

Legionella Control Risk Assessment and Audit

*Safeguarding People
Protecting Your Reputation
Ensuring Legal Compliance*

What is Legionnaire's Disease?

Legionnaires' disease causes inflammation of the lungs. It is a type of pneumonia of greater severity than normal. Legionella bacteria are responsible for triggering the infection. The same bacteria can also cause Pontiac fever. This is a milder condition. It does not progress to pneumonia and is usually self-limiting. Some people infected by Legionella bacteria may assume they simply have flu.

How does a person get Legionnaires disease?

The germ which causes Legionnaires' is a bacterium called Legionella pneumophila. People catch it by inhaling small droplets of water suspended in the air which contain the Legionella bacterium. However, most people who are exposed to legionella do not become ill.

Legionnaires' disease symptoms: What should you expect?

The symptoms caused by the disease are like those experienced when someone has flu. Muscle aches, headaches, fever, and feeling tired are all common. They typically occur between two and 10 days after exposure to Legionella bacteria. As the condition progresses, other symptoms may appear. These are more indicative of pneumonia. Phlegm may be green. Shortness of breath may occur. Chest pain and confusion can also be experienced.

If any such symptoms appear, you should seek immediate medical help. They do not always mean you have Legionnaires' disease, but they should be checked out. If the disease is diagnosed, prompt treatment will be given to combat it.

BIOFILM, AMOEBA, AND LEGIONELLA

Biofilms are the root cause of serious problems in building potable and industrial water systems including clogged piping, reduced heat transfer efficiency, microbiological corrosion, and Legionella transmission. Biofilms are dynamic, complex structures optimized for microbial growth and survival, which make them difficult to remove and control.

1 SURFACE ATTACHMENT

Many species of bacteria growing in water will attach to system surfaces to improve survival. Conditions favoring surface attachment include high planktonic bacteria counts, stagnation, and sediment deposits.

Planktonic Bacteria
(Free Floating)

Sessile Bacteria
(Surface Attached)

2 BIOFILM FORMATION

Surface attached bacteria secrete a sticky, extra-cellular polymeric substance (EPS), often called slime, to form an adherent biofilm.

Biofilms start forming in minutes, but may take days to become visible (100 microns).

Biofilms are over 90% water, which makes them very insulating.

Dirt, corrosion byproducts, and other debris readily attach to biofilms forming biofouling deposits.

Secreted EPS
Encapsulates
Growing Sessile Bacteria

3 ESTABLISHED BIOFILM

Complex communities of problem causing microorganisms can grow protected within biofilm and biofouling.

Bulk water bacteria levels do not measure bacteria growing within biofilms.

Corrosive anaerobic bacteria can thrive in biofilms causing severe damage to system metals. Biofouling deposits can block critical water passages and increase pumping costs.

Established biofilms are tenacious and difficult to remove. The secreted EPS lightly binds to systems surfaces and protects growing microorganisms from environmental hazards including high level cleaner and biocide additions.

4 LEGIONELLA AMPLIFICATION

Biofilms and amoebas play a key role in the survival of Legionella.

Biofilms provide a protective environment for Legionella entering with the source water to grow and multiply. Biofilms also contribute to Legionella amplification as a food source for amoeba.

Legionella is parasitic with several species of common amoeba. When certain amoeba ingest Legionella, the bacteria can multiply to high levels inside the microorganism. When food is exhausted, the amoeba ruptures releasing Legionella in the bulk water. The amoeba amplified Legionella have increased virulence.

Legionella infected amoeba that transform into cysts in response to hostile conditions are exceptionally difficult to kill.

Amoeba

5 BIOFILM PROPAGATION

When conditions become unfavorable, biofilms propagate by detachment, which releases bacteria and pieces of biofilm into the bulk water to inhabit other surfaces.

Environmental stresses such as biocide addition, shear, over-crowding, and low nutrient availability can trigger detachment.

Is there risk of Legionella in my workplace?

