



PRIVATE WATER SUPPLIES – CASE STUDY 2018/01

Rainwater harvesting private water supply

This case study concerns a private supply which uses rainwater as the source. The supply feeds an 'off grid' eco centre, which is used as an educational centre and hosts events such as weddings. The supply is classed as a Regulation 9 supply as the centre is used by members of the public. A rainwater harvesting system collects rainwater from the roof area which then goes through a coarse gravel screen, a vortex filter, four storage tanks, pumps, two filtration units and UV disinfection. The supply feeds a kitchen area and bathroom facility with a shower.

The local authority served a Regulation 18 Notice in 2012 due to the supply being identified as a potential danger to health following detections of E.coli and Enterococci in samples collected from the kitchen and bathroom taps. The Notice specified restriction of use advice (boil water and do not drink advice) and prohibition of use for toilet flushing and showering. The specification of both 'boil water' and 'do not drink' advice is confusing, typically 'boil water' advice is sufficient where there is a microbiological contamination concern. The Notice included a longer-term step requiring the supply operator to provide, within 28 days, a report detailing measures to be taken to ensure compliance with the standards. No long-term mitigation measures were included such as the implementation of suitable treatment upgrades and ongoing management and maintenance.

Local authorities are reminded of the need to have clearly defined and appropriate remedial measures specified in Regulation 18 Notices both in the short to medium-term AND in the long-term, along with reasonable timescales for their implementation. Regulation 18 Notices should not be used purely as restriction of use Notices, a measure which should only serve as a means of short-term protection whilst other more permanent solutions are sought and put in place.

No further work was carried out to improve the supply at the eco-centre until 2017 when the rainwater harvesting treatment facilities were upgraded. A new UV treatment system was installed which was capable of treating the microbiological quality and anticipated flow of the harvested water. Further samples collected in 2017 and 2018 verified that the treatment system was working effectively due to the absence of microbiological indicator organisms. However the samples did show that antimony was present in excess of the regulatory standard. Antimony is a metalloid and is unlikely to be found in the

source (rainwater), thereby indicating that the contamination must have been associated with the 'catchment' (the roof), the treatment process or domestic distribution system.

A subsequent site visit to carry out a Regulation 6 risk assessment identified that solar panels had been installed on the eco-centre roof from where the rainwater is harvested. Antimony is a common component of solar panels and is therefore a potential source of the antimony detected in this supply. However, the local authority did not further investigate the cause to narrow down the likely source of the contaminant. Local Authorities are encouraged to carry out comprehensive investigations as required under Regulation 16 (18 in Wales), which should include sampling at the various stages from source to tap in the supply system. This can help determine where a contaminant may be entering the system, so that suitable mitigation measures can be considered and implemented.

This case study illustrates the importance carrying out timely and thorough investigations into the source of contamination, as required under Regulation 16 (Regulation 18, Wales). Local authorities should also be issuing Regulation 18 (Regulation 20, Wales) Notices with clearly defined long-term measures, to suitably mitigate any risk where the supply presents a potential danger to human health, with appropriate short-term actions and appropriate deadlines .

Figure 17: Solar panels installed on the roof which is used for rainwater collection.

