosis

Agency/ Organisation	Roles and Responsibilities
NHS	• To provide rapid urinary antigen testing of suspected cases of legionella. • Health Protection (Notification) Regulations 2010 places a duty on registered medical practitioners to notify the proper officer of the relevant local authority (LA) (in London the Consultant in Communicable Disease Control/Consultant in Health Protection at the relevant HPT) if they have reasonable grounds of suspecting that a patient has Legionnaires' disease. • Notify Health Protection team (HPT) on clinical suspicion or confirmation of microbiologically confirmed cases of Legionnaires' disease from clinical samples. • The diagnosis made in the local laboratory should also be confirmed through submission of the positive sample (urine and sputum) to the Respiratory and Vaccine Preventable Bacteria Reference Unit reference Laboratory at the Public Health England (PHE), Colindale. • Support the HPT in the investigation and management of the case (or incident). • Attend outbreak control meetings as appropriate. • In a hospital outbreak, the Consultant in charge of infection control or Consultant Microbiologist are to convene and chair the Incident Control Team and invite any relevant partners including Environmental Health (EH) and PHE, as necessary.

Agency/ Organisation	Roles and Responsibilities
Public Health England (Health Protection Team)	• Inform and liaise with the LA EH team/Health and Safety Executive (HSE) as appropriate in the area of residence and other relevant potential areas for exposure of the patient, in order to discuss appropriate investigation of the source of the infection. • Surveillance of legionella infection and taking detailed case history from the patient (or relative) to establish possible risk factors and identify possible source(s) of infection, clusters and outbreaks, which is then shared with the national PHE legionella team. • Ensure appropriate data is collected in a timely fashion. • Identify and declare an outbreak/cluster and convene and chair an Outbreak Control Team (OCT) including liaison with the LA, HSE, PHE specialist labs (National Legionella Reference Laboratory and Food, Water and Environmental Microbiology Laboratory (FW&E)), epidemiology teams and scientists/clinicians etc. • Membership of partner OCT when appropriate. • Inform/update/liaise with the Director of Public Health and Public Health Consultant/Heath Protection leads in the relevant LA, PHE London Communications team, Deputy Director of Health Protection, PHE London regional microbiologist and food, environment and water teams, plus the local NHS trust/Clinical Commissioning Group if appropriate. • When appropriate, inform and liaise with neighbouring HPTs.
Public Health England (General)	• Take an overview of the surveillance and control of Legionnaires' disease cases occurring throughout the region, through the National Enhanced Legionnaires' disease surveillance scheme (NELSS) and National Legionella Surveillance Team. Receive surveillance data gathered by HPTs during investigations.

Public Health England (PHE FW&E/ National Legionella Team)	• Review the data and advise relevant HPTs on the need to explore any geographical or temporal links between other cases occurring elsewhere in the region. • Provide a testing service for clinical specimens from suspected and confirmed cases. • Provide access to a full laboratory service for testing water and environmental samples on a national level through PHE FW&E lab, Colindale. • Report all relevant sample results to the sending LA (and HPT as necessary) immediately by telephone and by written report in a timely fashion. • PHE FW&E would advise the LA on the technical aspects of sampling and support field sampling activities through provision of resources as available/appropriate. • Provide advice to the HPT and the Incident Management Team/OCT.
Local Authority	• LA may have two roles: ▪ Public health investigation to identify the source ▪ Carrying out health and safety enforcement under Health & Safety at Work legislation; as necessary, direct and lead in field investigation, partake in the investigation risk assessment process and use all local intelligence and knowledge to inform the investigation and to identify potential sources e.g. check the Cooling Tower Register, inspect premises and other environmental sources, where appropriate working with the HSE • The LA enforces the Health and Safety at Work etc. Act in premises allocated to them under the Health and Safety (Enforcing Authority) Regulations 1998. Under the Health and Safety at Work etc. Act 1974, inspectors approved under the Act, which includes all HSE inspectors, have powers to compel occupiers to clean and disinfect a plant which is not being adequately maintained to L8 standards. • Attend any relevant OCT in liaison with HPT as necessary. • Visit domestic premises and other potential environmental sources to undertake assessment of risk as necessary and, in discussion with OCT/HPT, visit relevant commercial premises and check risk assessments, water treatment, maintenance and monitoring records of water systems against legal requirements.

