DARTMOUTH DENTAL PRACTICE

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Preventing and controlling the risk from exposure to legionella bacteria

(Refer to Control of Substances Hazardous to Health Regulations 1999, Regulation 7 and 9 Health and Safety at Work etc. Act 1974, Sections 2, 3 and 4)

Date	Amendment/Change
Saturday, 27 June 2020	Review - no changes
Monday, 12 August 2019	Review and update - spelling correction and inclusion of this change log
Thursday, 24 May 2018 v4	Document review
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Tuesday, 3 July 2012 v2	Schematics produced for each floor of practice
Saturday, 12 May 2012 v1.1	Legionella Management Training Course - document review post course - Dr Alison Jack PhD
Wednesday, 26 January 2011 v1	Document creation

What is Legionella?

Legionnaires' disease is a potentially fatal form of pneumonia which can affect anybody, but which principally affects those who are susceptible because of age, illness, immunosuppression, smoking etc. It is caused by the bacterium Legionella pneumophila and related bacteria. Legionella bacteria can also cause less serious illnesses which are not fatal or permanently debilitating (see below). The collective term used to cover the group of diseases caused by legionella bacteria is legionellosis.

- Legionnaires' disease was first identified following a large outbreak of pneumonia among people who attended an American Legion Convention in Philadelphia in 1976. A previously unrecognised bacterium was isolated from lung tissue samples which was subsequently named Legionella pneumophila.
- It is normally contracted by inhaling legionella bacteria, either in tiny droplets of water (aerosols), or in droplet nuclei (the particles left after the water has evaporated) contaminated with legionella, deep into the lungs. There is evidence that the disease may also be contracted by inhaling legionella bacteria following ingestion of contaminated water by susceptible individuals. Person-to-person spread of the disease has not been documented. Initial symptoms of

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Legionnaires' disease include high fever, chills, headache and muscle pain. Patients may develop a dry cough and most suffer difficulty with breathing. About one third of patients infected also develop diarrhoea or vomiting and about half become confused or delirious. Legionnaires' disease can be treated effectively with appropriate antibiotics.

- The incubation period is between 2-10 days (usually 3-6 days). Not everyone exposed will develop symptoms of the disease and those that do not develop the 'full blown' disease may only present with a mild flu-like infection.
- Infection with legionella bacteria can be fatal in approximately 12% of reported cases. This rate can be higher in a more susceptible population; for example, immunosuppressed patients or those with other underlying disease. Certain groups of people are known to be at higher risk of contracting Legionnaires' disease; for example, men appear more susceptible than women, as do those over 45 years of age, smokers, alcoholics, diabetics and those with cancer or chronic respiratory or kidney disease.
- The disease is usually diagnosed by a combination of tests. The organism may be cultured from the patient's sputum, bronchial washings or lung tissue. Alternatively, tests are used to measure the presence of antibodies in the blood and, increasingly, tests are available to measure specific antigens in the patient's urine.
- L. pneumophila is also responsible for a short feverish form of the illness without pneumonia, known as Pontiac fever. Its incubation period is typically between 2-3 days. Another species of legionella, L. micdadei, is responsible for a similar form of the illness without pneumonia called Lochgoilhead fever after an outbreak in Lochgoilhead, Scotland. The incubation period can be up to 9 days. A high percentage of those exposed to this agent tend to be affected. However, there have been no recorded deaths associated with either Pontiac or Lochgoilhead fevers.
- To date, approximately 40 species of the legionella bacterium have been identified. L. pneumophila causes about 90% of cases. Sixteen different serogroups of L. pneumophila have been described; however, L. pneumophila serogroup 1 is most commonly associated with cases of Legionnaires' disease in the UK.
- L. pneumophila serogroup 1 can be further sub-divided to distinguish between strains most commonly associated with Legionnaires' disease. Additionally, 'genetic fingerprinting' methods such as Restriction Fragment Length Polymorphism (RFLP) and Amplified Fragment Length Polymorphism (AFLP) can be valuable tools in the investigation of outbreaks. Such methods of typing can

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sometimes provide a means of linking the organisms isolated from patients to the sources of cases of outbreaks.

