

Target Audience Information Pack



Under the right conditions, Legionella bacteria can grow and spread in any water system but there are some sectors which do pose a significantly higher threat to public health. Hydrosense exists to help individuals in these sectors improve water system safety, avoid huge fines, shut downs and bad press, and of course protect people from this deadly bug.

This document will give you valuable information about the industry sectors that Hydrosense has been serving successfully over the years, so that you can familiarise yourself with their specific needs and use that information to go out and serve those groups successfully in your region too. You will also find out which kits works best for each market and how the kits many benefits serve each sectors varying needs.

Cooling Towers



Cooling towers are a leading source of outbreaks of Legionnaires' disease. CDC research shows that from 194 cooling towers tested in the US, 84% of them returned a positive result for Legionella DNA, meaning the bacteria were either present or had been present in the system at some point¹.

Cooling towers are high-risk areas for Legionella growth and spread because they:

- generate aerosols and can spread them over large distances. For this reason, they are considered one of the most dangerous and heavily regulated sectors in the Legionella industry.
- are prone to biofilm formation due to the amount of debris, dirt and dust being collected by the system.
- often allow sunlight to reach the cooling tower basin, heating the water inside and encouraging algae and bacteria to grow.
- sometimes source water from holding tanks which can contain sludge, rust and sediment and provide Legionella with protection and nutrients.
- are prone to areas of stagnation which can encourage the growth of biofilms that protect Legionella from chemical treatments.
- often use traditional lab culture testing in isolation to identify Legionella risk in their systems. However, recent research has been uncovering the disturbing limitations associated with this method, such as its inability to detect VBNC Legionella bacteria and its low recovery rate.

Cooling tower packs are a very high-risk area that can be found in cooling towers. Biofilm can build upon its surfaces and infect the whole system if not dismantled and disinfected regularly. The Hydrosense bio-film test kit is a valuable monitoring tool in situations such as this and can be used to test the state of a system for dangerous Legionella bacteria in only 25 minutes, compared to 10-14 days with the lab culture method. This allows quick corrective action to be taken and can help cooling tower owners to avoid any fines or unnecessary downtime.



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Recommended Kits

The Hydrosense Legionella Industrial Test Kit comes with a standard pipe fitting which can be fitted to standard plumbing in a cooling tower - to allow for faster and more convenient repeat testing. The sensitivity of the test is 100 CFU/ L and the kit comes with components to run one test.

The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one or five tests.

Hospitals and Care Homes



Worldwide, cases of hospital acquired Legionnaires' disease have been on the rise, with research showing that the potentially fatal bug is present in 12-85% of all hospital water systems². A study carried out by CDC found that 19% of cases are associated with long-term care facilities and 15% with hospitals³. The majority of cases have been linked to Legionella pneumophila Serogroup 1. Legionnaires' disease is life-threatening unless treated quickly. This is especially true in health-care and care facilities where mortality rates are as high as 40% due to the vulnerability of residents⁴. Because of this, such facilities should be highly aware of the risks and where they come from and should aim to reduce risk factors to zero.

Hospitals and nursing homes are high-risk areas for Legionella growth and spread because they:

- they treat a large number of vulnerable persons. Individuals who have a weakened immune system, have undergone recent surgery or who need to use respiratory equipment are at a much higher risk of being infected with the disease. Smokers, the elderly and new-born babies are also more susceptible to infection.



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- can have complicated, old pipework with dead legs which can be harder to manage and control. In some cases, for example in ageing facilities or newly renovated facilities, schematics of old and new pipework may not be up to date or complete. Failure to keep an up to date schematic can compromise the facilities risk assessment and leave high-risk areas in the system unmonitored.
- often have a water safety plan which are designed to meet minimum requirements outlined by a regions regulation rather than to minimise Legionella risks and may not be comprehensive enough to completely avoid growth and spread of Legionella bacteria.

The risk of acquiring Legionnaires' disease can increase by 64% for every hour spent near the source of an outbreak⁵ and this number is likely to be higher for patients who are immunosuppressed. So, it is crucial that duty managers in the healthcare and nursing home sector can implement remedial action quickly. The Hydrosense test offers an immediate picture of Legionella contamination risk in only 25 minutes and facilitates immediate corrective action, protecting the lives of vulnerable persons but also the facilities' reputation. Moreover, the Hydrosense test requires no training or experience and can be carried out by anyone, anywhere and the test results can be read, stored and managed via the Hydrosense Pro Reader App and an online Portal.