Local Authority (contd.)	• Where authorised to do so, take enforcement action where risks are not controlled, and compliance is not being met, in accordance with the LA enforcement policy. For the purposes of health and safety enforcement, this may only be in premises allocated to them under the Health and Safety (Enforcing Authority) Regulations 1998. However, other regulatory powers may be available for use where this is not the case. • Arrange for appropriate water samples to be taken. Coordinate with PHE FW&E laboratory, Colindale, to discuss sampling and testing arrangements prior to sampling. • Inform and liaise with neighbouring local authorities as appropriate. • Inform and liaise with local HSE Enforcement Liaison Officer as necessary where HSE enforced premises are implicated. This may include exploring the undertaking of investigation and sampling at those premises by the LA as appropriate. • Consider formal action in line with Enforcement Management Model principles and LA enforcement policy.

Health and Safety Executive	• The HSE enforces the Health and Safety at Work etc. Act in premises allocated to them under the Health and Safety (Enforcing Authority) Regulations 1998. HSE officers have the same powers as LA officers under the Health and Safety at Work etc. Act 1974. • Respond in accordance with HSE Operational Guidance [1]. • Examine the risk assessments, water treatment and monitoring programmes of water systems where the HSE is the lead health & safety enforcement agency (or otherwise co-ordinate with other parties to ensure the same). • Enforce where risks are not controlled, and compliance is not being met in accordance with the HSE enforcement policy. • HSE's policy is not to take samples from water systems **as it does not need evidence of sampling** to support a prosecution or any other enforcement action taken under health and safety legislation. HSE's aim is to assess the degree of compliance with the Approved Code of Practice (ACoP) and legionella sampling is too unreliable for this purpose. • Membership of the OCT when appropriate.
Care Quality Commission (CQC)	• CQC is the lead inspection and enforcement body under the Health and Social Care Act 2008 for safety and quality of treatment and care matters involving patients and service users in receipt of a health or adult social care service from a provider registered with CQC. • May have responsibility for enforcement regarding health risks in otherwise LA/HSE enforced premises, in accordance with the Memorandum of Understanding [2], even where staff members and public are at risk. • Membership of the OCT when appropriate.

2. Management of a single case of legionellosis

2.1 This section of the document provides guidance for the management of a single case of legionellosis and is adapted from the '*Guidance on investigating cases, clusters and outbreaks of Legionnaires' disease'*, PHE [3]. The protocol outlines the primary focus for action. However, there may be local and individual circumstances that necessitate a different approach. Any exceptions to the protocol need to be agreed between the relevant stakeholders. All single cases should be dealt with on a case by case basis and the level of investigation will depend on the LA involved and the circumstances of the case.

2.2 Usually, a case is reported to the HPT once a provisional diagnosis has been made. This will typically consist of clinical or radiological diagnosis of pneumonia combined with a positive *Legionella* urinary antigen test performed in the local laboratory.

2.3 HPT will complete a National Surveillance Scheme Reporting Form and will provide the HPZone reference number, a copy of the form, an indication of any implicated premises and any request for action to the relevant LA at the time of notification. The LA should consider whether further information is necessary and discuss the notification and any relevant local intelligence/other information of interest with the HPT.

2.4 If the case is believed to be community acquired, the LA should instigate a desktop evaluation to identify potential known environmental sources (Box 1) and undertake a public health risk assessment in conjunction with the HPT.

Box 1. Possible sources of community acquired legionellosis

- Residential properties (indoor and outdoor hot and cold water systems, compost, etc.)
- Places of work (domestic hot and cold water systems, showers, fountains, etc.)
- Cooling towers and evaporative condensers within 500 m of the case's known movements within the onset period
- Spas, hot tubs and therapy pools
- Large commercial water systems such as leisure centres or large hotels
- Car or jet washes
- Public water features/displays such as within shopping or garden centres
- Care homes

2.5 The desktop evaluation should account for any previous inspections, site visits or enforcement action history. The LA may then deem it necessary to undertake a field investigation to gather further information. If a relevant potential source is adjacent to a LA border, then that information should be provided to the HPT and neighbouring LA contact as necessary.

2.6 Effective field level investigation will require an assessment of compliance with known standards that are relevant for the water system in question using up to date guidance, such as L8, the HSG 274 series or HSG 282 but also relevant industry standards where applicable. The investigating officer must be competent with regard to the water system(s) being investigated. Any sampling undertaken should include the HPZone reference provided upon the sample submittal form to highlight that it is linked to an investigation/case.