To comply with their legal duties, employers and those with responsibilities for the control of premises should:

- Identify and assess sources of risk - this includes checking whether conditions are present which will encourage bacteria to multiply, e.g. is the water temperature between 20-45°C; there is a means of creating and disseminating breathable droplets, e.g. the aerosol created by a shower or cooling tower; and if there are susceptible people who may be exposed to the contaminated aerosols.
- Prepare a scheme for preventing or controlling the risk.
- Implement, manage and monitor precautions - if control measures are to remain effective, then regular monitoring of the systems and the control measures is essential. Monitoring of general bacterial numbers can indicate whether microbiological control is being achieved. Sampling for legionella is another means of checking that a system is under control.
- Keep records of the precautions.
- Appoint a person to be managerially responsible. At our practice this person is Keith Roberts.
- Where the assessment shows that there is a reasonably foreseeable risk, the use of water systems, parts of water systems or systems of work that lead to exposure has to be avoided so far as is reasonably practicable.

Where this is not reasonably practicable, there should be a written scheme for controlling the risk from exposure which should be implemented and properly managed. The scheme should specify measures to be taken to ensure that it remains effective. The scheme should include:

(a) an up-to-date plan showing layout of the plant or system, including parts temporarily out of use (a schematic plan would suffice)

(b) a description of the correct and safe operation of the system

(c) the precautions to be taken

(d) checks to be carried out to ensure efficacy of scheme and the frequency of such checks; and

(e) remedial action to be taken in the event that the scheme is shown not to be effective.

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The risk from exposure will normally be controlled by measures which do not allow the proliferation of legionella bacteria in the system and reduce exposure to water droplets and aerosol. Precautions should, where appropriate, include the following:

(a) controlling the release of water spray;

(b) avoidance of water temperatures and conditions that favour the proliferation of legionella bacteria and other micro-organisms;

(c) avoidance of water stagnation;

(d) avoidance of the use of materials that harbour bacteria and other micro-organisms, or provide nutrients for microbial growth;

(e) maintenance of the cleanliness of the system and the water in it;

(f) use of water treatment techniques; and

(g) action to ensure the correct and safe operation and maintenance of the water system.

Once the risk has been identified and assessed, a written scheme should be prepared for preventing or controlling it. In particular, it should contain such information about the system as is necessary to control the risk from exposure.

The primary objective should be to avoid conditions which permit legionella bacteria to proliferate and to avoid creating a spray or aerosol. It may be possible to prevent the risk of exposure by, for example, using dry cooling plant, adiabatic cooling systems or point-of-use heaters (with minimal or no storage). Where this is impractical, the risk may be controlled by minimising the release of droplets and by ensuring water conditions which prevent the proliferation of legionella bacteria. This might include engineering controls, cleaning protocols and other control strategies. Decisions should be made about the maintenance procedures and intervals, where relevant, on equipment used for carrying out the control measures. Legionella bacteria may be present in very low numbers in many water systems but careful control will prevent them from multiplying.

In general, proliferation of legionella bacteria may be prevented by:

a) avoiding water temperatures between 20°C and 45°C - water temperature is a particularly important factor in controlling the risks;

b) avoiding water stagnation, which may encourage the growth of biofilm; avoiding the use of materials in the system that can harbour or provide nutrients for bacteria and other organisms;

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c) keeping the system clean to avoid the build-up of sediments which may harbour bacteria (and also provide a nutrient source for them);

d) the use of a suitable water treatment programme where it is appropriate and safe to do so; and

e) ensuring that water systems operate safely and correctly and are well maintained.