The health risks associated with Legionella bacteria are significantly heightened in areas where water is stored or recirculated, where the water temperature is between 20 and 45 Degree C, where there is the possibility of breathable water droplets

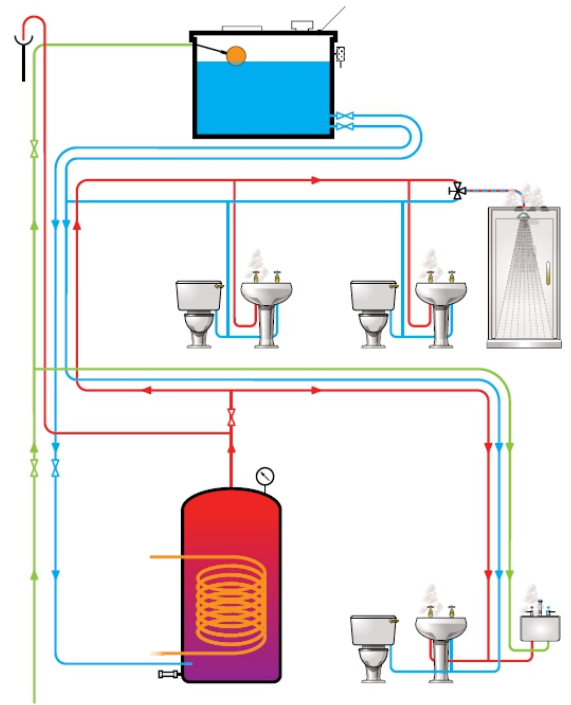
Which premises are at risk?

- Hotels
- Clubs
- Hospitals
- Residential Complexes
- Schools / Colleges
- Malls



What does Legionella Risk Assessment Cover?

- Site Visit, Plant related risk assessments including operational planning and controls in different water features
- Overview of the composition of water in the system
- Thorough evaluation of records and analysis
- Independent assessment of the monitoring and testing regime in place
- The effectiveness of any legionella precautions currently being applied



Why choose Gulf Test?

We will help you to assess and manage these risks and ensure that you comply with your legal requirements.

- Full compliance guaranteed** - Our Legionella risk assessments are completed in strict compliance with ACoP L8, OSHAD Code of Practice, Dubai Municipality Technical Guidelines and BS8580-1:2019
- Comprehensive reporting** - Our reports are designed to provide you with the information you need in a format that's precise and easy to understand.
- Accredited Lab** - All of our water analysis is conducted at ENAS / EIAC accredited laboratories. You can rely on our analytical services to be accurate and prompt.
- Competent Team** - We have been providing legionella risk assessments and water hygiene services in UAE; our team of specialist assessors are vastly experienced, professional and fully qualified in their respective fields.

Demonstration of Competency

Gulf Test Safety Consultancies is a registered **Grade A Consultants** with the OSHAD Centre and are competent to provide Legionella Services under following main categories:-

1. Legionella Risk Assessment
2. Legionella Training Services
3. Legionella Auditing Services
4. Legionella Consultancy Services



عام زايد
YEAR OF ZAYED



مركز أبوظبي للسلامة والصحة المهنية
ABU DHABI OCCUPATIONAL SAFETY AND HEALTH CENTER



أوشاد
oshad

شهادة تسجيل في برنامج قدرات

Qudorat Registration Certificate

Certificate Number:	1000033	رقم الشهادة:
Date Of Issue:	23/04/2014	تاريخ الإصدار:
Date Of Expiry:	27/02/2019	تاريخ الانتهاء:
Company Name:	جلف تيسر للاستشارات السلامة GULF TEST SAFETY CONSULTANCIES	اسم الشركة:
Trade License Number:	CN 1195081	رقم الرخصة التجارية:
Registration Type:	OSHA Consultancy Office مكتب استشاري OSHA Auditing شركة تدقيق	نوع التسجيل:

الدرجة/Grade

<ul style="list-style-type: none"> • OSH Consultancy Services • OSHMS 3rd Party Auditing 	<p>(A)</p> <p>(C)</p>	<ul style="list-style-type: none"> • استشارات في مجال السلامة والصحة المهنية • التدقيق على أنظمة إدارة السلامة والصحة المهنية بواسطة الجهات الخارجية المستقلة
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Important Notes:

- Abu Dhabi Occupational Safety and Health Center – OSHAD should be notified of any changes that may affect requirements for obtaining this certificate. Failure to do so will result in withdrawal of registration.
- This certificate becomes invalid in case of any alteration.
- Application for renewal must be submitted before expiry date.