2.7 Where specialist advice is required, the LA should consider contact with the PHE FW&E lab, the HPT, the HSE and other LA colleagues as necessary for assistance.

2.8 If a potential source of legionella is suspected consider the need for environmental sampling (*refer to 4. Environmental sampling).* LAs should adopt safe working practices during wet cooling tower inspections and sampling. Where a residential source is suspected then the LA is to have regard to the PHE guidance on household sampling [4] and may wish to provide a copy of the PHE leaflet [5] to the residents.

2.9 If a source of infection is identified or confirmed, ensure that action is taken to isolate and remove the source immediately and that appropriate remedial action is taken. If the source is residential, then PHE guidance on household water systems must be followed.

> **N.B:** In most cases, sampling of residential water outlets is only likely to be advisable if a nosocomial case is suspected, if a case has been housebound during the incubation period or if it would help exclude a case from a cluster (or an outbreak where relevant).

2.10 The LA officer will keep the HPT appraised and inform relevant partners such as neighbouring Authorities and the HSE of any significant information gathered during investigations, including where any premises have not been subject to field investigation.

2.11 In the event of a cross-boundary incident, the lead HPT should inform the neighbouring HPT and liaise with relevant stakeholders.

2.12 On conclusion of any necessary investigation, the relevant enforcing authority will decide on the appropriate course of action in line with their enforcement policy.

3. Management of a cluster or outbreak of legionellosis

When a cluster or outbreak is confirmed or suspected, an Outbreak Control Team (OCT) will be formed in accordance with existing national guidance. If they are not already involved the HPT will inform the appropriate LA officer(s), Director of Public Health (DPH) and relevant national/ London PHE colleagues as soon as possible.

3.1 Cluster

3.1.1 A suspected or an identified cluster (Box 2) would be declared by PHE and notified to the relevant Local Authority/ies for further investigation in accordance with the National Guidance [3].

Box 2. Definition of a cluster of legionellosis

A cluster is defined as 2 or more cases with onsets of symptoms that are close in time, within days or months depending on the category of exposure. If community acquired, there will typically be a common link within 6km and with an onset date of symptoms within 6 months of each other.

3.1.2 The LA should consider the strength of association of any commonality found to determine need/extent of further work, also taking into account the nature of the urban environment and relevant population density.

3.1.3 If an association to a cooling tower/evaporative condenser is evident then a sampling programme should be agreed and implemented in relation to those water systems. Whilst 500m is typically used as a limit to determine likely association to a cooling tower/evaporative condenser, the consideration should be flexible with regard that distance where wind conditions and height of heat rejection plant from the ground may contribute to greater (or lesser) dispersal of aerosol.

3.1.4 Other possible sources of infection should also be considered for sampling e.g. water features, spa pools, showers, etc.

3.1.5 Where the results of analysis establish a link between cluster cases, and there is strong epidemiological and/or microbiological evidence pointing to a single infection source, the definition will likely be revised by PHE to an outbreak and the investigation will be escalated accordingly. This may include a greater demand for sampling in a shorter timescale and will have resource implications for those involved.

3.2 Outbreak

3.2.1 Immediate action is essential and will include arrangements for invoking call-out procedures where the incident is reported outside normal office hours and LAs must have arrangements in place for this.

3.2.2 The HPT will ensure that steps are taken to obtain laboratory confirmation of the diagnoses where possible.

3.2.3 The LA will inform neighbouring LA's and the Health & Safety Executive (HSE) if appropriate; contact will be made through the relevant HSE Enforcement Liaison Officer.

3.3 Stage 1: Convene a full Outbreak Control Team

3.3.1 The HPT will convene an OCT meeting to review all available information and consider the need for further investigation and action. Clear and strong leadership of the OCT must be established immediately and leadership must have continuity throughout the incident.

3.3.2 Members of the OCT will vary based upon the context of the outbreak and Appendix 9 of the PHE guidance gives examples of appropriate roles and members. Local Authorities will be expected to attend as required and may need to support the convening of the OCT through contact and invitation to attend with key stakeholders such as the HSE, the CQC, other affected Local Authorities and any key local networks.

