



White Paper
Being wise to water

May 2022



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Water is one of those commodities that we tend to take for granted, after all just turn on a tap and out it comes. But from a workplace, facilities and building management perspective there is a lot more to it. From safety and quality to leaks, water can be one of those areas where issues arise if it is not carefully managed.

So, this month we are looking at the subject of buildings and water. From some headline water facts to managing Legionella, drinking water and closed water systems, we are sharing some actions you may want to take or perhaps to use to check where you are with your management.



1. Water in the UK, some facts

In 2020, 14,255 million litres of water (Drinking Water Inspectorate (DWI) figures) was supplied daily by public supplies in England. This was via:

- 1,924 abstraction points;
- 1,090 treatment works; and through
- 318,073 kms of mains pipes.

Between 2018 and 2020, each person in the UK used approximately 142 litres of water per day per year (figures from Statista).

According to Waterwise, “as much as 25% of your household’s energy bill comes from heating water, and domestic hot water accounts for 5% of UK greenhouse gas emissions.”

Published by Defra, their triennial report for the years 2017 to 2019 identified in England “99.95% met the regulatory standards”. More recently, testing at consumer’s sites found the percentage of samples meeting the requirements in 2020 to be:

- England and Wales 99.97%;
- Scotland 99.92%; and
- Northern Ireland 99.94%.

A consequence of the first lockdown in March 2020, we saw a significant increase in demand for water (approx. 30% above base usage by the end of May in 2020). This was equivalent to peak levels seen during the hot summer of July 2018.

According to the DWI, during 2020, they “put in to place 103 new legal instruments in England, to improve drinking water quality to 27,545,892 consumers”

Waterwise identify 76% of domestic water usage to come from just four areas:

- Toilet flushing 30%;
- Personal washing (baths and taps) 21%;
- Personal washing (showers) 12%; and
- Clothes washing 13%.



2. How is water regulated in the UK?

Because of its diverse nature, different aspects of water are controlled by different agencies in the different parts of the UK.

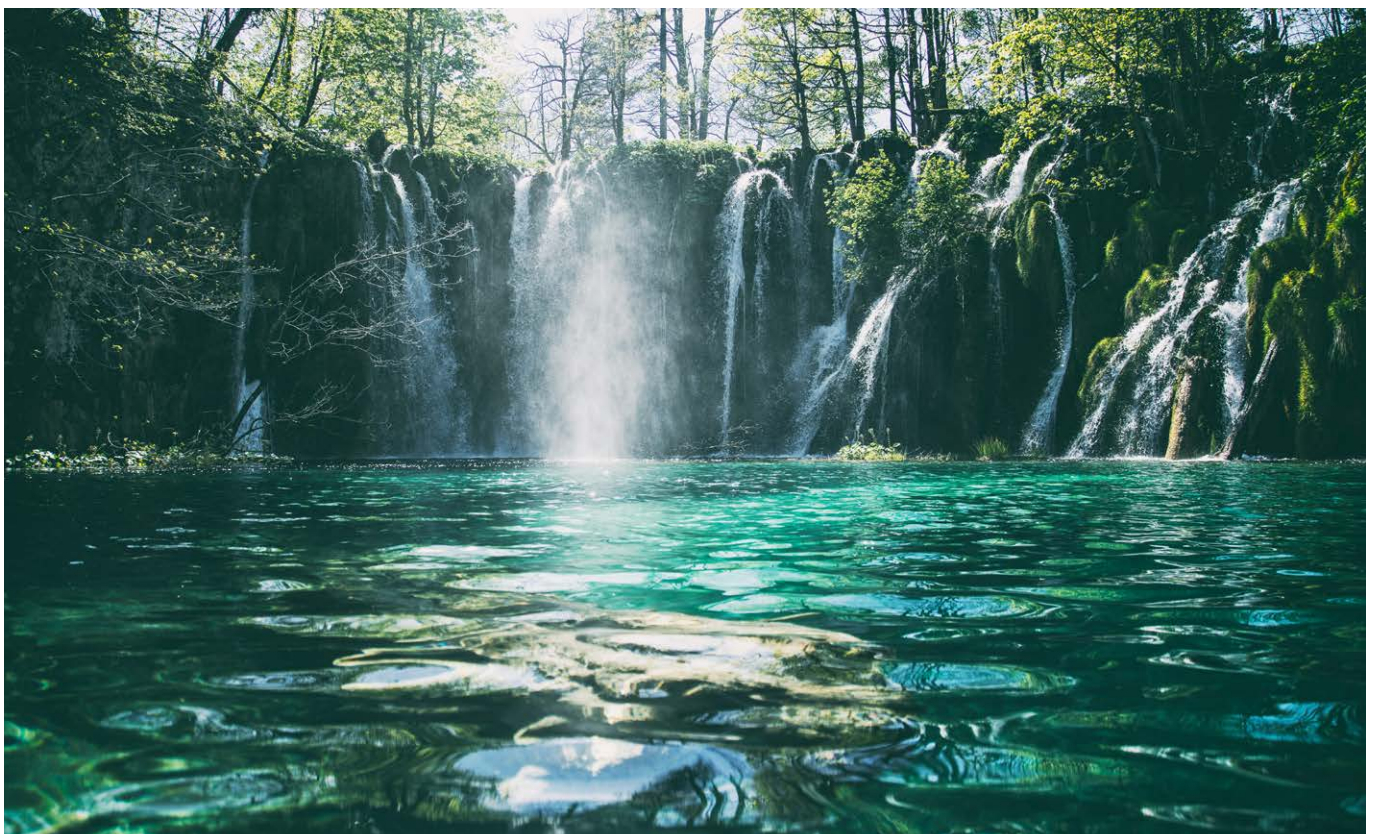
From a health and safety perspective, water in buildings falls under the jurisdiction of the Health and Safety Executive (HSE) or local authority, dependant on for example sector, work activity or hazard. These could cover for example Legionella and other related health and safety related incidents, through the Health and Safety at Work etc. Act 1974, Control of Substances Hazardous to Health Regulations 2002 (COSHH) and the Workplace (Health, Safety and Welfare) Regulations 1992.

