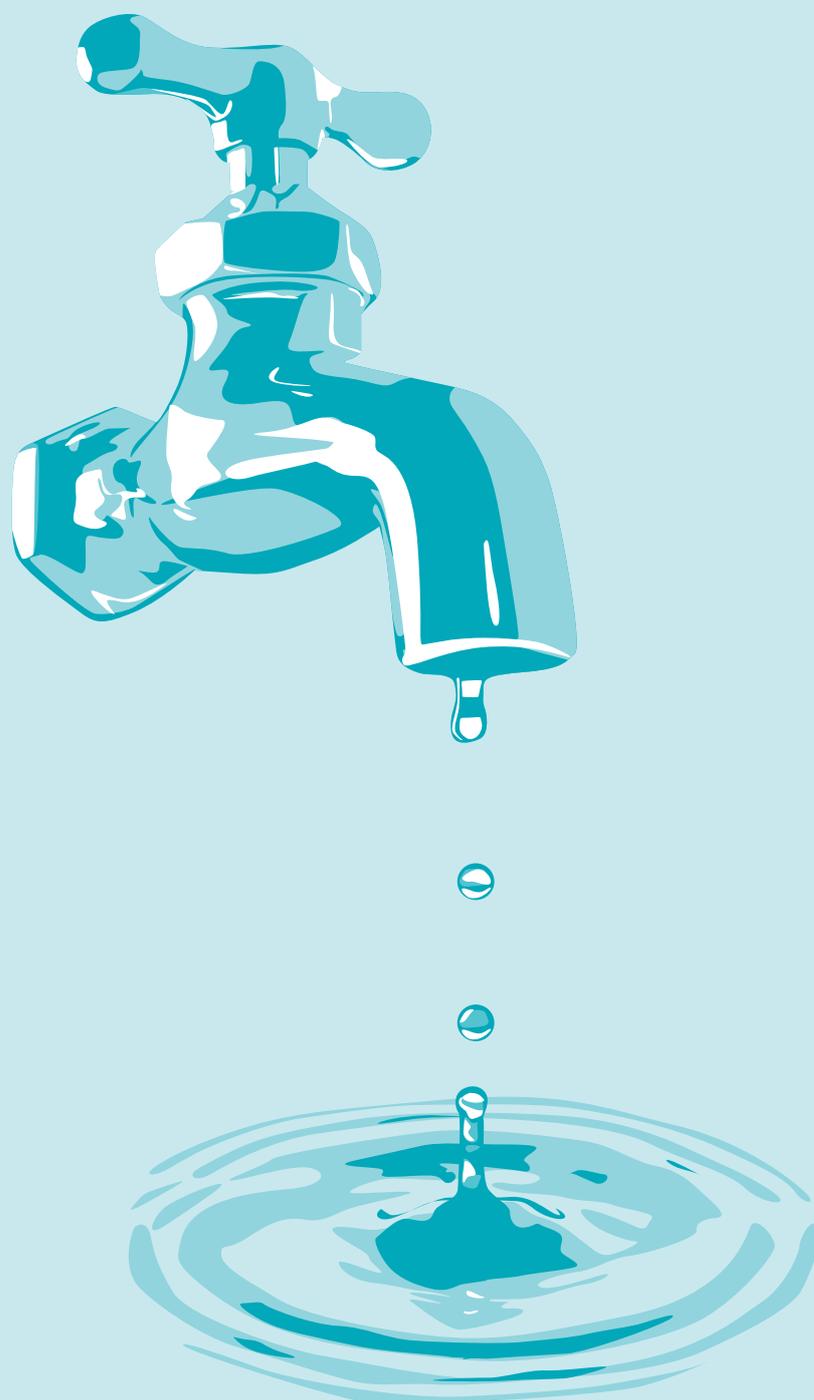


Drinking water 2015

Summary of the Chief Inspector's report
for drinking water in Wales

July 2016

A report by the Chief Inspector of Drinking Water





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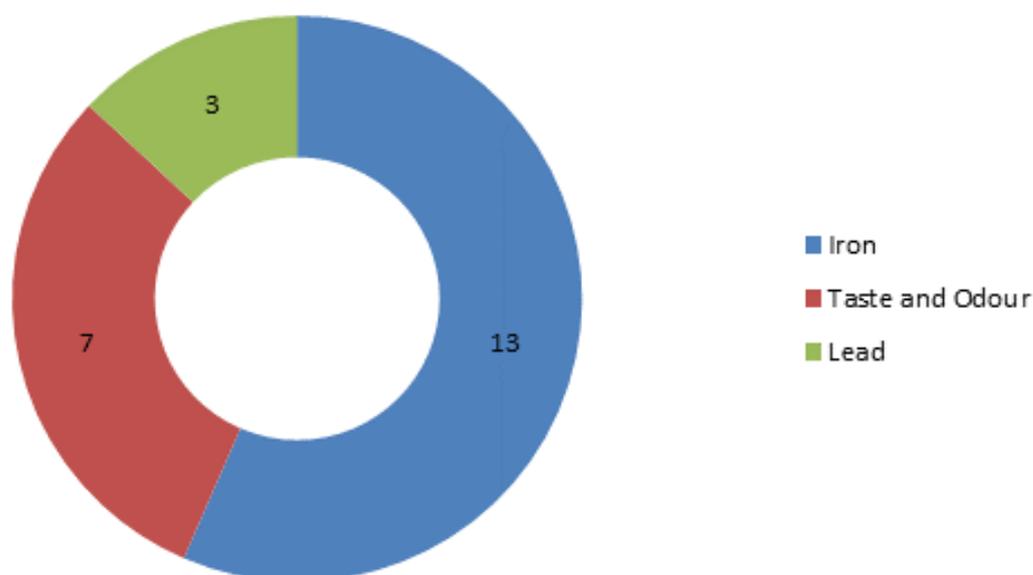
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Summary of the Chief Inspector's report for drinking water in Wales

Overall, in 2015, the figure for public water supply compliance with the European Union (EU) Drinking Water Directive in Wales and England, was 99.96%. The drinking water quality compliance figure is made up of tests for 39 different microbiological and chemical parameters and for 36 of these parameters the standard for compliance with the Water Supply (Water Quality) Regulations 2000 was met in relation to every test carried out in Wales. Where there have been failures to meet standards, the reasons are illustrated in Figure 1.

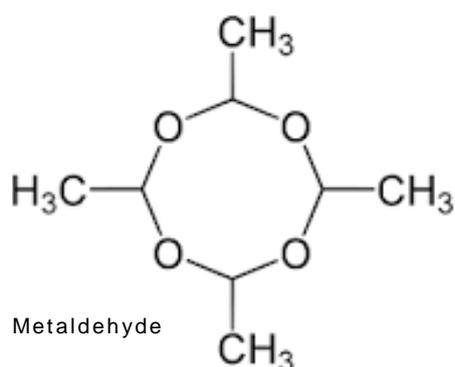
Figure 1: Number of failures of standards – Wales 2015



Compliance is not, however, a complete measure of how compliant water companies are with the Regulations, nor an accurate predictor of performance, but a measure of end point monitoring. Too much focus remains on zonal compliance resulting in a reactive approach where there are still too many significant water quality events. There is also too much emphasis on treatment solutions, rather than risk assessment and management of those hazards arising in the source and all the way through to the tap.

Protection of the source from which water is drawn is a sustainable, effective and an efficient means, which takes a proactive approach to reducing risk, reducing treatment and thereby reducing waste for a scarce resource. This is recognised in the Water Framework Directive which sets out the aim of avoiding deterioration in source quality in order to reduce

the level of purification treatment required in the production of drinking water and in the Sustainable Use Directive where appropriate measures should be in place to protect drinking water supplies from pesticides. England continues to experience detections of metaldehyde (65), a pesticide used to control slugs which, after application, can be washed into water sources by rain. It is difficult to remove both by catchment management and water treatment. In Wales, monitoring for metaldehyde is in place in 13 raw water abstraction points, six of which exhibited low levels of metaldehyde in 2105. However, there have not been any failures to meet the standard in treated water in Wales.



