

Positive Legionella Water Tests
Understanding Detection
Thresholds & Corrective Actions



Introduction

This water safety guide examines how the Responsible Person and others tasked with ensuring workplace water safety deal with positive legionella test results.

The guide looks in detail at the UK's detection thresholds used for Legionella bacteria in water, what these mean in practice and what you need to do if your water samples return a positive result. The article also considers the different types of Legionella bacteria, water sampling strategies and corrective actions to take if a problem is identified.

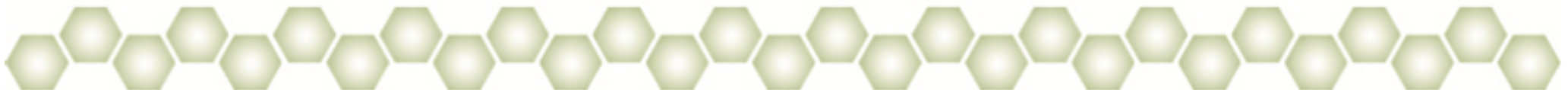
When does legionella become a problem?

Legionella bacteria naturally occur in many water sources such as ponds, lakes, and rivers. However, they can also be present in manmade water systems, such as those found in buildings and equipment, and this is where problems can occur. If the bacteria are detected at low levels following testing, under normal circumstances there may not be any need to take action.

However, in some cases, the level of bacteria could be high enough that you do need to act to find out why this has happened, and to resolve the problem as quickly as you can because of the increased risks to health.

Do you need to test for Legionella bacteria?

Typically, regular sampling and testing of a water system for legionella is not required by law, although there are some situations that do call for it such as when operating cooling towers, evaporative condensers and spa pools.



That said, sampling for legionella is a practical and sensible way to monitor how safe the water in your system is. Sampling can act as confirmation that a water safety plan and associated control methods are working as they should be.

The importance of the legionella risk assessment

In the UK, every water system used in a business environment should be risk assessed to determine where the legionella risks are, and their significance. Any risks should then be removed or reduced as much as possible, depending on what they involve.

Removal of the risk is ideal but in some cases this may not be possible. For instance, a disused piece of pipework (a dead leg) can be removed to eradicate the risk it poses. Conversely, a rarely used yet still operational shower head can simply be flushed through and regularly cleaned to reduce the risk it may pose.

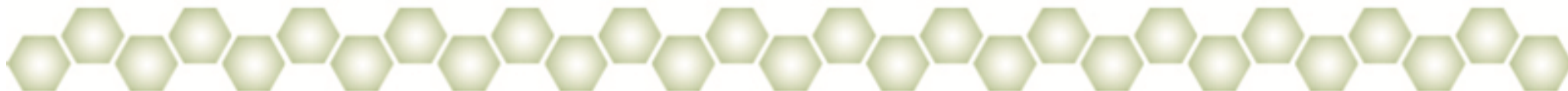
In situations where you do conduct water sampling for legionella, it's best to do so every six months or more frequently if the situation demands it.

Detection levels for Legionella bacteria

In UK laboratories there are three broad ranges of contamination a water sample tested for Legionella bacteria may show when returned. The figures presented by the lab will be recorded as cfu/l. Cfu stands for colony-forming units, while the lowercase l represents litres.

So, a reading of 150 cfu/l would indicate there were 150 colony-forming units in each litre of water sampled and tested.

The UK's safety regulator, the Health and Safety Executive set three legionella trigger or detection thresholds when sampling hot and cold water systems (HSG274 Part 2), they are as follows:



Legionella not detected or <100 cfu/l

This means the levels of Legionella bacteria detected are below 100 cfu/l or so low as to not show in the test.

However, in hospitals and healthcare environments, the main concern is to protect vulnerable patients, so any detection of legionella should be investigated further. This may call for the system to be resampled to help interpretation of the test results in line with the legionella control strategy and water safety risk assessment.

Legionella detected >100 cfu/l – <1,000

This refers to levels of bacteria detected at over 100 cfu/l but less than 1,000. This could indicate low level contamination of a water system which would require further investigation.

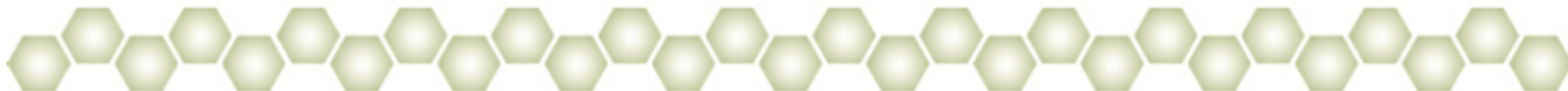
If a minority of samples are positive, the system should be resampled. If similar results are repeated, a review of the control measures and risk assessment should be carried out to identify any remedial actions necessary.

However, if the majority of samples are positive, the water system may be colonised, albeit at a low level. An immediate review of the control measures and legionella risk assessment should be carried out to identify any other corrective action required. Disinfection of the system should also be considered.

Legionella detected >1,000 cfu/l

This indicates a high level of bacteria whereby immediate remedial action must be taken to prevent a potential outbreak of Legionnaires' disease.