Standards for drinking water were transposed from a European Directive, the European Council Directive 98/83/EC (the 'Drinking Water Directive') and is overseen by the Drinking Water Inspectorate (DWI). In Scotland and Northern Ireland, equivalent legislation, and regulators (The Drinking Water Quality Regulator for Scotland (DWQR) and Drinking Water Inspectorate (DWI) respectively) exist. There has been no alteration to the standards as a result of the UK leaving the EU.

Water companies also have enforcement powers over issues such as wastewater and contamination - occurring from the installation and maintenance of plumbing systems, fitting, and appliances, etc. - under the Water Supply (Water Fittings) Regulations 1999.

Ofwat, a non-ministerial government department act as the economic regulator of the water sector, through the Water Industry Act 1991.

For matters such as environmental/pollution related incidents and abstraction licences, etc. the respective environment agencies across the UK are the enforcing agency.



3. What's the current position with Legionella?

Legionella is well understood and for the most part well managed by many organisations. As with all things microbiological however - and speaking as a microbiologist - it can go badly wrong very quickly if you don't maintain effective control.

While concerns expressed over lockdown have not materialised to any great extent, this is against a backdrop of increasing numbers of reported cases in England and Wales. Some research using PHE (and their previous incarnations) figures over the last three decades show a rise from around 200 to approx. 400 reported cases a year, when averaged out. Improved diagnostic techniques no doubt play a significant part in this.

Summer months continue to produce most cases too, with typically 60% of the annual reported infections occurring between July and September. Community related cases seem to be greater than those contracted abroad currently too.

Nothing has changed with respect to the regulation and ACoP requirements for Legionella control, although with the current version of L8 now nearly nine years' old, referring to it as "new" is perhaps no longer really accurate!

Another enduring fact relating to Legionella is the need for management to be the focus. Where operational controls are of course fundamental to success, it is failures in the tactical management that usually lead to outbreaks and/or enforcement action. Taking the HSE HEX 12/07 report as an example (HEX/12/07: Legionella outbreaks and HSE investigations; an analysis of contributory factors), "outbreaks by failing" identified the main issues to be:

- Risk Assessment 25%
- Scheme of Control 63%
- Cleaning and Disinfection 4%
- Training and Competence 8%

Similarly, "Prosecution by collective failing" identified the main culprits to be:

- Scheme of Control 50%
- Risk Assessment and Scheme of Control 43%
- Scheme of Control, Training and Competence 7%

More recent statistics from and HSE intervention programme, unfortunately echoed these outcomes, with the main findings leading to enforcement action against duty holders included 64% for risk assessments being absent/not up to date/insufficient/in need of review, 44% for written schemes being absent/not up to date/ not sufficient/in need of review and 27% for lack of training.

