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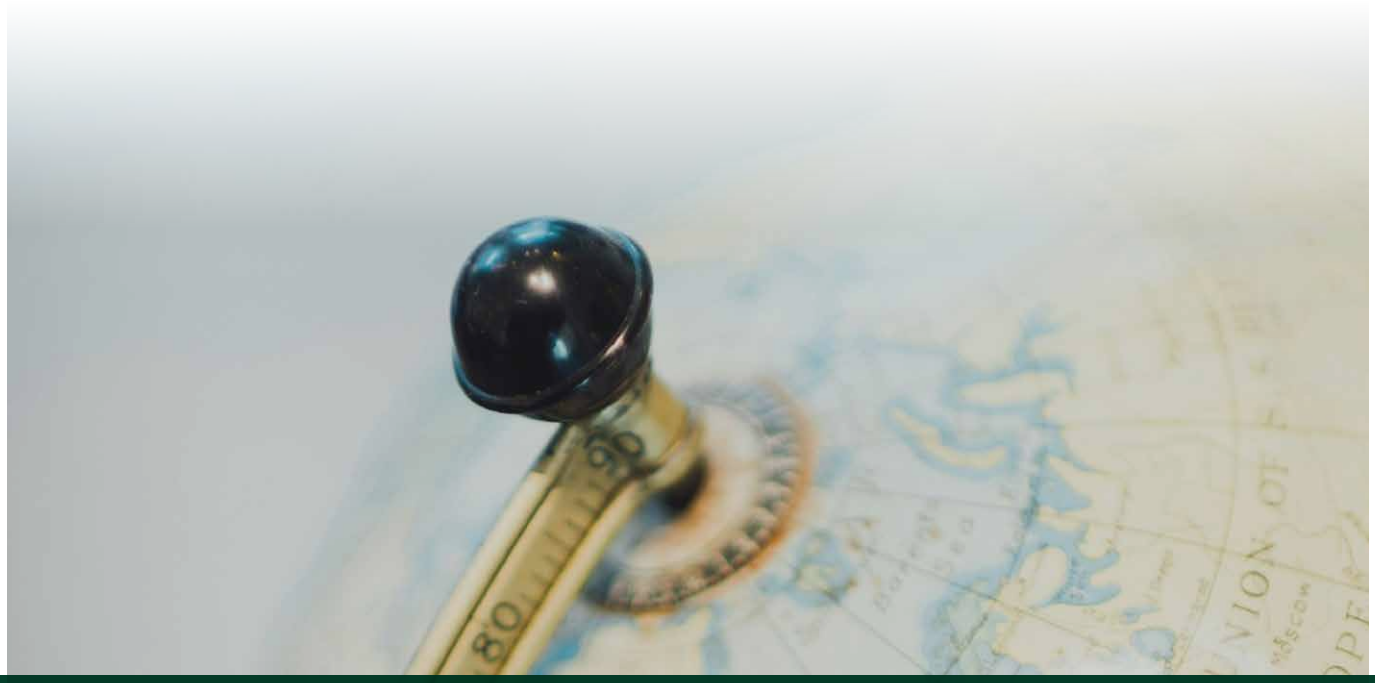
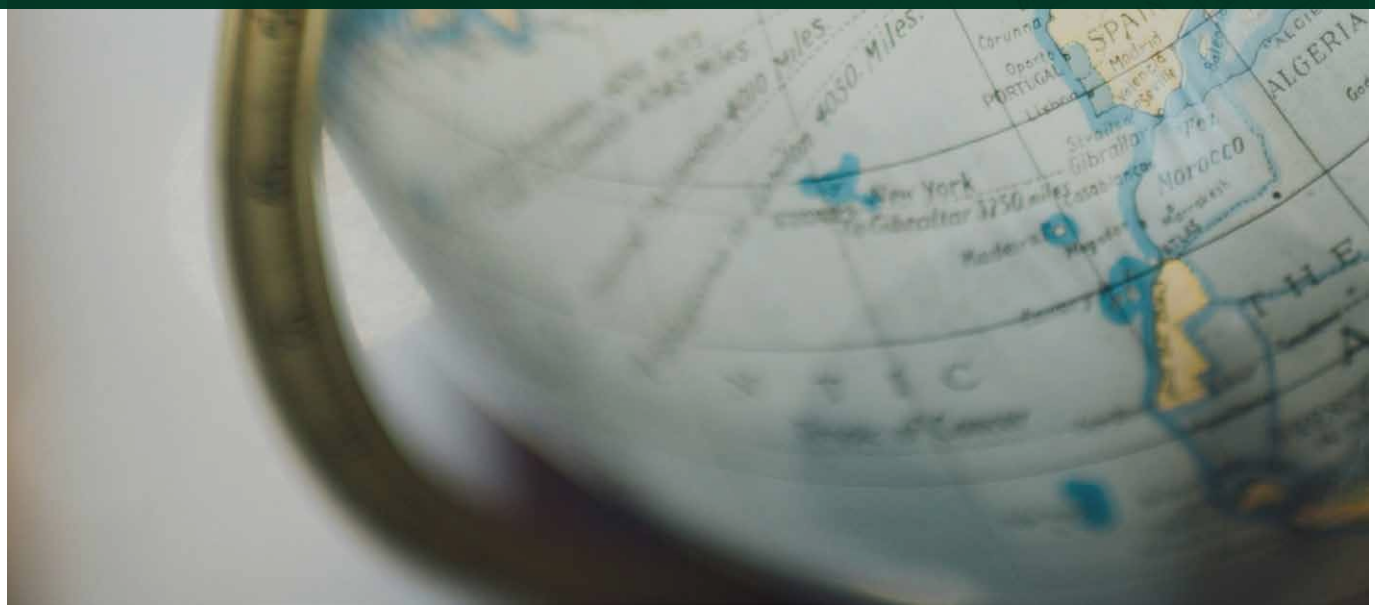


