



## PRIVATE WATER SUPPLIES – CASE STUDY (2011/02)

### The need for a multi-barrier approach for a small surface water supply

This case study relates to a small surface water supply serving two domestic dwellings, one of which is rented. The risk assessment identified that spring water is collected via an open pipe buried into the ground. Rabbit faeces were observed on the loose stones partially covering the collection chamber. The supply is distributed to the dwellings without further treatment from a second chamber with a watertight cover. Samples taken during the risk assessment contained *E.coli*, coliforms and enterococci.

The risk assessment highlighted that the supply was a potential danger to human health and the local authority served a Regulation 18 Notice restricting the supply (so that all users were made aware of how to safeguard their health by boiling water before use or using bottled water). The Notice set out the improvements required at the source and also required the relevant person to arrange to clean and chlorinate the distribution network. Sampling following these improvements confirmed the water was faecally contaminated through the detection of *E.coli*, therefore the local authority has updated the Notice to include the requirement to install a disinfection system (UV) and thereafter carry out regular maintenance and record keeping of, for example, when UV lamps need to be changed. There was no appeal to the Notice.

This case study illustrates the benefit of the risk-based approach and the application of multi-barrier principles for securing safe drinking water. For disinfection to be effective, steps must be taken to ensure that the turbidity of the water being presented for disinfection is <1NTU. This is the purpose of the indicator parameter value in Schedule 1, Part 2 Table C of the Private Water Supply Regulations and implements the WHO Guidelines for Drinking-water Quality<sup>1</sup>. Turbidity interferes with the ability of UV light to penetrate the water and inactivate microorganisms, likewise if turbidity is associated with organic matter it increases chlorine demand and reduces the concentration available for disinfection. It is essential therefore that water quality is first improved at source and storage tanks and pipes are regularly cleaned out to remove organic matter and deposits. These steps, combined with regular maintenance and checks, are the key safeguards to secure that water is adequately disinfected at all times.

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<sup>1</sup> WHO *Guidelines for Drinking-water Quality*<sup>1</sup> (published by WHO 2011, available at [http://www.who.int/water\\_sanitation\\_health/publications/2011/dwq\\_guidelines/en/index.html](http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/index.html))