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Risk Assessment

We have conducted a survey of the premises and believe the risk to be low. This is because:-

1. There have not been any reported incidents of legionella type symptoms in the practice to our knowledge.
2. Our patient profile suggests that we will encounter patients who represent a higher than normal risk if exposed to the legionella bacteria. Our procedures reduce this risk.
3. We have no water storage tank.
4. We use instantaneous water heaters with non-return valves.
5. Water use is high and regular (minute by minute, daily).
6. Aerosol spray is minimised.
7. All water lines are purged daily and flushed with an approved bactericide.
8. Our daily surgery procedures include purging of all waterlines, spittoons and suction systems.
9. Demineralised water is used for surgical procedures where there is small risk of aerosol.
10. We employ policies, procedures and protocols to manage the risk of exposure to legionella bacteria. In particular:-
    - 10.1. Cleaning the practice
    - 10.2. Cross Infection Control Policy
    - 10.3. Cross Infection Control Procedure Audit
    - 10.4. Clinical Governance Framework Audit (Final) 2009 Dartmouth
    - 10.5. Dental Unit Water Lines (DUWL) Flushing
    - 10.6. Hand Washing
    - 10.7. Legionella Risk Procedure (this procedure)
    - 10.8. Surgery Cleaning Procedure
    - 10.9. Surgery Cleaning Surgery Notice
    - 10.10. Surgery protocols used before, during and after a patient undergoes a dental procedure of any kind
11. Areas that could expose patients and staff to legionella are
    - 11.1. dental procedures when using the **high speed turbines** which use a water mist to assist cooling and wash away debris from the

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immediate treatment area (debris being removed using dedicated suction systems).

11.2. **3 in 1 Syringes** at the dental units.

11.3. **Suction system** at the dental unit.

11.4. **Ultrasonic Scaler** at the dental unit

11.5. **Hand washing facilities** in surgeries and in staff and patient toilets.

11.6. **Fire extinguishers** (if and when used in an emergency).

11.7. **Hot Water Systems** - There are no hot water systems (heating) on the premises

11.8. **Cold Water Systems** - No water storage tanks are used on the premises to store water. All hand-washing facilities are supplied by instantaneous hot water heaters plumbed into the mains water supply.

12. High speed turbines

12.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C? - ~~**YES**~~**/NO** - are high speed turbines supplied directly from the mains water supply via as short lengths of pipe as possible? **YES/**~~**NO**~~ The delivery hoses (DUWL) from the dental unit have non-retraction valves fitted to prevent water reflux. The DUWL are flushed through at the end of each day in accordance with the manufacturers procedures and once a week using a recommended biocide - Unodent Water Supply Cleaner Concentrate.

12.2. Is it possible that water droplets will be produced? - **YES/**~~**NO**~~. High speed turbines are use throughout dentistry as the only practical way way of removing caries. The speed and friction involved cam cause local heating and the only practical way of dissipating heat is to cool with a fine water spray. This spray is continuously removed from the vicinity of the patients mouth with a suction device used to remove debris from the patients mouth.

12.3. Could they be dispersed over a wide area? - **YES/**~~**NO**~~**.** This is minimal as a suction device is used at all times to prevent the patient from drowning.

12.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets?- **YES/**~~**NO**~~**.** But this is minimised.

13. 3 in 1 Syringes

13.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - ~~**YES**~~**/NO**

13.2. Is it possible that water droplets will be produced? - **YES/**~~**NO**~~

13.3. Could they be dispersed over a wide area? - **YES/**~~**NO**~~

13.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/**~~**NO**~~**.** But this is minimised.

14. Suction system

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14.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - **YES/~~NO~~**. Measures are taken to minimise bacterial growth and written down in pour policies and procedures.

14.2. Is it possible that water droplets will be produced? - **YES/~~NO~~**

14.3. Could they be dispersed over a wide area? - **YES/~~NO~~**

14.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

14.5. The Suction is flushed through at the end of each day in accordance with the manufacturers procedures and once a week using a recommended biocide - Durr Oratol.

15. Hand washing facilities

15.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - **~~YES~~/NO**

15.2. Is it possible that water droplets will be produced? - **YES/~~NO~~**

15.3. Could they be dispersed over a wide area? - **~~YES~~/NO**

15.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

16. Fire extinguishers

16.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - **YES/~~NO~~** All fire extinguishers are of the canister type and are under contract to be services and maintained by Dart Fire protection. All extinguishers are changed periodically or re-charged.

16.2. Is it possible that water droplets will be produced? - **YES/~~NO~~**. Only in an emergency/fire situation when loss of life is possible due to fire.