In 2015 significant efforts were made by companies affected to characterise catchments, initiate reward orientated trials for farmers, promote product substitution and run campaigns to reduce the presence of metaldehyde. Initial results of this work have been encouraging, but the trials are in small and limited catchments and further work will be necessary to prove this can be transferred to large catchments. For reductions to continue in 2016, all stakeholders must work together for a sustainable and cost effective solution.

Turning to the next stage of water supply, water treatment; in 2015, three events occurred at large and critical treatment works. Severn Trent Water's Frankley works, where disinfection failed for six hours potentially affecting 1.5 million consumers, and United Utilities' Franklaw works, where *Cryptosporidium* detections resulted in boil water advice to up to 700,000 consumers. The failure of these two treatment works identified issues for consideration by all companies and highlighted the need for longer strategic planning to avoid failure to supply wholesome water to consumers at all times where there is no obvious opportunity to recover.

A third event at Affinity Water's Egham works highlighted insufficient design resilience when a burst occurred on the sole 1,000mm glass reinforced plastic main between the treatment stages, threatening supplies to 280,000 consumers. Plans should include not only interconnection between works and systems, but process redundancy, operation within design limits, appropriate technology and competent staff



all brought together through risk assessment and mitigation. This year, companies submitted their risk assessments to the Inspectorate and it is clear that long-term asset planning for water quality will need to be a priority to maintain a resilient supply.

Moving to water storage; during 2015, the Inspectorate focused its audit programme on structures called break tanks.

Break tanks exist in networks for operational reasons often to allow a change of pressure from one area to the next or as a safeguard against backflow and are usually relatively small. These are not considered to be regulatory assets unlike service reservoirs which are considered to be stored reserves of water to meet a variable demand and are a range of sizes, sometimes containing millions of litres of water. Even though the Regulations do not specify the monitoring requirements of break tanks, we would expect companies to treat them in a similar way to service reservoirs as they present a similar risk to the water supply. The Inspectorate concluded that this was not the case. In 39 (71%) cases, there was no sampling at all and in 13 (24%) cases the companies had not even included the tank in risk assessments. This highlights the risk posed when companies focus on achieving compliance as a performance target rather than risk management.