Recommended Kits

The Hydrosense Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one and five.

Spa Pools



Spa-pool systems, which include whirlpools and hot tubs, are a well-known source of disease for infections such as Legionnaires' disease. Hot tubs or spa pools are popular in gyms, hotels and increasingly in people's back gardens. The spa pool economy as a whole has been booming in recent years with a global annual growth rate of 9.9% (2017) which can be compared to only 2.3% growth between 2013 and 2015. In fact, spa facilities are now raking in \$93.6 billion yearly and the number of spa locations has notably increased from 121,595 (2015) to over 149,000 (2017).

However, spa pools can pose serious health risks if not properly looked after. Outbreaks of Legionnaires' disease have been linked to spa pools in leisure centres, hotels, holiday homes and cruise ships amongst others. A recent study that investigated cases and outbreaks of Legionnaires' disease in swimming pools and spa pools, has shown that from all reported cases of infection 43% were diagnosed with Legionnaires' disease, and found a fatality rate of 6.3%⁶.

Spa pools are high-risk areas for Legionella growth and spread because they:

- provide ideal temperature conditions for the growth and spread of Legionella bacteria.
- they have a complex system of filters, pumps and pipes and have significant surface areas for biofilm formation, which can provide Legionella bacteria with nutrients and protect it from biocides.
- can spread aerosols containing Legionella bacteria over considerable distances. This means that you wouldn't necessarily have to be sitting in a hot tub to catch the infection, you could simply be in the proximity of it.
- can harbour nutrients such as mucus, saliva, perspiration, dead skin, suntan lotion, spray tans, cosmetics, shampoo, soap residues, faecal matter, and hair.
- often use traditional lab culture testing to identify Legionella risk in their systems. However, recent research has been uncovering the disturbing limitations associated with this method, such as its inability to detect VBNC Legionella bacteria and its low recovery rate.



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Even though spas are high-risk areas for Legionella growth, duty managers in this sector continue to use the lab culture method, which can take 10-14 days to provide a result. However, when you consider the fact that Legionella pneumophila can proliferate very rapidly, potentially doubling in population within a mere 24 hours, it becomes clear that duty holders need a test which can detect Legionella as quickly as possible. The Hydrosense rapid test can provide an immediate solution to this problem. It's ease of use also means that now anyone with a spa or pool in their garden can test for Legionella bacteria and keep their friends, neighbours and family safe.

Recommended Kits

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one or five tests.

Hotels



Legionnaires' disease was first discovered in 1976 in Philadelphia when an outbreak occurred in a hotels cooling towers, infecting over 130 people. 40 people lost their lives during the course of the outbreak and to this day, hotels and resorts continue to be the number one setting for outbreaks of Legionnaires' disease, causing 44% of all cases in the USA³.



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The European Centre for Disease Prevention and Control reports that every year, over 1000 cases of Legionnaires' disease are correlated back to the hotel industry. Legal claims associated with Legionnaires' disease can be significant and can cause extensive financial and reputational damage to a hotel and a regions tourism sector in general⁷.

Hotels are high-risk areas for Legionella growth and spread because they:

- often have a high number of high-risk systems on their premises, such as spa pools, cooling towers, air conditioning units and showers. If pools, hot tubs, water parks and water features are not properly maintained, bacteria can multiply in the biofilms. These high-risk areas need to be properly cleaned and treated or microorganisms will quickly multiply. Hot tubs are of particular concern as they have the ability to spread Legionella over large distances. It is important that pools, spas, water features and hot tubs are properly treated with biocides and that biocides are alternated frequently to avoid bacteria becoming resistant.
- they can be affected by temperature and climate, especially if located in warm or tropical holiday destinations. Temperatures ranging anywhere between 20 and 45 degrees Celsius can provide Legionella with optimal conditions for rapid growth and can increase the risk of an outbreak occurring.
- often have empty rooms for extended periods of time. Depending on the region, this could be for only a few days or for months during down seasons. During these periods, stagnant water in the pipes can encourage the growth of scale, sludge and amoeba which protect Legionella and provide the bacteria with nutrients – thus accelerating its growth and spread.

It is incredibly hard to eradicate Legionella from a water system completely but there are steps which can be taken to reduce growth and spread dramatically. Temperature controls, the use of biocides, and regular monitoring and maintenance will help to ensure the safety of water systems. In hotels, it is also strongly recommended that vacant rooms are cleaned and tested regularly, especially after a period of low occupancy. However, using traditional methods for Legionella testing can be cumbersome, time-consuming (it takes 10 to 14 days to provide the results) and often inaccurate.