3.3.3 Where a premises registered with the CQC is implicated, they must be invited to join the OCT. Contact should be established in accordance with the HSE Operational Guidance [1] and the OCT and relevant stakeholders should agree who will arrange communication in the first instance. The CQC may be notified by email to **HSEIncidents@cqc.org.uk** but LAs/PHE are strongly recommended to phone the **CQC National Customer Service Centre**, clearly explain the nature and severity of the issue and ask to speak with an Inspector directly.

3.3.4 Should the CQC choose not to attend the OCT then investigation of the incident at the relevant premises may still continue but LAs are to be mindful of the potential limitation of their powers in accordance with the Memorandum of Understanding [2] i.e. use of the Health and Safety at Work etc. Act 1974 may be considered *ultra vires*. The CQC should be informed of investigation outcomes as necessary using the email above.

3.3.5 Clear documentation from the onset and throughout the investigation will be maintained by this group.

3.3.6 The initial meeting may take place via teleconference or convened at the offices of an OCT member organisation and will be determined by the circumstances at the time. If the Major Incident Plan has already been invoked, a larger Control Room could be required. The procedures for establishing a venue need to be agreed by local authorities and may be part of more general arrangements for emergency planning.

3.4 Stage 2: Initiate a response and control strategy

3.4.1 Box 3 contains sequences and headings that may be useful in establishing the course of incident management.

Box 3. Typical sequences and headings for establishing the course of incident management for legionellosis outbreaks

- Review clinical, epidemiological, microbiological and environmental evidence received so far
- Seek common links where there is more than one such case, particularly where other peripatetic workers are involved in the same premises
- Agreement of case definition
- Risk to the public and control of that risk
- Agree and implement a control strategy for the incident
- Agree an investigation process for the general area
- Agree a sampling strategy
- Decide when control team meetings will be held and communication links
- Decide on the dissemination of information to relevant bodies, public and media
- Decide how progress will be managed and administered, and information collection monitored
- Agree out of hours contact arrangements for all members

3.4.2 The LA media team must be kept informed of the outcome of the OCT decisions regarding information dissemination. Communication with the relevant PHE Communications team should be established to facilitate joint press releases etc. as necessary. Advice on any media strategy is contained within Appendix 9 of the '*Communicable Disease Outbreak Management: Operational guidance'*, PHE [6].

3.5 Control strategy

3.5.1 In an incident the emphasis needs to be on:

- control and prevention of further illness
- the identification of premises where water systems have not been effectively managed
- epidemiological data gathering
- the collection of robust information and evidence for any potential formal action

One could potentially compromise another but the **first consideration should be on control and prevention of further illness.**

3.5.2 The OCT should agree a strategy for managing the environmental investigation and control program. The team, through LA/HSE inspectors, should initially seek to eliminate the risk to people and focus on compliance with the legislation and the L8 ACoP. Where there is significant risk and clear failures to comply with the relevant legislation, enforcement (for example to disinfect the systems) should be taken to control the risk of further cases of Legionnaires' disease and allay public concern. This may include stopping processes and/or systems. The balance involves informing duty holders to shut down their systems and ensuring

this is done without compromising any sampling program or unduly delaying possible disinfection (and return to use). The OCT should be aware that if duty holders are informed of an impending visit, it is likely that they will shock dose the system which may reduce the likelihood of obtaining samples that effectively assist in locating the source. The use of laboratory PCR analysis techniques may assist in overcoming such concerns but should be clearly considered by the OCT and discussed as part of the sampling strategy with the HPT and PHE FW&E Laboratory.

3.5.3 HSE guidance document '*HSG274 Part 1*' [7] Appendix 3 details that emergency cleaning and disinfection of cooling towers implicated in an outbreak should be undertaken and '*HSG 274 Part 2*' [8] also advises that chemical or thermal disinfection procedures are carried out for other implicated water systems. Such methods are not guaranteed to provide long-term control and verification of effectiveness should be sought where necessary e.g. through follow-up sampling both immediately after any procedure and also after several weeks.

3.5.4 Information from any inspection programme should be collated and added to other environmental information and the microbiological and epidemiological information and any initial control strategy discussed and refined.

3.6 Investigation

3.6.1 The OCT will draw up a list of premises for inspection in the vicinity of the home or workplace of each case and places they regularly visit. This may include sports clubs, dental surgeries, residential and commercial premises which have systems known to be associated with legionella risk or which have the potential to create and release an aerosol which may be contaminated.

