Dangers of Bacterial Infections:

Weils Disease/ Leptospirosis

Weil's disease is a form of a bacterial infection also known as Leptospirosis that is carried by animals, most commonly in rats and cattle. It can be caught by humans through contact with rat or cattle urine, most commonly occurring through contaminated fresh water. Although human infection in the UK is minimal it is still worth taking some preventative measures to decrease the possibility of contracting it.

Infection

Infection of humans usually occurs where open wounds are immersed in relatively stagnant water contaminated with rat or cattle urine. It can be contracted from contact with any fresh or untreated water including ponds, canals, lakes and rivers, as well as flood waters that are contaminated.

- Those most at risk of infection are open water swimmers who expose their whole body to possible infection.
- Activities that occur in or near fresh water such as fishing, water skiing, sailing and kayaking also present a risk.
- Activities that can cause open wounds or that take place near the water's edge where rat urine is more likely to be found increase the risk of contracting the disease.
- People who have previously had leptospirosis develop immunity to the particular strain that they were infected with and others closely related for up to ten years. They are not immune to other strains and may become infected again if continuing in activities where it is a risk.
- It does not usually result from swallowing water or rat bites.
- The bacteria are unable to survive in salt-water, so there is no risk of infection of Weil's disease from swimming in the sea.

The risk of contracting the disease varies according to the size of the local rat population, which unfortunately is very hard to assess. Landowners, local authority environmental health departments, and in agricultural areas, DEFRA, may be able to provide assistance for operators who may need to assess the risk.

Symptoms

Symptoms can occur between 3 and 21 days from the time of infection. There can be two distinct phases of leptospirosis.

The first phase

- Symptoms are similar to those of the flu, including high fever, severe headache, chills, muscle aches, and vomiting, and may also include a rash.
- May last between 3 to 5 days before recovery.
- In mild cases the patient will recover after just the first phase, but they can suffer fatigue and depression for some time afterwards.

The second phase

- Initial symptoms will reoccur.
- Further symptoms can vary according to severity and may include jaundice (yellow skin and eyes), red eyes, abdominal pain, and diarrhoea.
- Symptoms can be similar to those of meningitis.

- Severe cases can also cause the failure of kidneys or live Death can occur due to heart, liver or respiratory failure.

Preventative Measures The best prevention is to understand where and how Weil's disease can be caught and taking precautions based on this knowledge. If you know you may come into contact with untreated water such as flood waters, canals, ponds and rivers you can reduce the risk of infection by taking the following precautions:

- Cover any open wounds such as cuts and scratches with waterproof plasters.
- Wear protective clothing such as waterproof gloves.
- Wash thoroughly and as soon as possible if you have entered the water.
- Assess the risk of the likelihood of contamination if contemplating entering fresh water, particularly be aware of stagnant water.
- Carefully clean any open wounds obtained during time at fresh water.

If symptoms occur

Seek medical treatment and explain to the practitioner that you have been in contact with open water. If you are an employee, show them your workers card. Early diagnosis and treatment of Leptospirosis can prevent more severe cases of infection.

What is Legionnaires' disease?

Legionellosis is the generic term used to describe two distinct clinical conditions caused by legionella pneuomophila.

- Legionnaires' disease takes the form of a severe, potentially fatal, form of pneumonia.
- Pontiac fever is a non-fatal, mild and self-limiting illness similar to influenza.

Infection occurs when droplets or aerosols from a contaminated source, containing legionella bacteria are inhaled and deposited in the lungs.

Legionella bacteria thrive in warm, stagnant water environments such as hot water cylinders and cold-water storage cisterns that are not kept at the correct temperatures. Rainwater harvesting systems, often containing water with other contaminants, are also environments in which the bacteria can thrive.

Legionella bacteria occur in water systems at temperatures in the range 20–45ºC. These temperatures are commonly present in the lower part of hot water cylinders and also in uninsulated cold-water storage cisterns in roof spaces and locations where they can be affected by solar energy such as in tank rooms on flat roofs.

Controlling legionella bacteria

Legionella bacteria can multiply to dangerous concentrations in five days. A simple and effective way of controlling the bacteria in hot water systems, is to increase the water temperature. This will start to kill the bacteria at around 50ºC and if the water temperature reaches 60ºC and is held at that temperature for sufficient time (usually about 10 minutes), the bacteria will be killed. Satisfactory routine control of legionella bacteria will be achieved if a temperature of 60ºC is maintained throughout the cylinder for a period of one hour each day.

Heating the water to 60ºC will kill the bacteria but there is an increased risk of skin burns (scalding). Fitting a thermostatic mixing valve (TMV) allows the water to be stored and distributed at high temperature while blending it with cold water before it reaches the tap. (Building Regulation Part G required the fitting of TMVs as standard on baths in new homes.)

Water in storage cisterns should not be allowed to exceed 20ºC.

Water systems risk areas

- Hospitals and healthcare premises house persons who might be susceptible to respiratory problems.
- Sports clubs and changing rooms, which are often used intermittently and usually have a number of showers.
- Spa baths are a particular problem because the water is at an optimum temperature for them to grow, dirt, dead skin cells provide food for the bacteria to thrive, and the agitated water forms aerosols and spray through which the bacteria can be breathed in.
- Hotels invariably have as many showers as they have bedrooms and these can all produce aerosols.
- Car washes at garages, windscreen water in cars
- Dental suites.
- Reducing water temperatures at draw-off points to prevent scalding, this should be done at the point of use rather than at the source.
- Dead legs in old systems left after pipework alterations.
- Cold water storage cisterns often contain organic deposits which collect as a sludge in the bottom of the cistern, and these can support legionella bacteria.
- Incorrectly positioned outlet pipes in relation to the cold mains inlet in cold water cisterns can result in stagnation, particularly where two or more cisterns are linked together.
- Inadequate thermal insulation will allow the water temperature to increase in warm roof spaces. Cold water cistern should have a purpose-made, tight-fitting cover and adequate thermal insulation to protect against freezing in winter and heat gain in summer.
- Oversized water cisterns reduce the risk of the building running out of water but can lead to water stagnating.

So, in summary control legionella by:

- Prevention and control of legionella are achieved by good design, installation and routine maintenance.
- Hot water storage temperatures should regularly be taken to 60ºC.
- Cold water should be stored at not more than 20ºC.
- Keep to a minimum the amount of water stored.

What are the symptoms?

The symptoms of Legionnaires' disease are similar to the symptoms of the flu:

- high temperature, feverishness and chills;
- cough;
- muscle pains;
- headache; and leading on to

- pneumonia, very occasionally
- diarrhoea and signs of mental confusion

Legionnaires' disease is not known to spread from person to person.

How is it treated?

The illness is treated with an antibiotic called erythromycin or a similar antibiotic.

What to do

- If you develop the above symptoms and you are worried that it might be Legionnaires' disease, see your general practitioner.
- It is not always easy to diagnose because it is similar to the flu. A urine or blood test will be helpful in deciding whether an illness is Legionnaires' disease or not. When doctors are aware that the illness is present in the local community, they have a much better chance of diagnosing it earlier.
- If you suspect that your illness is as a consequence of your work then you should report this to your manager, as well as your health and safety representative and occupational health department, if you have one. There is a legal requirement for employers to report cases of Legionnaires' disease that may be acquired at their premises to the Health and Safety Executive.

Sign off Sheet

Name	Signed & Dated	Name	Signed & Dated

BY SIGNING THE ABOVE, I ACCEPT THAT I UNDERSTAND WHAT IS REQUIRED OF ME AND I AGREE TO COMPLY.