The Hydrosense test is an incredibly useful tool in the hotel industry and provides a simple and fast check for risk areas such as showers, hot tubs and air conditioning units. Its speed allows for quick remedial action so that water systems can be treated immediately, and rooms/ facilities can be made available to guests in good time.

Recommended Kit

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Hydrosense Legionella Industrial Test Kit comes with a standard pipe fitting which can be fitted to standard plumbing or shower heads - to allow for faster and more convenient repeat testing. The sensitivity of the test is 100 CFU/ L and the kit comes with components to run one test.

The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one or five tests.

Facilities Mangement



Legionnaires' disease is a central safety concern for business owners, managers and tenants alike, but it is often the case that the person responsible for the safety of the building does not have a complete or comprehensive understanding of Legionella control. Under these circumstances, it is advised that a responsible person bring in a competent third party to fill this gap in knowledge and ensure the safety of the buildings water systems.

All over the world, facilities management companies are brought in to help with a range of services linked to the efficient running and maintenance of commercial and residential buildings. It is their job to control and strategically coordinate all operational aspects of a building's day to day needs and to keep the facility safe for both its residents and the general public. One important part of their service is water system maintenance and safety. Many facility management companies will offer Legionella risk assessment, testing and treatment services.



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Facilities management companies and their clients are at risk from Legionella growth and spread because they:

- are liable for the safety of their clients', who can face huge fines, legal fees and lasting reputational damage if the services and expertise they provide are not sufficient. For this reason, it is crucial that facilities management companies keep innovative technologies at the forefront of the battle against Legionella in water systems. This will not only add value to customers, but it will also help to protect businesses from the financial and reputational damage that accompanies an outbreak.
- may come across a Legionella strain which has become resistant to a particular biocide and will, therefore, be unaffected by treatment with that same biocide. Such a strain poses a huge threat to a client's reputation if the issue is not identified by the engineer through regular testing.
- may not have access to accurate or up to date schematics of the system. This is a serious problem in ageing facilities or newly renovated facilities where schematics of old and new pipework may not be up to date or complete. Failure to keep an up to date schematic can compromise the facility's risk assessment and leave high-risk areas in the system unmonitored.

In order to protect their reputation and keep their clients and the general public safe, it is highly recommended that facilities management companies do not use lab culture testing in isolation. Doing so can leave their clients at risk. Instead, they should incorporate new innovative testing methods, such as Hydrosense, that can protect clients from false negative results and speed up implementation of remedial action. In the face of increasing competition, the Hydrosense test can provide facilities management companies with a source of unique added value by acting as a door opener to start conversations with new clients and allowing them to upsell and cross-sell additional treatment services to end users. The Hydrosense test also allows companies to differentiate themselves and provides clients with peace of mind quickly.

Recommended Kits

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Legionella Risk Assessment Test Kit contains two tests for testing water samples and two tests for testing surfaces. The kit is perfect for identifying the source of an outbreak and can help in developing a control management plan.

The logo for Hydrosense, with 'hydro' in blue and 'sense' in green.

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The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one or five tests.

The Hydrosense Legionella Industrial Test Kit comes with a standard pipe fitting which can be fitted to standard plumbing or shower heads - to allow for faster and more convenient repeat testing. The sensitivity of the test is 100 CFU/ L and the kit comes with components to run one test.

Car Washes



Researchers from the University of Padua state that: 'Any water source producing aerosols should be considered a risk for the transmission of Legionella bacteria, including car wash installations frequently used by a large number of customers and where poor maintenance probably creates favourable conditions for Legionella overgrowth and spreading.'

Systems like car washes are considered high-risk areas, as they can generate aerosols which can be contaminated with Legionella. These aerosols can infect human lungs and cause severe and potentially life-threatening infections like Legionnaires' Disease. Results from the National Legionella Outbreak Detection Program in the Netherlands reported car washes as a potential source of infection in 3-4% of all cases of Legionnaires' disease between 2002-2012⁸. That means that on average 10 people a year were infected by car washes in the Netherlands during that period.

Car washes are high-risk areas for Legionella growth and spread because they:

- can experience extended periods of stagnation, which if combined with exposure to direct sunlight increases the risk of Legionella growth in water tanks and pipes significantly.