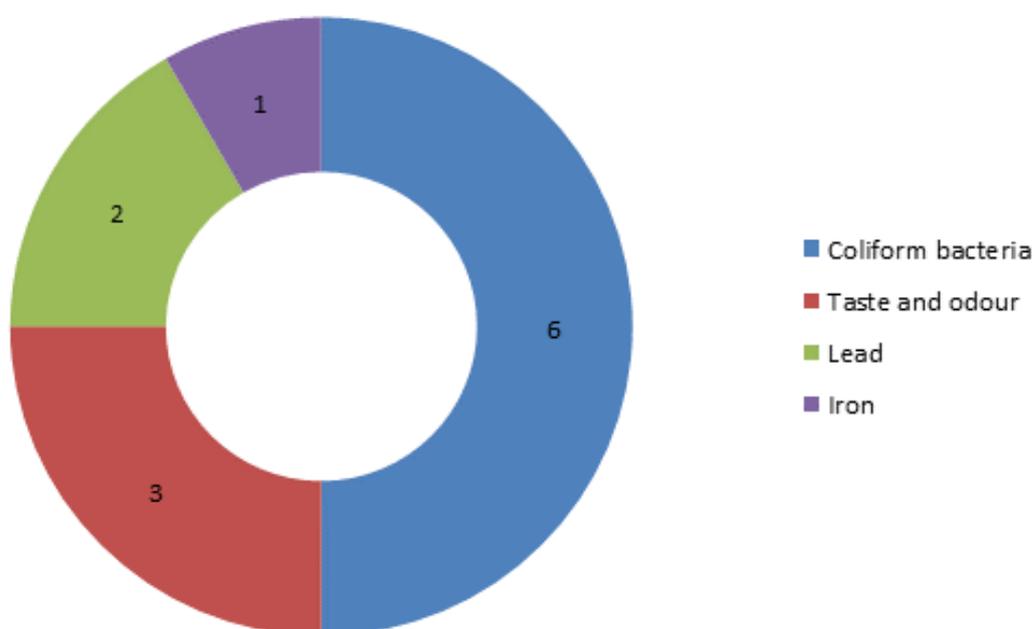


In the fourth step of the supply chain, we turn our attention to water distribution. The water industry has many interconnections within and between water companies that allow the interchange of water to ensure a sufficient volume is available. These supplies are referred to as bulk transfers or bulk supplies. When a company supplies water to another company both are responsible in this arrangement. That means water must be wholesome when exported and must not cause a deterioration to the system at a later point by the effects of the change in the source. Equally, the importer must ensure they have taken measures to secure suitable water for their system. This is achieved through information sharing and a combined risk assessment ahead of any transfer. In 2015, the Inspectorate identified further evidence that weaknesses existed in the protocols and arrangements for bulk supplies. The Inspectorate was disappointed to identify 25% of water companies' bulk transfer protocols did not include a regular transfer of data or interaction between provider and recipient company. The Inspectorate's audit revealed that the majority of arrangements had not been reviewed or updated since being introduced in

2012. Companies failed to share risk assessments, water quality data or any other water quality risk mitigation approaches for supplies between companies or within companies. In an industry where there is and will be significant transport of water by companies, water quality must remain at the centre of this objective rather than business objectives. The transport of water which is not compliant could be considered as an offence such as when metaldehyde is present or where a new source causes another system to become non-compliant, as demonstrated in Flint, Michigan in the USA.

The final step of the water supply chain is delivery at the tap. Just under 40% of failures in 2015 were due to consumers' domestic systems (12 out of 32).

Figure 2: Failures at consumers' taps



One of the most difficult areas for water companies to control is a failure at a domestic premises with causes ranging from historical lead piping and the use of products such as taps and fittings which may contaminate the supply, examples of which are solder containing lead (banned for use in water supplies since the 1970s but still being detected) or taps with a chromium or nickel coating. The presence of these materials will continue to pose a risk to health. Companies must exercise their powers as the water fittings regulator particularly as competition increases.

The Inspectorate will continue to develop its strategy to focus on risk assessment. The requirement for companies to complete a risk assessment for every treatment works and supply system was initiated as part of the 2007 amendments to the Regulations. In October 2015, the

Inspectorate completed its project for a database which sets a commonly agreed framework for summary risk assessment reports demonstrating company compliance with the Regulations. The database collects risk information associated with catchments, treatment works, service reservoirs and zones, and enables the Inspectorate to scrutinise those risks and related mitigations. The Inspectorate's assessment of the risk information and any resulting enforcement action is also visible. This key change embraces the principles of risk assessment and better regulation. Work is currently ongoing to develop the outcomes of the assessments and this will be taken into account in the risk-based response of the Inspectorate going forward.

The new Chief Inspector's report for 2016 acknowledges the changing landscape of water regulation where the focus of proactive regulation is focused on risk assessment and management rather than setting the goal solely on end point compliance of parameters. Data submitted to the Inspectorate, together with the outcomes of investigations and enforcements, will be used to manage regulatory risk with new indices to identify where the risk of regulatory failure exists within the industry. The aim of this is to deliver proportionate and effective regulation.

Private supplies

In 2015, local authority records contained the details of a total of 13,893 private supplies in Wales, 84% of which serve a single household. In Wales, over 77,000 live or work in a premises that relies on a private supply. The quality of public water supplies in Wales in 2015 was very high, with only 0.04% of tests failing to meet the EU and national standards, but the quality of private water supplies remains a concern, with 6.1% of tests failing to meet the standards in 2015. Nonetheless, this figure represents an improvement when compared to the 9.6% of tests that failed in 2010, the year when reporting for private supplies was first introduced.