ملاحظات هامة:

- يجب إبلاغ مركز أبوظبي للسلامة والصحة المهنية – أوشاد عن أي تغييرات قد تطرأ على المتطلبات الخاصة بالشهادة، علماً أن الإخلال بذلك سيؤدي إلى سحب التسجيل.
- تصبح هذه الشهادة غير صالحة إذا تم إجراء أي تغيير عليها.
- يجب التقدم للتجديد قبل انتهاء صلاحية الشهادة.

Note:

The Grade is only an indication of the knowledge, competency and experience of the professional entity demonstrated at the time of registration in accordance with Mechanism 7.0, it does not however, indicate the quality of work of the entity.

مركز أبوظبي للسلامة والصحة المهنية – أوشاد

Abu Dhabi Occupational Safety and Health Center - OSHAD



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UAE Legal Aspects of Legionella

The health risks associated with Legionella bacteria are significantly heightened in areas where water is stored or recirculated, where the water temperature is between 20 and 45 Degree C, where there is the possibility of breathable water droplets

Under UAE Health and Safety Law, business owners, property managers and landlords are legally required to consider the legionella risk in their properties or businesses.

In Abu Dhabi, the general requirements for Legionella are specified in OSHAD-SF – Codes of Practice CoP 12.0 – Prevention and Control of Legionnaires Disease – Version 3.1 – 18th June 2017. This Code of Practice (CoP) applies to all duty holders within the Emirate of Abu Dhabi.

The requirements set out within this CoP are intended to specify the general requirements for prevention and control of legionnaire's disease. This CoP applies to all duty holders and places of business within the Emirate of Abu Dhabi that have equipment that uses, stores, or disseminates warm water.


This includes, but is not limited to, swimming pools, hot tubs, heated spas, cooling towers, hot water tanks, large air conditioning systems, water treatment facilities, metalworking systems that use water, equipment for manufacture of plastic parts using injection molding, emergency water systems (to include safety showers, eye wash stations, and fire sprinkler systems), artificial fountains/waterfalls, water features, and other similar equipment that use and/or stores large amounts of water.

The first requirement of this CoP is that Duty Holders who uses, stores or disseminates hot water systems shall perform an annual "suitable and sufficient" health risk assessment of the building. This risk assessment should be undertaken with due consideration to the guidelines detailed in BS8580:2010, ASHRAE, ACOP L8 Requirements. The risk assessment must include

- An assessment of the risk to health, and identify measures to be taken
- Consideration of replacement/substitution to prevent the risk
- Where prevention is not reasonably practicable, engineering measures to control exposure; e.g. drift eliminators
- Other measures to reduce the risk; e.g.: water treatment
- A management regime to ensure continual compliance and regular reviews

LEGIONELLA IN WATER SYSTEMS

Integrated Water Services



WHATS ALL THE FUSS


Potentially fatal

Legionella bacteria causes a lot of diseases including pneumonia. The collective term is called legionellosis. It is contracted by inhalation of water droplets or air particles that contain the bacteria which multiply in the lungs.

WHO'S AT RISK

Everyone especially those in poor health


Anybody can be at risk, but especially those in poor health, people over 45 and smokers. People with reduced immune systems are also vulnerable to the bacteria.



20-45°C

Legionella bacteria multiplies


The legionella bacteria multiply rapidly between these temperatures but their ideal temperature is 37°C, human body temperature. The bacteria will become dormant at temperatures below 20°C and start to die at temperatures of 60°C and above.



WATCH THE BIOFILM

Bacterial Biofilm - Avoid build up


Biofilms on surfaces will form a protective layer which protects the bacteria from temperatures and treatments which destroy the bacteria. Water systems i.e. cooling towers, water tanks and unclean water sources with the right conditions can allow the legionella bacteria to grow and create these biofilms.



ASSESS THE RISK

Keep everyone safe

It is your legal duty to keep everyone safe, so, do an audit of the risk on your site, identify assets, facilities and individuals that are most at risk. You must keep records and appoint a responsible person.