3.6.2 They will have regard to potential environmental sources, namely:-

- Cooling towers and evaporative condensers
- Hot & cold water systems
- Industrial process washing/cleaning systems
- Spas and therapy pools
- Humidifiers, humidified display cabinets, fountains and sprinkler systems
- Spray washing equipment

3.6.3 This list will be allocated to members of the team responsible for inspections. The aim of the inspections will be to check the water systems and associated processes for conditions where proliferation of *Legionella* could have occurred.

3.6.4 All inspections will include examining relevant documentation such as the risk assessment, the written scheme of control and any associated records. A visual examination of the system so far as is possible must also be undertaken in so far as is safe to do so (Box 4).

Box 4. Conditions to be checked when examining water systems

- Systems which permit likely aerosol formation
- The efficacy and management of any water treatment programme
- Water temperatures
- Possible stagnation and dead legs i.e. ow use outlets and un-occupied areas
- System cleanliness, scaled fittings, debris in associated water tanks
- Recent breakdown and/or work to services
- Locate intake for mechanical ventilation system, if any

3.6.5 The locations of cooling towers in a given area will need to be considered and a strategy devised for the further investigation of these sources. In areas where there is a large concentration of cooling towers this may take up a significant part of the investigative (and sampling) response and the investigation team should be mindful of the potential for aerosol distribution across LA boundaries.

3.6.6 A target area will need to be identified centred on relevant locations or routes where the case(s) lives, frequently works or their common travel route. This is most easily done using a GIS mapping system (ideally linked to the premises database or with a cooling tower layer available).

3.6.7 Circles of given radii – normally 250m, 500m, and 1000m - are scribed from the identified case locations and all the towers within each area should be identified including those which have been closed (and not physically removed from site). Wind data, to measure weather data, including wind strengths and direction in the period 21 days before onset of first symptoms, may be useful in determining how to prioritise resources for visits. The PHE Emergency Response Department, Porton Down should be contacted for GIS analysis.

3.6.8 The investigation may identify locations or routes close to or spread across various individual Borough boundaries. If so, the EH Departments or equivalent should be advised and brought into the OCT as necessary to enable more effective identification of candidate premises for investigation. All these authorities need to be familiar with this protocol and the level of response they may be required to give.

3.6.9 An inspection programme should be devised to include all the premises identified. Where there are a large number, an order of inspection priority should be adopted but all sites will need to be visited in the identified area including those enforced by HSE. Notification and, where possible, agreement with the HSE ahead of any visit should be attempted. Joint visits may be undertaken.

3.6.10 As part of the control strategy, consider contact with each of the identified premises with regard to informing them that the protocol has been invoked and that EH will be visiting the premises as soon as possible. The purpose of this is to make available a site engineer who will have sufficient knowledge of the site to provide assistance to the EH officer and take any action as may be required e.g. shock dose the system. Where the inspection can take place in sufficient time, contact ahead of the visit may not be required. The decision to contact or not should rightly consider any remedial action the premises may take ahead of the investigation team arriving, and the impact this may have upon the investigation outcomes.

3.6.11 Contact with the responsible person for the site is made to ensure the relevant information and/or person capable of taking any action are available. This can be via e-mail and it should explain what we require following activation of the protocol. The text should be agreed by the OCT as it may put incident details in the public domain.

3.6.12 An essential part of the inspection process is the gathering of appropriate information in a format that the OCT can use. Relevant aide-memoires can assist with consistency and form an effective record through which any anomalies and/or deficiencies in control measures can be communicated to the OCT. Where multiple investigators are to be involved, particularly from a number of LAs, the form of information recording should ideally be agreed prior to commencing the investigation.

3.6.13 The inspection procedure itself should be clear to all those involved and prior training on the nature of the inspection is considered essential in this respect.

3.6.14 A prime purpose of a proactive inspection program is to help prevent incidents. Officers trained in the inspection procedures for such inspections should be able to complete a similar examination in an incident situation. The same inspection procedure is advocated; that is an examination of the management systems (and associated records) followed by a physical examination of the system to which sampling can be added.

3.6.15 Each of the inspecting officers should check the recent enforcement history of sites they are to visit. The person nominated to manage the EH response above will have a list of the premises to be inspected and should allocate these to the officers involved. They should keep a check on individual's progress during the day.