The results of testing during 2015 demonstrate that private supplies in Wales, while showing an overall improvement over previous years, continue to be of unsafe microbiological quality, with 15.7% of samples containing *E.coli* and 13.8% containing Enterococci. Failures of these two standards mean that the water supply is contaminated with faecal matter and there is a risk that harmful pathogens will also be present.

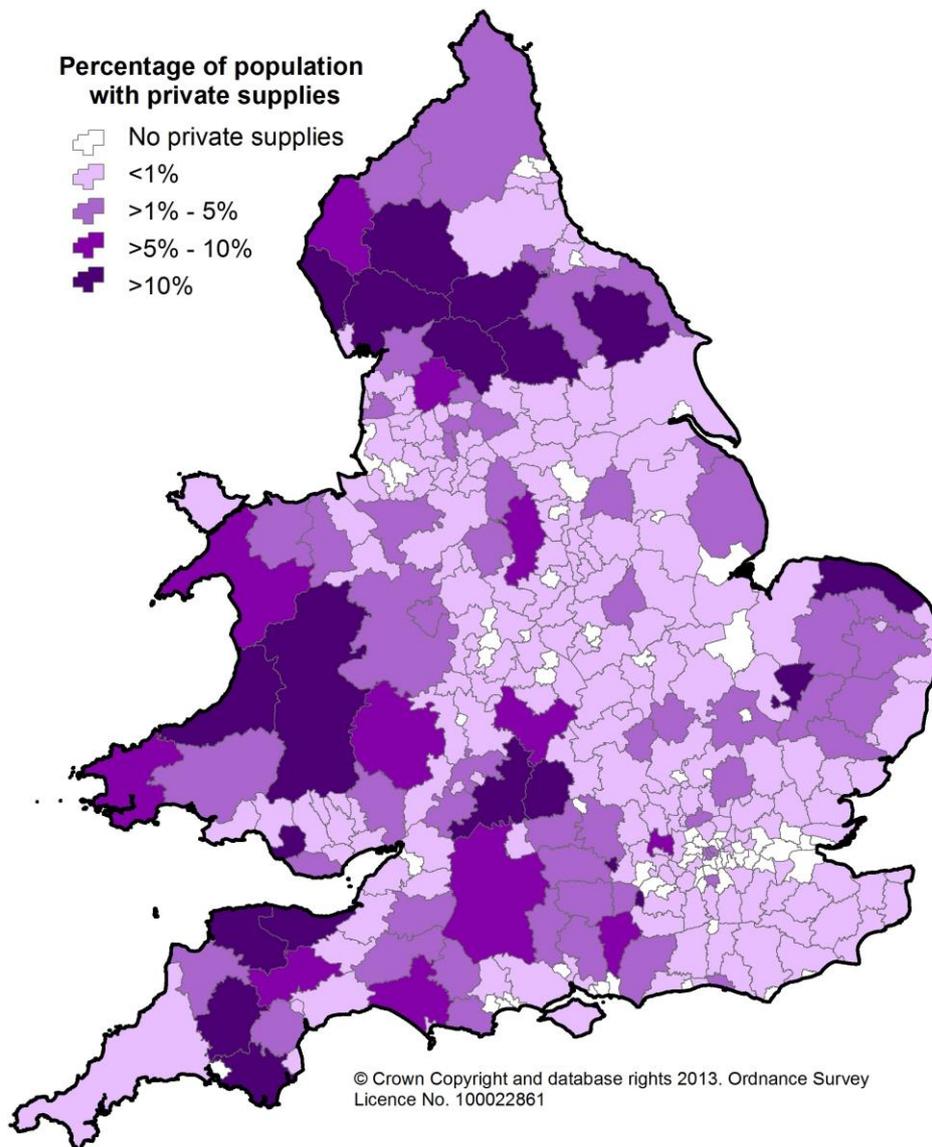
The records show that in 2015 there were 61 supplies in Wales that were a potential danger to human health where local authorities required the owners to make improvements and take steps to protect public health. This represents a slight decrease in activity in Wales compared to 2014, when

action to safeguard public health was taken in relation to 165 supplies. In Wales, four-fifths (80%) of these failing private supplies are large supplies or supplies to commercial or public premises.