Principle Legislation

The principal legislation and guidance relating to duties to manage risks from exposure to legionella in work places comprise

- OSHAD-SF – Codes of Practice CoP 12.0 – Prevention and Control of Legionnaires Disease – Version 3.1
- Health and Safety at Work etc Act 1974
- The Control of Substances Hazardous to Health Regulations 2002 (as amended)
- Management of Health and Safety at Work Regulations 1999
- Notification of Cooling Towers/Evaporative Condensers Regulations 1992
- Approved Code of Practice L8 (Fourth edition) Legionnaires' disease: the control of legionella bacteria in water systems
- Legionnaires' disease Technical Guidance HSG274 Parts 1, 2 and 3
- European Legionnaires' Disease Surveillance Network (ELDSNet) Technical Document-14 Point Plan
- Managing for Health and Safety HSG65
- World Health Organization (WHO) – Legionella and the prevention of Legionellosis (2007)

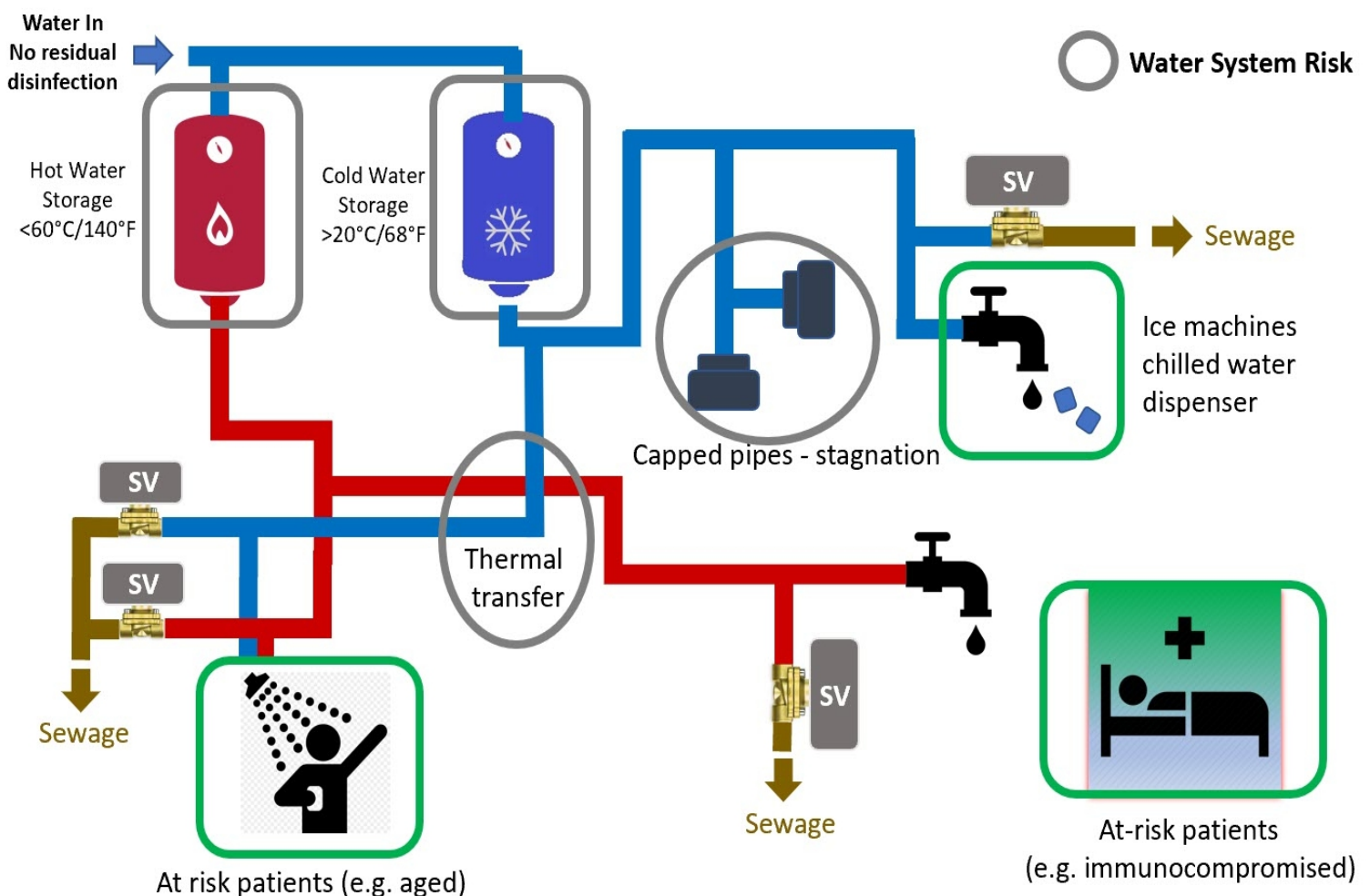


Legionella Risk Assessment

Legionellosis is a collective term for diseases caused by legionella bacteria including the most serious Legionnaires' disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires' disease is a potentially fatal form of pneumonia and everyone is susceptible to infection.

A Legionella risk assessment survey is a systematic examination of the potential risks presented by engineered water systems, and seeks to identify and assess the risks of exposure to Legionella bacteria from work activities and water systems.

Whilst identifying the risk to your water systems, our assessor will check; the temperature of each water outlet, for stagnated water and dead legs and for any other potential threats. They will then supply you with your own copy of the risk assessment.



Legionella Risk Assessment Benefits

Legionella bacteria is a waterborne pathogen that can develop in unmaintained water systems. This water is most likely pumped through out the building to various outlets and could cause harm to the residents. If these water droplets are inhaled, i.e. through showers, spray taps and humidifiers, then the recipients could be exposed to Legionnaires' disease – fatal form of pneumonia.

The law is clear that if you are a landlord and rent out your property (or even a room within your own home) then you have legal responsibilities to ensure the health and safety of your tenant by keeping the property safe and free from health hazards. A simple assessment may show that there are no real risks and are being properly managed and no further action is needed. It is important to review the assessment in case anything changes in the system.