White Paper

A climate for Legionella?

August 2024



A climate for Legionella?

Legionella as a subject and management issue, has been largely well understood and regulated for decades, (it is nearly 60 years since it was first characterised). It is also true that, in the intervening years, our knowledge has continued to expand and grow around the subject, as we learn more about it.

The requirements for growth of Legionella, how it causes disease and those most susceptible has not changed. Neither overall has the control measures that can be employed that are dependent on system type and operation. We are still seeing regular outbreaks as well as individual infections, and where legislation directs the prosecution of those responsible for them.

Are more recent outbreaks, however, not only adding further to this knowledge but possibly also indicating other forces now affecting the epidemiology of Legionella?

In this whitepaper:

1. Numbers of Legionella cases

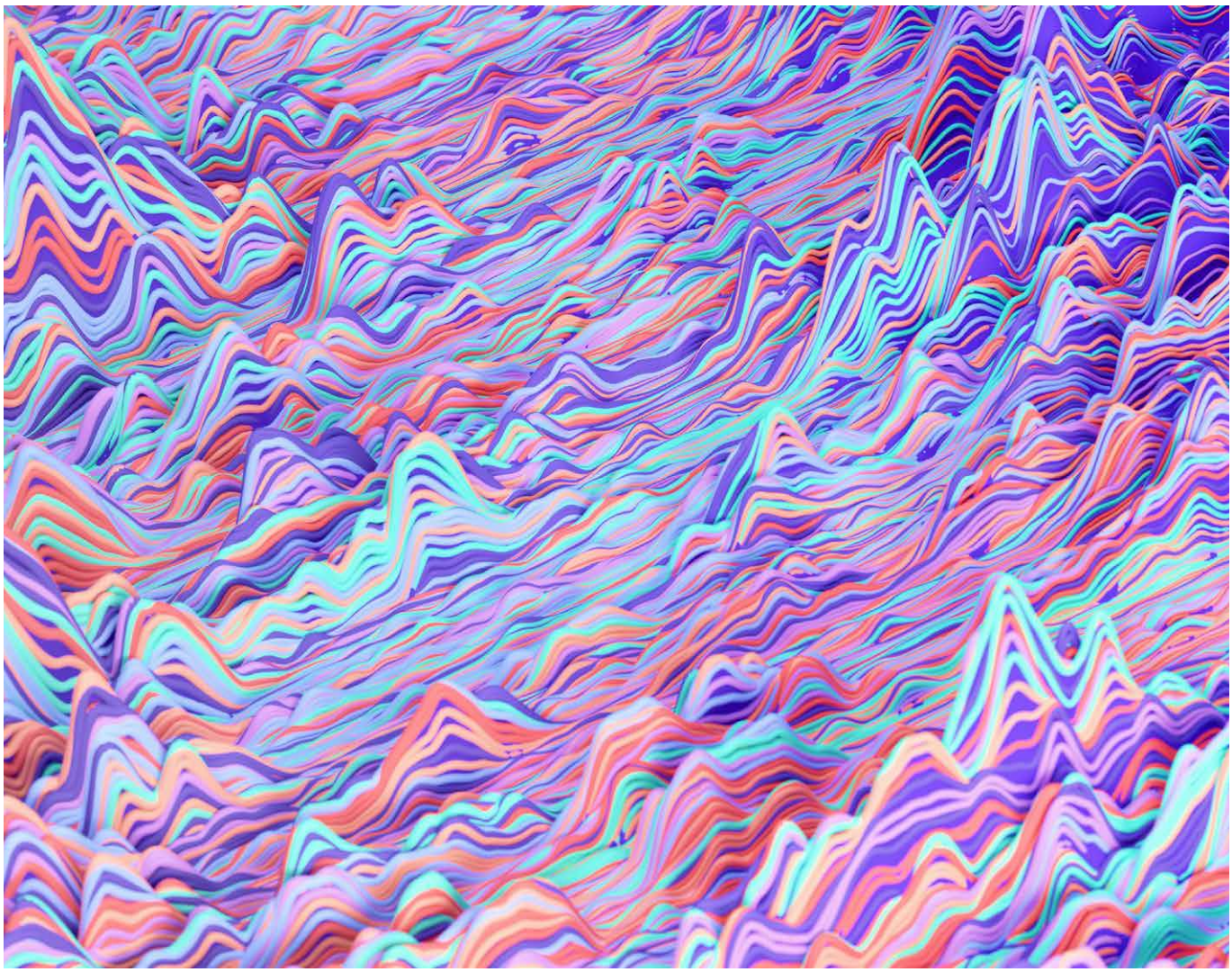
A report published by the European Centre for Disease Prevention and Control (ECDC) last year reported that in 2021, "the EU/EEA witnessed the highest annual notification rate of Legionnaires' disease to date, with 2.4 cases per 100,000 population." It described the over 10,700 reported cases and 704 known fatalities as "a significant surge."