Across Wales, the number of private supplies that had been risk assessed by the end of 2015 was 1,870, but there are still 13% of assessments to do. Overall, the report shows that 13 local authorities in Wales have fully complied with the duty to risk assess all relevant supplies in their area. One council (Denbighshire County Council) has written to the Inspectorate refusing to supply their statutory data return citing a lack of resource to complete the task and thus making the Inspectorate's data deficient.

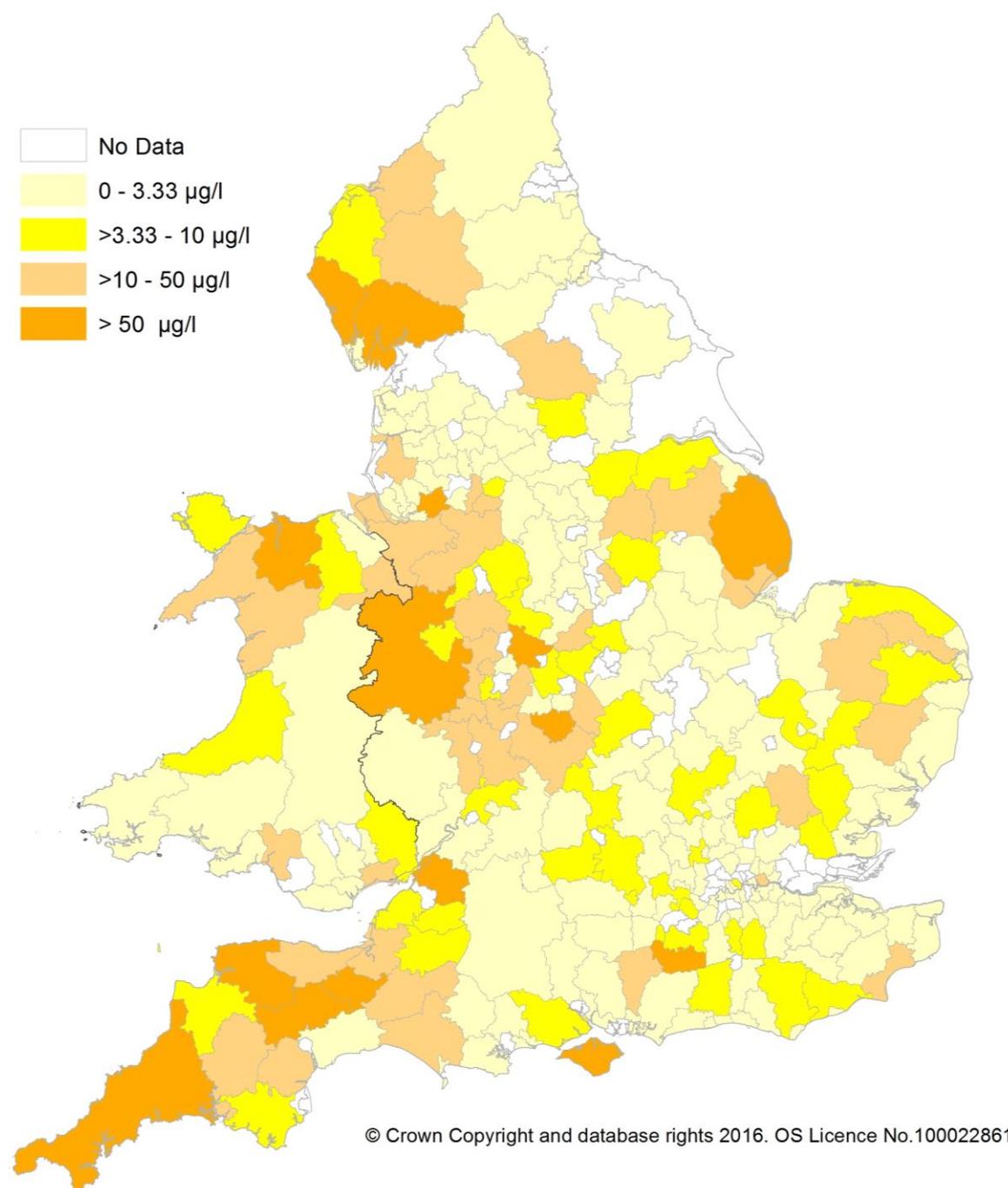
Private supplies on average supply 1% of consumers, but in some areas private supplies can provide up to 10% of the population particularly in remote areas where there is no public supply. These areas such as Central Wales and the South West, and the North West of England are often associated with tourism and are frequently the supplies that provide water for bed and breakfasts, cafés and attractions.