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- can disperse aerosols contaminated with Legionella bacteria over long distances, thus putting whole neighbourhoods at risk of infection.
- sometimes use water which comes directly from the mains may not have been properly treated. Further, some car washes recirculate their water to use again later but this process increases the amount of general debris, dirt and nutrient's in the water, which can encourage rapid Legionella growth.
- have a lot of soap, dirt, oil and sediment in their water which can support fast microbiological growth. Especially if water temperature is favourable.
- do not often have a comprehensive safety plan in place or may not have the expertise and knowledge to create one.

Under such circumstances, if a duty holder suspects that the system may contain Legionella they need to get results quickly. Waiting 10-14 days for a result could put hundreds if not thousands of people at risk. The Hydrosense test provides an easy to read, fast test for duty managers that can minimise the risk of infection, downtime and huge fines.

Recommended Kit

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

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Ships and Offshore Facilities



Outbreaks of Legionnaires' disease have been reported globally in association with the marine environment. In fact, a recent study conducted on Legionnaires' Disease Outbreaks on Vessels revealed that Legionella was detectable in potable water systems on 58% of 350 vessels in the study.

Ships and offshore facilities are high-risk areas for growth of Legionella for a number of reasons. Cruise ships for example, may have a complex system of whirlpool spas, jacuzzies and decorative fountains which cannot be easily tested for bacteria due to limited lab access. All types of ships and offshore facilities must be monitored and controlled, including off-shore accommodation vessels, which are known to have had several cases of the disease after being laid up and re-commissioned without the proper attention to potable water safety.

Ships and offshore facilities are high-risk areas for Legionella growth and spread because they:

- have very complex water systems which can be altered or even contaminated during refits and maintenance. Dead legs and blind spots are also a common problem on ships as they make monitoring and control even more challenging.
- can have large capacity water tanks in which stagnant water is kept for extended periods of time, resulting in low chlorine residual in the water. Low cabin occupancy can also result in water stagnation which encourages the formation of biofilms where Legionella grows.
- often travel to regions with high temperatures, which can heat up any water which is stored on the vessel and encourage Legionella growth and spread.
- do not have easy access to lab services. Access to the laboratory is usually limited and the reliability of the laboratories in various countries can be questionable at best. As a result, using standard Legionella testing techniques onboard can be very impractical.



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It is very important that duty manager onboard ships and offshore facilities can get quick results on the state of their systems, especially when the risk of acquiring Legionnaires' disease can increase by 64% for every hour spent near the source of an outbreak. The Hydrosense test can give duty holders the fast answers they need and can help them to avoid the difficulties and impracticalities they face when trying to send a sample to a lab for testing.

Recommended Kits

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Hydrosense Legionella Industrial Test Kit comes with a standard pipe fitting which can be fitted to standard plumbing in a car wash - to allow for faster and more convenient repeat testing. The sensitivity of the test is 100 CFU/ L and the kit comes with components to run one test.

The Hydrosense Legionella Swab Test Kit is perfect for testing surfaces and for identifying the source of an outbreak. The sensitivity of the test is 200 CFU per swabbed area and the kit comes in packs of one or five tests.

Domestic Water Systems



Scientists at Public Health England (PHE) have found that Legionella is on the rise in domestic homes. Recent research revealed that up to 1.5 million households in the UK could be harbouring the potentially fatal Legionella organism and experts fear household showers may be to blame for hundreds of cases each year where the source of infection cannot be identified.



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Domestic water systems are high-risk areas for Legionella growth and spread because they:

- are not regularly tested or treated for Legionella bacteria, if ever. Meaning that large amounts of biofilm may have been left to form over the years, providing Legionella with nutrients and protection.
- are often left unmonitored for factors like temperature change. Hot water should ideally be kept at temperatures over 60 degrees Celsius and cold water below 20 degrees Celsius, to discourage Legionella growth. However, if a domestic system falls out of these controls the problem may not be identified and Legionella could spread rapidly.
- may contain outlets which go unused, causing stagnation and build-up of biofilm, scale and sludge.

Legionella in domestic water systems is a serious threat, especially if the property is home to vulnerable persons with weakened immune systems, smokers or the elderly. The Hydrosense test is the easiest way for residents to get peace of mind. Its simplicity means that it doesn't require specialist knowledge to carry out or read.

Recommended Kit

The Legionella Single Syringe Test Kit is both flexible and sensitive – it allows for sample collection from any water source and has an excellent Limit of Detection of 100 CFU/L.

The Legionella Risk Assessment Test Kit contains two tests for testing water samples and two tests for testing surfaces. The kit is perfect for identifying the source of an outbreak and can help in developing a control management plan.

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Check out our references:

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