Where the cause(s) of the increase remains unknown, it is postulated that several possible factors may explain the findings, these included:

- Changes in national testing policies and surveillance systems;
- An ageing EU/EEA population; and
- The design, infrastructure, and maintenance of water systems used in buildings.

The report went on to recognise that, "changes in climate and weather patterns across Europe and worldwide can also impact both the ecology of Legionella in the environment and the exposure to water aerosols containing the bacteria."

In the UK, whereas the previously well reported stats on Legionella in England and Wales have been less easily accessible since the pandemic, they do show increases too, with the 3-year mean figures for reported cases of Legionnaires' disease being 459 (2017-2019), compared to 307 (2010-2012).



2. Numbers, clusters and causes

Over the last 18 months more than 40 outbreaks of legionellosis have occurred worldwide, infecting over 600 people and resulting in 50 deaths. The majority are individual instances, typical of what is normally seen and associated with a system or service in a specific building. As reported earlier in the month an example of this is the outbreak in the Laverton area of Melbourne (Fatal outbreak of Legionnaires' disease in Melbourne, Australia (assurityconsulting.co.uk)). This has now risen to 109 people infected and two deaths. Other outbreaks, while initially appearing isolated, do seem to be occurring for longer periods of time, repeating, and with potentially involvement of more of the local water systems. Examples of these include:

The Baltic States

As of 16th August 2024, the Legionellosis outbreak in Kaunas, Lithuania, has resulted in over 20 confirmed cases and 7 deaths. The outbreak, which began in late April 2023, has been linked to contaminated water in a water pumping station at Garliava (the start of the outbreak coinciding with the washing of the reservoirs at the local pumping station).

A not dis-similar trend has been seen in neighbouring Latvia, where during 2022/23 Legionella infections have led to 120 infections and 18 deaths. A hypothesis was that many of the cases were due to the energy-price crisis with people looking to save money on water heating. A possibility highlighted by Viktorija Leitēna, epidemiologist at the Disease Prevention and Control Center, who noted "this year, we had temperatures below 50 degrees in nearly half of the samples, according to statistics."

New Jersey, USA

The New Jersey Department of Health reported that testing between 3rd August and 24th October 2023 found "21 people in Middlesex County and 20 people in Union County were sick and tested positive for Legionella (both counties only usually see 6 to 8 over the same time frame usually).

In March 2023, the New Jersey Department of Health had also investigated following seven people contracting Legionnaire's disease in Mercer County, with two of them subsequently dying. This follows further cases of Legionnaires' disease reported in the same area in August 2022, April 2022, and December 2021. Four people were infected with one fatality.

Following the investigation Trenton Water Works was looking to clean and line 2.25 miles of tuberculated 4 to 8-inch diameter water mains in areas of the county.

In December 2022, both the Camden County Department of Health and Cape May County Health Department were working with authorities after four cases of Legionnaires' disease were reported in people living in Pennsauken and a resident at a developmental centre became ill.