Such failings in management were starkly highlighted just before the pandemic took hold when in November 2019 Birmingham Magistrates' Court handed out twelve month suspended prison sentences to two business owners who failed to put suitable measures in place to control the risk of Legionella bacteria from the cooling tower on their premises.

More encouragingly, and using data from the 1,000s of tests and examinations Assurity Consulting have carried out over the years, Legionella detections (anecdotally reported to be nationally around 11%), while at 1% for evaporative cooling systems and 2% for hot and cold water systems prior to the pandemic (reference period 2016 to 2019), have been 0% and 1% respectively over the last two years.

4. So, what about drinking water?

Our provision of drinking water has become ever more sophisticated in the workplace. As well as mains and stand-alone bottled water dispensers, vending machines and plumbed-in (hot and cold) water units, all offering a solution (excuse the pun). This, in part, did result in some issues over the recent years.

Again, using the data we've been gathering on building performance, prior to the pandemic (reference period 2016 to 2019) on average 2% of drinking water outlets produced results with coliforms and/or E. coli present (so outside the prescribed standards) and a further 24% produced counts of *Pseudomonas aeruginosa* (less of a potential health risk, but likely to result in taste, odour and/or colour issues with the water).

Since lockdown however (2020 and 2021), while the results for coliforms and/or E. coli have decreased with a 1% average, *Pseudomonas* isolations have gone up to 27%.

The possible explanations for this are multiple. Certainly, over the last two years many drinking water supplies, be they mains, vending machines or bottled water dispensers had a significant reduction in use. While this situation potentially has less of an effect on direct mains supplies, for anything holding water this could certainly explain some of the findings. Frequency of cleaning/replenishment could have been another factor with the focus firmly in other areas for the former and greatly reduced turnover resulting from the latter.

Regulation 22 of the The Workplace (Health, Safety and Welfare) Regulations 1992, which covers "Drinking water", states:

"(1) An adequate supply of wholesome drinking water shall be provided for all persons at work in the workplace.

(2) Every supply of drinking water required by paragraph (1) shall -
(a) be readily accessible at suitable places; and

(b) be conspicuously marked by an appropriate sign where necessary for reasons of health or safety.

(3) Where a supply of drinking water is required by paragraph (1), there shall also be provided a sufficient number of suitable cups or other drinking vessels unless the supply of drinking water is in a jet from which persons can drink easily."

Choice and variety of supply is also attractive for occupants and users. Particularly with a long-term change in occupancy rates though, this may now come at a cost. Too many outlets, or those in unoccupied areas of the building, run the risk of some being "forgotten" and underused. This in turn increases the likelihood the water quality within them becomes compromised. Rationalising this situation as part of your return-to-work strategy and adjusting your provision of drinking water accordingly would be wise.



5. And your closed water systems?

Paradoxically, COVID-19 controls around mechanically ventilated buildings have seen these systems working much harder over recent times. Regardless of occupation many systems were running on full “fresh air” and for extended periods of the day, if not constantly.

Under these conditions getting heat into the building has proved an issue and seen LTHW systems working very hard, yet their chilled counterparts less so. Isolation of parts of the system too (in empty parts of the building) can also lead to a change in operation characteristics and system performance.

With the design of closed water systems meaning, they don't produce any aerosols under normal conditions, coupled with their operating temperatures, these systems are usually considered low risk with regard to Legionella. However, water quality does need careful monitoring to make sure of efficient operation of the system.

Identifying the performance trends in these systems is key (providing it is based on a relevant sampling/testing regime). As patterns of use change, it is this information that will inform you on any subsequent changes you need to make to keep the system operating properly. If you are unsure an independent assessment of your closed water system would be a very good investment.



6. Some actions to take to keep your water systems safe and well

- Check your current water meter readings against your pre-pandemic figures to build up a picture of your pattern of current usage.
- Review your Legionella risk assessment to see if it remains relevant to your current circumstances and all actions/recommendations have been completed.
- Review your provision of drinking water, particularly through vending machines and bottled water dispensers, to make sure it meets and reflects occupancy and user needs. Consider moving or removing units/supplies that are now surplus to your requirements.
- Audit your written schemes of control for Legionella to assess how accurately it is meeting your current building operational needs. Have any changes both during lockdown and as we return to work in greater numbers been accurately documented?
- Establish the current position with your closed water systems performance regime. What are the consequences of any changes to the systems over lockdown and how are they being managed now?
- Assess the operation and maintenance of all your building water systems to identify what changes, if any, occurred as a result of lock down and so the actions/activities that need to occur to keep them safe and operational.



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