



PRIVATE WATER SUPPLIES – CASE STUDY 2017/04

Investigation of unusual taste and odour

This case study concerns a Regulation 9 supply which is located off the coast of southern England. The supply serves an hotel from a single borehole and undergoes filtration, UV treatment and chlorination. The location of the borehole means that local authority's regulatory monitoring and risk assessment obligations can be logistically challenging it can only be reached by boat. The location also poses a challenge for maintenance visits as all equipment needs to be brought to the supply by boat, during fine weather.

During 2017, a routine water sample taken from one of the bedrooms of the hotel was found to have a 'phosphorous' odour. This led to the local authority to suspect that the water was potentially unwholesome by virtue of the unusual nature of this odour. Unsure of their next actions, the local authority contacted the Inspectorate for advice as to what could potentially be the cause of the odour and how they should progress their regulatory investigation.

On reviewing the information supplied, the Inspectorate, identified that the borehole headworks was located in a room which historically had been used for storing gunpowder. Although gunpowder does not contain phosphorous it does contain sulphur and potassium nitrate, which could account for the unusual odour. Following discussions with the local authority it was agreed that a further sampling survey should be undertaken to identify exactly where in the supply system the unusual odour was arising.



Figure 8: UV treatment



Figure 9: Borehole headworks

Samples were subsequently collected from the borehole, after treatment and from various points in the downstream distribution system and submitted for an extended suite of analysis including an organics scan. During the sample collection a strong 'sulphur' smell was noticed from the borehole raw water and this was confirmed by the laboratory analysis. The raw water was also found to have iron, manganese and ammonia concentrations in excess of the prescribed regulatory limits, however the treated water was found to be meeting the standards apart from a 'salty' taste in one of the samples collected from a bedroom. No organics, which might have been contributing to the unusual taste and odours, were detected in any sample collected. The local authority remained unable to draw any final conclusion as to the exact cause.

Local authorities have a duty under the Regulations to complete an investigation to establish the cause where it suspects a supply is unwholesome. However the Regulations do not specify a minimum or maximum duration for investigation and in reality should be determined by the perceived risk on a case-by-case basis. In the case of this particular supply, the unusual nature of its location has meant that site visits are impeded due to access restrictions, leading to protracted investigations and a reliance on the co-operation and input of the hotel operator to undertake the investigative work.

Plans have recently been put in place to undertake a CCTV survey of the borehole due to the unusual odours, ammonia, iron and manganese detected in the source.

In all cases local authorities should ensure that where they suspect a supply to be unwholesome, investigations are completed in an appropriate and timely manner. Where investigations are protracted, appropriate monitoring arrangements should be put in place to identify rapidly, any deterioration in the supply. Once an investigation has identified the cause of unwholesomeness, the local authority should apply enforcement action as necessary where relevant.