Figure 3: Percentage of local authority population supplied by a private water supply



This report develops the understanding of the geographical location of risks such as arsenic to help local authorities when they carry out their risk assessment.

Figure 4: Maximum arsenic sample from public supply raw water and private water supplies datasets



This report also develops the awareness of failing supplies, particularly those smaller supplies which provide water to other properties and where those who receive it may not be aware of the quality nor have the ability to control or change the supply. Between 2011 and 2015, these small supplies were found to have nearly 17% of tests which contained *E. coli* and nearly 16% containing enterococci, both of which indicate direct faecal contamination and present a significant risk to consumers.

For the purposes of shared learning, the report *Drinking water 2015 – Private water supplies* describes a number of case studies with varying circumstances where consumers were put at risk or where illness resulted. During 2015, there were two events of particular significance. The first concerns illness in three independent family groups holidaying at two cottages served by a private supply in summer 2015. Amongst the 52 individuals there were 22 symptomatic cases of diarrhoea and vomiting and five people were hospitalised as a result of an infection of *E.coli* 0157. The private supply spring source was located in a wooded area of grazing pasture on hillside above the premises and was fitted with an ultraviolet (UV) disinfection unit. The supply was found to have a number of defects including changes in the catchment, undersized equipment and inadequate active management. The second significant event was the use of a private water supply contaminated with trichloroethene (TCE) by a large food factory that resulted in the authorities issuing a Detention of Food Notice. This event and the associated prosecution case highlights the documented cost impact (£1million) falling on a single food premises when it had to stop production, call back product from customers and commission a new water supply due to a situation that arose solely as a consequence of that business choosing to rely on a private water supply that did not meet quality standards. The case also shows how the reputational damage to a food business from a single incident far offsets the cost of complying with regulation.

In conclusion, drinking water requires constant vigilance and careful maintenance by competent persons.

Business performance report

Following 2015 and as part of evolving changes, the Business Performance Report develops the financial and operational responsibility, openness and transparency to all who entrust drinking water regulation to the Inspectorate. The report aims to explain the Inspectorate's statutory and non-statutory duties, strategic objectives, and our work and achievements during the financial year 2015/16 together with the forthcoming changes in drinking water legislation and regulation.

The Inspectorate, a small team of 41, regulate an industry which delivers 14 billion litres of wholesome water to consumers in England and Wales every day and provides advice for local authorities to regulate 50,000 private supplies among other functions explained in this report. The challenge to ensure drinking water remains safe, for the public to continue to have confidence and ensuring the Inspectorate is trusted to act in their interest requires innovation in data handling, expertise in the field and

collaboration with those we regulate, advise and interact with on a national and international stage.

The innovation within the Inspectorate has resulted in the assessment of over four million pieces of analytical data, over 600 event investigations and audits, over 200 risk assessments and legal notices and nearly 1,200 enquiries from local authorities, consumers and organisations. To achieve this, the Inspectorate applies better regulation by promoting self-regulation in the form of risk assessments for those we regulate and identify regulatory failure through risk analysis of the data we receive. We will continue to engage and promote constructive dialogue with our fellow regulators; Ofwat, local authorities, the Environment Agency, Natural Resources Wales, Consumer Council for Water and WaterUK the representative of the water industry as well as Defra and the Welsh Government.

The provision of wholesome drinking water is central to the protection of public health. This report explains the role of the Drinking Water Inspectorate for the purposes of learning, decision making and collaborative working to maintain confidence in our supply.



Marcus Rink
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