Appendix 2:

Investigation of outbreaks of legionellosis from evaporative cooling systems.

Definition and scope of this guidance

This guidance relates to the investigation of outbreaks associated with evaporative cooling systems. It also provides guidance on when it might be appropriate to investigate single cases of disease

Background

Cases of legionellosis are primarily a public health issue and initiate investigation by the LA and the relevant NHS public health authorities. HSE is likely to be notified about single, as well as multiple, legionellosis cases, especially if there is a suspected link to HSE enforced premises.

On average, there are approximately 200-250 reported confirmed cases of Legionnaires' disease each year in England and Wales and it is thought that the total number of cases may be underestimated. About half of the cases are associated with travel abroad. Some clusters of cases and outbreaks occur for which no source of infection is confirmed. Legionnaires' disease is notifiable under public health legislation and registered medical practitioners have a duty to notify the relevant public health agency when they suspect a patient has contracted the disease. Legionnaires' disease is usually confirmed by a urinary antigen test.

Outbreak – definition and declaration

The Health Protection Agency (HPA) defines an outbreak (England and Wales) as two or more diagnosed cases linked by sufficient proximity in date of onset of symptoms, locality (place of residence, work or visited) and for which there is strong epidemiological evidence of a common source of infection, with or without definitive microbiological evidence. Health Protection Scotland (HPS) use the additional criteria of the cases occurring within a six-month period of the onset of illness from first case confirmed.

A judgement on which cases warrant further investigation is made by the Consultant in Communicable Disease Control (CCDC) in England and Wales, or by the Consultant in Public Health Medicine (CPHM) in Scotland. Declaring an outbreak will trigger the establishment of an Outbreak Control Team (OCT) [***NB: also referred to as Incident Management Team (IMT) or Incident Control Team (ICT); for ease of reference OCT will be used throughout this document].***

The Outbreak Control Team

The primary role of an OCT is to protect public health, and prevent further cases of disease. The aim will be to identify the source and control the risk as a matter of urgency.

The Chair of the OCT is usually an officer of the local authority or the NHS such as the Consultant in Communicable Disease Control (CCDC) in England and Wales and the Consultant in Public Health Medicine (CPHM) in Scotland. S/he would generally lead the investigation from the public health perspective.

Membership of the OCT is likely to include some or all of the following or their representatives:

- CCDC/CPHM and specialist staff from their team
- EHOs from the relevant LA(s)
- Consultant Microbiologist
- Representative(s) from HPA/HPS
- Clinicians
- NHS/LA Press/communications Officer

HSE can be invited to join the OCT and be directed to investigate all premises under its remit. HSE may also be asked to assist LAs, particularly with specialist support. HSE staff attending outbreak control meetings should normally be Band 2 or above with the necessary authority and experience to make strategic decisions, and advise members of the OCT on legal and technical matters. The input of an occupational hygiene specialist may be necessary at key meetings.

OCTs in England and Wales use a variety of local or regional incident protocols; Scotland has an agreed single national protocol http://www.documents.hps.scot.nhs.uk/about-hps/hpn/legionella-guidelines.pdf

The OCT will normally coordinate all the arrangements for the investigation of the outbreak including

- liaison cross-boundary and with other agencies;
- communication with the media, clinicians and other relevant personnel.

The OCT will meet as frequently as required and, ultimately, identify the end point of the outbreak, compile outbreak reports and identify lessons learned.

The outbreak investigation normally proceeds in two phases - a control phase, in which the objective is to minimise further cases and a second investigation phase. Where there are only a small number of installations within an outbreak zone, there may be a significant overlap between the two phases. In the investigation, HSE's objectives may differ from, but should not conflict with, those of the OCT.

