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## The impact of legionella infections

**Robbie Phillips and Richard Lamburn offer a reminder of the risks posed by legionella and the management procedures required to combat them.**

The recognition of certain strains of legionella in water-based systems has long been established. Serious multiple infections of persons near these systems is also well documented. It is essential that the plant operator recognises that when water is sprayed, or an aerosol spray is created, the risk of legionella infection begins. According to the following information, the risks can then escalate into a life-threatening and ultimately fatal situation.

### Precursors to the establishment of high-risk situations

There are accepted critical factors:

- Water as a transmission agent – bacterium can move around systems and attach to surfaces, particularly biofilms where masses of bacteria can develop including legionella.
- Nutrients in the form of body fats, oils, organic contamination, etc.
- Heat – legionella has mutated to a preferred temperature range. Therefore we can deduct that on the heating of a water-based environment, the bacteria multiply where temperatures are between 20-45°C and nutrients are available. The bacteria are dormant below 20°C and do not survive above 60°C.

### Potential leisure sites

If we consider the above factors and look at the general provisions within wet leisure the following are potential legionella risks:

- showers – shower heads, supply lines, etc
- spa baths – circulation systems, air blowers, booster pumps
- interactive play features – circulation systems, air blowers, feature pumps
- leisure centre features where spray features are present.

### Operator guidance

- Complete a legionella risk assessment of the facility and apply appropriate risk controls, completed by competent persons. Be aware it is known that industrial legionella contractors were not aware of spa bath risks, for example.

**“It is essential we understand the basics of legionella contamination, sources and risks. This bacterium has killed many people, including clients, staff and sub-contractors.”**

- “Follow the UK Health and Safety Executives ACoP L8 - Approved Code of Practice and Guidance document titled "Legionnaires' disease: The control of Legionella bacteria in water systems". This sets out guidance for the legionella risk assessment and legionella control procedures.
- A suitable and sufficient assessment is required to identify and assess the risk of exposure to legionella bacteria from work activities and water systems on the premises and any necessary precautionary measures.
- A safe operation begins with the design of a facility. Designers and installers should be aware of potential legionella risk and also should have specific detail of operation recommendations to reduce or eliminate risk.
- Since the legionella bacterium are neutralised with halogens (eg chlorine, etc) the application and control of disinfectant and pH at all times is critical and it is recommended that automatic chemical dosing systems are installed in these circumstances. Careful selection of manual testing and frequency is recommended. All testing should be meticulously recorded with reaction log, and, ideally a traffic-light system.
- Facility surrounds, balance tanks, overflow systems and filtration systems should all be maintained to recommendations in order to prevent bacterial contamination.
- Pre-bathing showering is essential in reducing contamination, and therefore nutrients, entering the facility.
- Apply microbiological testing and act immediately on results outside parameters. Monthly for general accepted bacteria, quarterly for legionella species and *L. pneumophillia*.
- Ensure water cannot stagnate anywhere in the system by keeping pipe lengths as short as possible or removing redundant pipe work. Poor flows in filters can provide an excellent breeding ground for biofilms and promote the presence of legionella bacterium. Good design and frequent inspections of the bed are required.
- Be aware of biofilm growth and eradicate; this growth protects and promotes legionella bacterium.

It is essential we understand the basics of legionella contamination, sources and risks. This bacterium has killed many people, including clients, staff and sub-contractors. It also can cause serious complications before death. This can also have a massive financial impact on a business, in terms of litigation and fines, loss of business and its reputation, and the costs involved in fixing the plant problems.

**Robbie Phillips and Richard Lamburn are members of the STA's technical pool plant team.**

For more advice visit [www.sta.co.uk](http://www.sta.co.uk). Further reference can also be found on the HSE website at [/www.hse.gov.uk/legionnaires/](http://www.hse.gov.uk/legionnaires/)

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