16.3. Could they be dispersed over a wide area? - **YES/~~NO~~**. This is the nature of a fire extinguisher.

16.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

17. Hot water Systems

17.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - **~~YES~~/NO**. Closed systems are used throughout the practice and these systems are connected directly to the cold water supply. All hot water is heated as required through the use of instantaneous water heaters.

17.2. Is it possible that water droplets will be produced? - **~~YES~~/NO**

17.3. Could they be dispersed over a wide area? - **~~YES~~/NO**

17.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

18. Cold Water Systems

18.1. Are conditions present which will encourage bacteria to multiply? For example, is the water temperature between 20-45°C and are nutrients present to encourage bacterial growth - **~~YES~~/NO**

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18.2. Is it possible that water droplets will be produced? - **~~YES~~/NO**

18.3. Could they be dispersed over a wide area? - **~~YES~~/NO**

18.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

19. Air Conditioning Units

19.1. Water is **NOT** used for chilling purposes. A refrigerant is used within a sealed and contained system. The refrigerant is a gas (butane) and is compressed and expanded. The expansion of the gas causes a change of state from liquid to gas and hence a chilling effect is achieved. There is no risk of legionella in these units.

19.2. Is it possible that water droplets will be produced? - **~~YES~~/NO**

19.3. Could they be dispersed over a wide area? - **~~YES~~/NO**

19.4. Is it likely that anyone particularly susceptible will come into contact with the contaminated water droplets? **YES/~~NO~~.** But this is minimised.

20. References

20.1. http://www.the-dentist.co.uk/detail.php?id=211 - Legionella control, PUBLISHED ON: 11-05-2010, Have you done a risk assessment?

20.2. http://www.sterilox.com/PDFs/Pankhurst_Paper_RiskDUWL.pdf

20.3. http://journals.cambridge.org/action/displayFulltext?type=1&fid=302705&jid=BFM&volumeId=2&issueId=01&aid=302704 REVIEW ARTICLE Biofilm formation and control in dental unit waterlines, F.F.S.Franco, D.Spratt, J.C.Leao and S. R. Porter

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Appendix 1 Action in the event of an outbreak

21. Legionnaires' disease is not notifiable under public health legislation in England and Wales but, in Scotland, legionellosis (ie all diseases caused by legionella) is notifiable under the Public Health (Notification of Infectious Disease) (Scotland) Regulations 1988.

22. An outbreak is defined by the Public Health Laboratory Service (PHLS) as two or more confirmed cases of legionellosis occurring in the same locality within a six-month period. Location is defined in terms of the geographical proximity of the cases and requires a degree of judgement. It is the responsibility of the Proper Officer for the declaration of an outbreak. The Proper Officer is appointed by the local authority under public health legislation and is usually a Consultant in Communicable Disease Control (CCDC). In Scotland, it is the Consultant in Public Health Medicine (CPHM) employed by the Health Board and acting as Designated Medical Officer for the local authority.

23. Local authorities will have established incident plans to investigate major outbreaks of infectious disease including legionellosis. These are activated by the Proper Officer who invokes an Outbreak Committee, whose primary purpose is to protect public health and prevent further infection. This will normally be set up to manage the incident and will involve representatives of all the agencies involved. HSE or the local authority EHO may be involved in the investigation of outbreaks, their aim being to pursue compliance with health and safety legislation.

24. The local authority, CCDC or EHO acting on their behalf (often with the relevant officer from the enforcing authorities - either HSE or the local authority) may make a site visit.

25. As part of the outbreak investigation and control, the following requests and recommendations may be made by the enforcing authority.

    25.1. To shut down any processes which are capable of generating and disseminating airborne water droplets and keep them shut down until sampling procedures and any remedial cleaning or other work has been done. Final clearance to restart the system may be required.

    25.2. To take water samples (see paragraphs 124-131, Part 2 see Appendix 3 here) from the system before any emergency disinfection being undertaken. This will help the investigation of the cause of the illness. The investigating officers from the local authorities may take samples or require them to be taken.

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25.3. To provide staff health records to discern whether there are any further undiagnosed cases of illness, and to help prepare case histories of the people affected.

25.4. To co-operate fully in an investigation of any plant that may be suspected of being involved in the cause of the outbreak. This may involve, for example:

25.4.1. tracing of all pipework runs;

25.4.2. detailed scrutiny of all operational records;

25.4.3. statements from plant operatives and managers;

25.4.4. statements from water treatment contractors or consultants.