The water system should be resampled and an immediate review of the control measures and legionella risk assessment carried out to identify any corrective actions, including disinfection of the system. Retesting should take place a few days after disinfection and at frequent intervals afterwards until a good level of control is achieved.



What are the different types of Legionella bacteria?

In the lab a water sample can show three broad groups of Legionella bacteria. The first two groups show different types of Legionella pneumophila -- serogroup 1 in the first, and serogroups 2-14 in the second. The final group covers several dozen other types of Legionella bacteria.

The bacterial types go in order of potential seriousness. Legionella pneumophila serogroup 1 is isolated as it is the most serious, and most likely to cause Legionnaires' disease in people who are exposed to it.

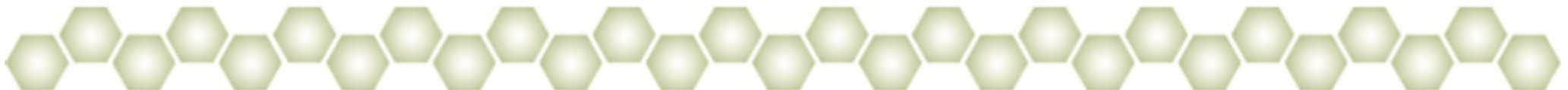
Serogroups 2 through 14 can cause other forms of disease – still derived from Legionella bacteria but from less dangerous forms. The remaining bacterial types may suggest there is a greater chance that the serogroups already mentioned could cause issues if the growth of bacteria isn't immediately dealt with.

Sampling for legionella at different points in the water system

Sampling for legionella at different points in the water system is another way to determine whether the entire water system has been contaminated (more likely if there are higher levels of bacteria in one or more samples) or whether rising levels are restricted to one area.

What to do if legionella is detected in your water?

What action you take following a positive legionella test depends on the levels of bacteria detected. Once you know more about the levels and locations of the bacteria, you can decide on what remedial actions to take.



The actions you take will vary depending on the available data. For instance, it could be that all samples are fine except for one taken from a disused shower head. In that case, thoroughly cleaning it and flushing through that portion of the system is the best thing to do – ahead of another test, of course.

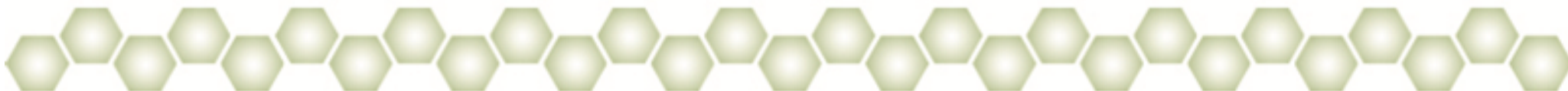
If raised levels are seen throughout the system, or the levels are high enough to be of real concern, the affected parts of the water system should be isolated and not used until measures are taken to reduce the bacterial growth. In extreme cases, the entire water system may be shut down while this takes place. There have been lots of cases where buildings have been shut down until the situation is brought under control.

A thorough disinfection and flush through of the entire system, along with intensive cleaning and maintenance where required, is often the only solution in this case. Regular dosing of the system with disinfectant is another step that could well need to be completed.

Expert assistance following positive legionella testing

Since positive legionella testing results can be extremely worrying for anyone in charge of a business or other property, it can be reassuring to call in the experts, such as **Legionella Control International**.

While the person in charge of water system safety, referred to as the Responsible Person retains responsibility for dealing with the situation, it can still be sensible to resort to someone qualified and experienced in these situations. They can review the test results and any other data available including the risk assessment. They may recommend immediate actions including disinfection and further testing. They may even recommend point of use filtration, and steps to be taken in future to reduce the risk of overgrowth of Legionella bacteria. They may also recommend other measures to ensure contamination of the water systems is brought back under control so it is safe to use.



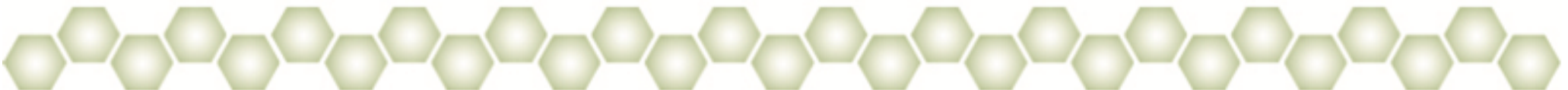
Legionella and water safety specialists

The water safety specialists at Legionella Control International support business owners and those responsible for health and safety in the workplace on all legionella and water safety issues.

Our risk management solutions support those responsible for the control of waterborne pathogens and other water safety risks, helping them to protect staff, customers and others and so meet their compliance obligations in this specialist area.

We deliver professional water safety solutions, legionella risk assessments, water quality testing, independent compliance auditing, Authorising Engineer (Water) support, City & Guilds training, expert witness support and other environmental risk management services that help keep people safe.

To speak with one of our legionella and water safety specialists' call us today on 0330 223 36 86 or email us at info@legionellacontrol.com.



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