3.6.16 Officers should visit each site according to the priorities laid out.

3.6.17 In an incident situation it is essential that inspecting officers have the requisite experience and competency to make informed decisions (quickly) about the status of the installations and the risk they present. Officers who have been involved in the inspection of cooling towers for at least six months (in the last two years) and who are authorized to serve improvement and prohibition notices (within the meaning of their Borough Enforcement Policy) should meet this criteria.

3.6.18 Other experienced and competent officers from across London may need to be seconded for other duties including water sampling and the collection of other epidemiological data. Boroughs will consider requests from the OCT and are encouraged to release officers if demands on their own services allow.

3.6.19 In an incident situation, arguments concerning not being able to turn off cooling towers because of operational concerns should not be entertained. There is a demonstrable public health need in assessing problems which must override inconvenience (even major inconvenience).

3.6.20 Further sampling procedure should be agreed and discussed as results of the inspection programme and other information are received. This should be agreed by the OCT and all sampling should be carried out with reference to '*The determination of Legionella bacteria in waters and other environmental samples (2005) - Part 1 - Rationale of surveying and sampling*' [9].

3.6.21 The inspecting officer should consider what additional measures may be required to control immediate risks. If in doubt, refer to the officer in charge of managing the EH response before initiating any further action.

3.7 Closure of the investigation

3.7.1 Upon completion of the investigation, the PHE and LA/HSE will review all the available evidence, at an appropriate time close the investigation, and where appropriate, document and share any lessons learned.

3.7.2 The public health investigation may be completed before any criminal investigation has been concluded. Care will need to be exercised when sharing lessons learned, so as not to prejudice future legal proceedings. It may be necessary to convene an independent panel, made up of personnel not involved in the criminal investigation to review and report on the investigation.

4. Environmental sampling

4.1 Environmental sampling for legionella may be considered when investigating single cases, clusters and almost always with outbreaks of legionellosis. Environmental sampling can be used to:

- Assist with the identification of potential sources of legionella
- Compare results with clinical samples
- Assess the effectiveness of any remedial action
- Eliminate a water system as the source of infection

4.2 However, careful consideration of the need for sampling is required before any sampling programme is instigated. The investigation and intelligence may be sufficient alone to identify the source. It is critical once the potential source has been identified to establish the efficacy of the risk management processes used within the premises/environment. Sampling to provide microbiological evidence is not required to support enforcement action under the Health and Safety at Work etc. Act 1974 legislation. It may however, be required if there is consideration of litigation for corporate manslaughter and assists with epidemiological data gathering.

4.3 Environmental sampling is recommended in outbreaks and personnel taking the samples should be appropriately trained and equipped. Environmental samples may be required from one or more locations, such as domestic dwellings (usually undertaken by a trained LA officer) or commercial sites, as well as from different water-based systems within these premises. Guidance is available to assist samplers and those preparing a sampling strategy.

4.4 In the event of a large incident or outbreak, the PHE FW&E Laboratory can provide support to the LA. However, PHE staff do not have specific legal powers to enter premises for the purpose of taking environmental samples and therefore, rely on the co-operation of authorised officers from the LA. If samples are required from premises located in different geographical areas, it may be necessary to enlist the support and co-operation of a number of local authorities. This may also result in sampling equipment being collected and samples being analysed by more than one laboratory. This might take some time to arrange and co-ordinate and should be factored into any investigation.

4.5 A risk assessment needs to be undertaken before any appropriately trained, experienced and equipped staff should undertake sampling. In some circumstances it may be appropriate for LA staff that 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 the PHE or a contracted agency to provide trained samplers. The LA EH managers/senior officers will take this decision and arrange for the necessary sampling to be undertaken. Contractors would need to be authorised for entry and competency.

4.6 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.

4.7 While the HSE will co-operate with sampling, HSE inspectors are instructed not to undertake sampling for legionella and HSE do not require such sampling as necessary for 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. It

would be anticipated that Local Authorities would make a joint visit with the HSE to ensure consistency and avoidance of duplication or mixed messages.

4.8 The sampler (LA or contractor) should obtain samples only after an appropriate sampling strategy has been agreed with PHE FW&E laboratory in London (Box 5).