Sampling – objectives and limitations

EHOs, acting under public health legislation, have powers to carry out sampling on all premises (including those that are HSE-enforced), usually in liaison with the relevant health protection body/laboratory, who may carry out the subsequent analysis. Depending on the findings on site, or the subsequent results of the analysis, dutyholders may be directed to carry out emergency cleaning and disinfection of their system, so called 'shot dosing' [NB *sometimes referred to as shock dosing]*

Sampling and analysis of system water can often fail to identify legionella for example

- by its very nature, sampling may fail to pick up bacteria in the system water if they are in low numbers and are embedded in biofilms on system surfaces
- bacteria may be missed due to the relatively small sample volumes taken (typically one litre or less) compared to system volumes which can be thousands of litres
- the bacteria may only have been present in the system transiently so sampling simply indicates no legionella was present when sampling took place; or
- sampling may have been carried out at an inappropriate point in the system eg downstream of a chemical dosing point.

In any event, the presence of legionella does not prove that an aerosol containing the bacteria was inhaled by anyone in the vicinity. Additionally, the sampling may not always be carried out at the most auspicious point in the system.

The judgement in the case R v Board of Trustees of Science Museum http://www.hse.gov.uk/foi/internalops/ocs/100-199/183_7.htm said that it was sufficient to prove that there was a risk of exposure and therefore potential for risk and no need to prove that there was actual harm. Since legionella is liable to be present in all water systems, a lack of control, suitable conditions for growth, or failure to prevent/minimise spread is sufficient to indicate a potential risk. Sampling is not considered necessary and, for reasons given in the preceding para, HSE's policy is not to carry out sampling.

Where the OCT requires microbiological analysis, HSE will be privy to this information. However any action taken by HSE must be in the context of the practical guidance in ACOP L8 and effective control. However, where analysis results are available which indicate that the dutyholder has failed to adequately control exposure, they can be utilised in any investigation and enforcement action, but not necessarily relied upon.

Inspectors should **not** take samples for the identification and quantification of legionella as HSE does not have the *vires* to sample on a public health remit. We have the vires to sample in HSE-enforced premises, but it is not our policy

to do so. If inspectors are requested to use their powers for legionella sampling, they should politely decline and explain HSE's position to the LA and the OCT.

Coordination

It will be necessary to ensure that any necessary action is coordinated between all agencies participating in outbreak investigations. Inspectors should take enforcement action where justified, after applying the EPS and the EMM. The views and action of the other agencies should be taken into account where appropriate. Inspectors should be satisfied that the relevant demarcation of responsibilities for investigation, enforcement and the provision of information has been agreed by the outbreak committee. Where other agencies take responsibility for communication with the media, inspectors must ensure that those agencies:

- are made aware of any statutory restrictions on disclosure of information; and
- do not disclose information about HSE-enforced premises without prior consultation.

HSE's role in outbreak investigation

Operational managers should consider a team response:

- nominating an inspector to lead the investigation on behalf of HSE;
- using operational support including VO assistance;
- identifying inspectors with the necessary training and competence;
- obtaining support from occupational hygiene specialist inspectors

Generally, the investigation should be led at Band 2 level. HID may also have premises for which they have enforcement responsibilities in the outbreak zone and the lead inspector should ensure that all relevant information is communicated to the local HID Band 2 inspector. The Head of Division, Regional News Network colleagues and HSE Press Office should also be kept informed. Press Office will take the lead on co-ordinating with the press offices of partner organisations.

The number of inspectors required will primarily depend on the number and range of HSE-enforced premises in the outbreak zone. Subsequent resource requirement will be determined by how quickly the number of potential sources can be narrowed down. Inspectors may need to be drawn from several groups, including HID groups, depending on the availability of suitably trained personnel and the premises to be visited.

HSE's Major Incident Response Plan may need to be invoked when for example:

- there is a major legionellosis outbreak;

- the scale of the outbreak requires more HSE resource than can be provided locally;
- a very large number of cases appears to be associated with one HSE-enforced site; or
- if the scale of local public and political concern is a major factor.

http://www.hse.gov.uk/foi/internalops/og/ogprocedures/majorincident/

The major incident investigation team would continue to work alongside the OCT

HSE's VOs may provide assistance in gathering intelligence eg
- obtaining lists of notified premises from LAs
- searching for suspect premises in the outbreak zone
- information to identify any non-notified installations.