Lombardy, Italy

As of 8th August 2024, 3 people have died and at least been 49 infected in an outbreak of Legionnaires' disease centred on the Corsico and Buccinasco municipalities, Southwest of Milan in Lombarby, Northern Italy. The outbreak is believed to have started in April 2024 and the over the period officials have been sampling several sections of Milan's supply water system.

Sydney, Australia

April 2022, 4 cases of Legionnaires' disease, were reported in the Camden and Narellan areas of Sydney. No specific source has been identified yet and investigations are continuing, including further testing of local water sources

May 2022, multiple evaporative cooling systems around Sydney's CBD have been assessed following 6 cases Legionnaires' disease being identified in the area. Sydney's CBD was again the centre of an outbreak in Jan/Feb 2024 after 7 people contracted Legionnaires' disease. The focus for the investigation is potentially contaminated cooling towers.

Rzeszów, Poland

In September 2023, a total of 166 cases of legionellosis, including 23 deaths, were reported from an area around the city of Rzeszów in Poland. The outbreak is believed to have started in July /August 2023 with the number of cases so far identified higher than the annual number of Legionnaires' disease Poland has reported since 2016.

Activities that occurred as the outbreak developed included the mapping all positive cases, water sampling sites, and cooling towers, the temporary shutdown of public fountains, public water sprays, and other water sources and disinfection of the water supply in the city and adjacent towns.

A recent period of very warm weather coupled with significant changes in occupation around the area (it was a transit stop for civilians and military associated with the war in neighbouring Ukraine) has been hypothesised as a significant factor in the cause of the outbreak.

3. What might we deduce from such episodes?

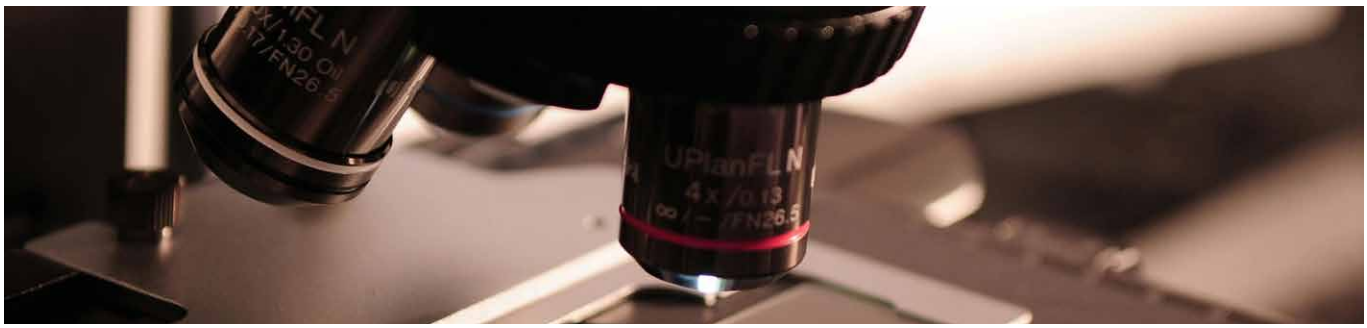
In the main, the investigation into outbreaks usually identifies deficiencies in control of the associated water systems and services, however, we may be seeing other factors also coming into play.

Whether better surveillance, easier testing or a combination of both, there does appear to a be a general increase in the numbers of cases of Legionnaires' disease being reported around the World. As technology and information further grows, this is likely to continue.

Climatic conditions, particularly periods of warmer wetter weather, appear to be influencing how outbreaks are now occurring and the outcome they are having. For example;

- With the recent Melbourne outbreak in Australia, recent reports are now indicating that "due to recent weather conditions, some people may have been infected while kilometres from the cooling tower", according to Victoria's Chief Health Officer Dr Clare Looker.
- Longer, warmer periods of weather may be seeing supply systems being colonised with higher numbers of Legionella, which in turn are persisting as a reservoir for the bacteria. Such conditions could explain why repeated outbreaks in New Jersey, the Baltic States and possibly Sydney have been occurred.
- The outbreak in Poland potentially resulted from a period of very warm weather in conjunction with a period of low demand for water, leading to widespread contamination of the water supply to the city and surrounding areas.
- The outbreak in Latvia, also highlighted potential wider socio-economic risks; with the rise in energy costs resulting in users reducing hot water temperatures to save money but increasing the risk of Legionella growth in these systems.

As far as the UK stands currently, the existing legislation and controls, if effectively implemented, continue to offer the best options for management. So, getting your Legionella risk assessments, schemes of control, training and documentation right, is key.



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