26. Any infringements of relevant legislation, may be subject to a formal investigation by the appropriate enforcing authority.Legionnaires' disease

Emergency cleaning and disinfection procedure for cooling towers

1. If a cooling water system has been implicated in an outbreak of Legionnaires' disease emergency cleaning of that system has to take place as soon as possible. The following actions should be taken, where appropriate:

(a) switch off the fan immediately;

(b) take samples for laboratory investigation before any further action;

(c) switch off the circulation pump as soon as is practicable and the system decommissioned;

(d) consult the enforcing authority before proceeding further;

(e) keep all personnel clear of the tower area;

(f) when cleared by the enforcing authority, add sodium hypochlorite to the system water to obtain a measured concentration of 50 mg/l of free chlorine;

(g) circulate the system water with the fans off for a period of at least six hours;

(h) maintain the free chlorine level at an absolute minimum of 20 mg/l at all times;

(i) use a suitable bio-dispersant;

(j) after six hours, de-chlorinate and drain the system;

(k) undertake manual cleaning of the tower, sump, and distribution system with cleaning staff wearing fully pressurised respirators;

(l) refill with fresh water, add sodium hypochlorite;

(m) recirculate without using the fan, at 20 mg/l of free available chlorine for six hours;

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(n) de-chlorinate and drain the system;

(o) refill, recirculate and take samples for testing:

(p) re-commission system when test results detect no legionella and/or permission is granted by the enforcing authority.

2. If a water system other than a cooling system is implicated in an outbreak of Legionnaires' disease, emergency treatment of that system should be carried out as soon as possible. This will usually involve the processes in paragraphs 192-196 (Appendix 2)

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Appendix 2

Chemical disinfection

1. Before chemical disinfection is carried out it is essential that the system is clean and it is important to ensure that all parts of the system are disinfected, not just those which are readily accessible. Chemical disinfection is usually carried out by chlorinating the water in the cold water storage tank to 20-50 mg/litre free residual chlorine. It is then allowed to flow to all parts of the system by successively opening the outlets in the system such as taps and showers (until there is a smell of chlorine), then closing them and leaving it to stand for an appropriate period. This depends on chlorine concentration (from at least one hour at 50 mg/l to at least two hours at 20 mg/l). The required concentration should be maintained in the header tank throughout the chlorination procedure and chlorine concentration needs to be monitored throughout disinfection to ensure that there is a sufficient residual chlorine level. The system should be thoroughly flushed following chlorination. Appropriate concentrations of chlorine dioxide, as recommended by the manufacturers, may also be used as a disinfectant.
2. This treatment should not be carried out by untrained personnel and should be closely supervised. Building occupants should be warned that the water is heavily chlorinated. If tanks and calorifiers are heavily contaminated by organic materials, the system should be disinfected before cleaning to reduce risks to cleaning staff and also after cleaning. It may be necessary to add chemical dispersants to remove organic fouling from pipework etc and chemical descaling may also be necessary. Where possible, cleaning methods should not create an aerosol.

Thermal disinfection

1. Thermal disinfection can be carried out by raising the temperature of the whole of the contents of the calorifier then circulating this water throughout the system for at least an hour. To be effective, the temperature at the calorifier should be high enough to ensure that the temperatures at the taps and appliances do not fall below 60°C. Each tap and appliance should be run sequentially for at least five minutes at the full temperature, and this should be measured. For effective thermal disinfection the water system needs to be well insulated.
2. Alternatively, the circulating pipework and dead-legs/ends may be thermally disinfected by means of trace heating. As before, the system should be capable of raising temperatures of the whole distribution system to 60°C or more for at least an hour.
3. The risk of scalding should be considered and particular care taken to ensure that water services are not used, other than by authorised personnel, until water temperatures have dropped to their normal operating levels.