The latter should focus on industrial processes and premises having a need to dissipate heat such as foundries, plastics manufacture, chemical and food manufacturing. In addition, processes involving freezing and chilling and/or use of water systems that store water and create aerosols should be identified.

Control phase

HSE inspectors should visit all HSE-enforced premises with notified installations within the outbreak zone to undertake a preliminary assessment. EHOs will undertake a parallel exercise in LA-enforced premises in addition to undertaking visits to all suspect premises in the outbreak zone and sampling under public health legislation. The inspection procedure should follow that for inspections described in Appendix 1.

Rapid assessment and decisions are likely to be required in order to limit the risk to public health. This may involve the use of both Prohibition Notices and powers under HSW s.20. EHOs visiting HSE-enforced premises for sampling purposes are likely to encourage dutyholders to disinfect and clean their systems when sampling is completed. Where possible, HSE and EHOs should co-ordinate their inspections in order that important evidence regarding the condition of the installation is not lost. Appendix 4 provides guidance on enforcement.

Investigation phase

During this phase, HSE's objective is to ensure that the risk of exposure posed by cooling plant is properly controlled, based on inspectors' assessment, following the practical advice in ACOP L8. In contrast, the OCT is concerned with identification of the source of the outbreak and protecting public health. HSE may appear less concerned with determining the source of the infection, and this difference in emphasis may be interpreted as lack of co-operation by OCT partners. Clarification of roles and responsibilities at an

early stage should avoid misunderstandings or unrealistic expectations from the outset.

Premises deemed to have posed a potential risk in the control phase may need to be re-visited and assessed in more detail during the investigation phase. Where the dutyholder engages a water treatment contractor (WTC), the WTC is likely to be present during the investigation and able to provide assistance on specific technical aspects of the installation, and the cleaning and maintenance regime.

Investigation of single cases of legionellosis

Individual cases of Legionnaires' disease, particularly affecting members of the public, are regularly notified to HSE with the expectation that we undertake or become involved in an investigation.

In the event of a fatal or non-fatal case of Legionnaires' disease to a member of the public, the Band 2 should follow the http://www.hse.gov.uk/enforce/hswact/priorities.htm

Once a decision has been made to carry out an investigation, the B2 should carefully define the scope and extent. For most situations, the workplace posing the most likely source of infection should be inspected with a view to examining all water systems that could present a risk and enquiries should not be restricted to evaporative cooling systems. Depending on the findings of the initial investigation, a decision may then be necessary as to whether to extend this to other premises in the vicinity. The decision to proceed should be based on careful judgement, balancing public concern against the risk of further infections. The latter will depend on factors such as the type of industries, the density of population and premises and the presence of susceptible groups of people.

As is the case with outbreaks, EHOs will be involved to deal with any potential public health risk. LAs requesting the assistance of HSE Occupational Hygiene Specialists should do so via the relevant Enforcement Liaison Officer (ELO) or partnership team.

Work-related death protocol

Where death results from a case or cases of suspected legionella exposure from a work activity, the police should take primacy in accordance with the Work-related Death Protocol: http://www.hse.gov.uk/pubns/wrdp1.pdf

Legislation

Occupiers have a duty under the Notification of Cooling Towers and Evaporative Condensers Regulations 1992 (NCTEC) to notify LAs of cooling towers and evaporative condensers on their premises, except where they contain no water that is exposed to air, and/or their water or electricity supply is not connected. The main purpose of notification is to assist in identifying where such devices are located in the event of an outbreak of legionellosis.

The Environmental Protection Act 1990 (EPA) and Public Health etc (Scotland) Act 2008 allow LAs to make provision for matters pertaining to the protection of public health, including pathogenic organisms. This gives LAs the power to enter premises and take samples, irrespective of whether the premises are enforced by HSE or LAs under health and safety legislation.