The practical and proportionate application of health and safety law to landlords of domestic rental properties is that whilst there is a duty to assess the risk from exposure to Legionella to ensure the safety of their tenants

A Legionella risk assessment will determine the likeliness of Legionella bacteria forming in your water system and will identify the steps needed to reduce that risk. Not only is it imperative that a risk assessment is carried out, however, it is also in the best interest of your customers, clients, employees and yourselves.

A *Legionella* water management program consists of:

- 1 Establishing a water management program team.
- 2 Describing the building water systems using words and diagrams.
- 3 Identifying areas where *Legionella* could grow and spread.
- 4 Deciding where control measures should be applied and how to monitor them.
- 5 Establishing ways to intervene when control limits are not met.
- 6 Making sure the program is running as designed and is effective.
- 7 Documenting and communicating all the activities.

www.cdc.gov/legionella/WMPtoolkit

Legionnaires' disease is on the rise



SOURCE: ASHRAE 188: Legionellosis: Risk Management for Building Water Systems
June 26, 2015.

SOURCE: National Notifiable Diseases Surveillance System, CDC, 2000–2014.

Legionella Risk Assessment Sample Certificate



Certificate of Legionella Assessment

This certificate has been awarded to

LE MERIDIEN ABU DHABI

PO BOX 46066 Tourist Club Area, Abu Dhabi, UAE

In recognition of the organization's Legionella Management Plan and successful completion of

Legionella Risk Assessment

In accordance with the following assessment criteria

OSHAD-SF CoP 12.0 - Prevention and Control of Legionnaires Disease v3.1,
HSE UK Approved Code of Practice and guidance on regulations L8 and
in recognition of the applicable Regulatory and International Requirements and Standards
pertinent to the Legionella Control

The scope covered under this risk assessment includes

Hot and Cold Water Systems, Laboratory Analysis and assessment of
Water Quality and Assessment of Water and Legionella Control Plan

Certificate No.: GTS-EE-5443-QTN-5443-21

Date of Reassessment: 07-03-2023

Risk Assessor: Noor Muddassir Khan

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