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Appendix 3

4. The monitoring programme should also include the routine sampling and testing for the presence of bacteria, both general (aerobic) bacterial species and legionella bacteria. Since the detection of legionella bacteria requires specialist laboratory techniques, routine monitoring for aerobic bacteria is used as an indication of whether microbiological control is being achieved.
5. The most common method to measure microbiological activity within a cooling system is to use a dip slide. These are commercially available plastic slides which are coated with sterile nutrient agar - a medium on which many micro-organisms will grow, but not legionella. They are dipped into the water and incubated for 48 hours. Any bacteria in the cooling water will grow and form colonies. Comparison with a chart will indicate the number of bacteria in the water. Dip slides should be dipped in the system water as near to the heat source as possible. If a drain cock is used it is important that any residual water is run off before the slide is dipped. The dip slide should then be replaced into its container and incubated for a minimum of 48 hours in an incubator, usually at 30°C. The incubation period and the temperature should be the same each time the test is performed.
6. Cooling tower water should be tested, using dip slides (or similar), on a weekly basis. The timing of dip slides and other microbiological sampling is important. Sampling should not be carried out if biocide has been recently added. Neither should the visible condition of the water be taken as a good indicator of the need for sampling; there are a number of chemical additions which render the water opaque. Conversely, relatively clear water may be heavily contaminated with bacteria.
7. Table 2 lists microbiological counts and the appropriate action that should be taken in response to them. While the number of micro-organisms is itself important, it is also necessary to monitor any changes from week-to-week, particularly if there are any increases in the numbers of micro-organisms detected. This should always result in a review of the system and the control strategies. A graphical representation of these data will often help to monitor any trends.
8. If the control strategy is effective, the dip slide counts should be consistently low. If an unusually high result is obtained, the test should be repeated immediately and, if confirmed, appropriate action taken (see Table 2). Consistently high microbiological counts using dip slides should be checked by laboratory-based total viable counts (TVC). The laboratory should be accredited by the United Kingdom Accreditation Service (UKAS).

Table 2: Action levels following microbial monitoring for cooling towers

AEROBIC COUNT cfu/ml at 30°C (minimum 48 hours incubation)	Legionella bacteria cfu/litre	ACTION REQUIRED
10 000 or less	100 or less	**System under control**
more than 10 000 and up to 100 000	more than 100 and up to 1000	**Review programme operation** - A review of the control measures and risk assessment should be carried out to identify any remedial actions and the count should be confirmed by immediate resampling.

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more than 100 000	more than 1000	**Implement corrective action** - The system should immediately be re-sampled. It should then be 'shot dosed' with an appropriate biocide, as a precaution. The risk assessment and control measures should be reviewed to identify remedial actions.

129. Alternative techniques for determining microbiological activity have been developed for on-site use. It is important that such methods can be clearly related to the results achieved by traditional counting methods and that appropriate action levels can be set to inform decisions on the necessary control measures.

Monitoring for legionella

1. In addition to the routine sampling for aerobic bacteria, the routine monitoring scheme should also include periodic sampling for the presence of legionella bacteria. This should be undertaken at least quarterly, unless sampling is necessary for other reasons, such as to help identify possible sources of the bacteria during outbreaks of Legionnaires' disease. More frequent sampling should be carried out when commissioning a system and establishing a treatment programme. Sampling should be carried out, on a monthly basis, until it can be shown that the system is under control. If a legionella-positive sample is found as a result of routine sampling, more frequent samples may be required as part of the review of the system risk assessment, to help establish when the system is back under control. The sampling method should be in accordance with ISO 11731:1998[8] and the biocide neutralised where possible. Samples should be taken as near to the heat source as possible. They should be tested by a UKAS accredited laboratory that takes part in the Public Health Laboratory Service Water Microbiology External Quality Assessment Scheme for the isolation of legionella from water. The laboratory should also apply a minimum theoretical mathematical detection limit of less than, or equal to, 100 legionella bacteria per litre of sample.
2. Legionella bacteria are commonly found in almost all natural water sources, so sampling of water systems and services may often yield positive results and the interpretation of any results of sampling should be carried out by experienced microbiologists. Failure to detect legionella bacteria should not lead to the relaxation of control measures and monitoring. Neither should monitoring for the presence of legionella bacteria in a cooling system be used as a substitute in any way for vigilance with control strategies and those measures identified in the risk assessment.