Box 5. Considerations for a sampling strategy

- Availability of in-date sampling bottles/equipment
- What plant or equipment is to be sampled
- What type of samples are required
- The number of samples to be processed (to be kept under review)
- How will samples be collected and transported
- When will the laboratory/ laboratories receive them (date and time)
- The contact person for receipt of laboratory reports
- Collect temperature information from each sampling point
- The nature of the analysis to be undertaken

4.9 The environmental samples must be labelled by site of origin, exact location of sample point, the date and time taken and with an HPZone reference number where relevant.

4.10 Where water samples intended for *Legionella spp*. analysis are being transported by cool box to PHE FW&E Colindale, ensure that ice blocks used are defrosted prior to packing. Samples should be transported in the dark at ambient temperature.

4.11 PCR (polymerase chain reaction) analysis could assist with rapid elimination of a water system as a source of infection. PCR analysis for legionella on environmental samples is not currently offered on a routine basis. In an outbreak, the OCT Chair may discuss the need for PCR with PHE FW&E and coordinate for a portion of the sample concentrate to be sent to Porton Down for PCR testing.

4.12 In all medico-legal cases consideration has to be given to maintaining the 'chain of evidence'. This is a legal concept, which requires that the history and origin of any exhibit presented in a court of law must be clearly shown to have followed an unbroken chain from its source to court.

Appendix A. Legislation relevant to legionella control and the powers of officers

1. Health and Safety at Work etc. Act 1974

1.1 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 a plant which is not being maintained to the standard required by the ACoP and to prosecute if appropriate.

1.2 "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."

1.3 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) (section 2(1) & section 3(1)).

1.4 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

2.1 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.

2.2 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.

2.3 "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 a 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

2.4 Entry into residential properties would require a warrant issued by magistrates.

3. Management of Health and Safety at Work Regulations 1999

3.1 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.

3.2 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 2013 (RIDDOR)

4.1 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

5.1 The LA must be notified of the relevant plant.

6. Health Protection (Notification) Regulations 2010

6.1 Legionnaires' disease is a notifiable disease. There is a duty upon registered medical practitioners to notify the proper officer of the relevant LA of any suspected cases of Legionnaires' disease. The notification must be provided in writing within three days from the date of suspicion. The operator of a diagnostic laboratory must notify the Health Protection Agency when *Legionella spp*. are identified in a human sample.

7. Public Health (Control of Disease) Act 1984

7.1 Measures are contained in the Public Health (Control of Disease) Act 1984 (as amended) together with the Health Protection (Local Authority Powers) Regulations 2010 and the Health Protection (Part 2A Orders) Regulations 2010.

7.2 Powers that impose restrictions or requirements are conditional on strict criteria being met. Before making use of one of these powers, the LA or Justice of the Peace (JP) must be satisfied that the criteria relating to a particular threat to health are met. The criteria cover evidence of infection or contamination, assessment of the potential for significant harm to human health, risk of spread to others and necessity for action to be taken in order to reduce or remove that risk.

8. Local authority powers

8.1 These powers enable a LA to request or require action to be taken to prevent, protect against or control a significant risk to human health. They allow local authorities to:

- disinfect/decontaminate premises or articles on request;
- request (but not require) individuals or groups to co-operate for health protection purposes

9. Part 2A Orders

9.1 In other circumstances, a LA can apply to a JP for an order that imposes restrictions or requirements on a person(s) or in relation to a thing(s), a body or human remains, or premises. Provided the JP is satisfied that relevant criteria are met, an order can be made for the purposes of protecting against infection or contamination that presents, or could present, significant harm to human health. There are safeguards to protect the interests of individuals who may be the subject of an application for an order.

9.2 In addition, a JP can make a Part 2A Order requiring that:

- **a thing(s)** is seized or retained; kept in isolation or quarantine; disinfected or decontaminated; or destroyed or disposed of;
- **premises** are closed; premises are disinfected or decontaminated; a conveyance or movable structure is detained, or a building, conveyance or structure is destroyed

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Glossary

ACoP – Approved Code of Practice

CQC – Care Quality Commission

EH – Environmental Health

FW&E – Food, Water and Environmental Microbiology Laboratory

HPT – Health Protection Team

HSE – Health and Safety Executive

JP – Justice of the Peace

LA – Local Authority

OCT – Outbreak Control Team

PHE – Public Health England