WATER UK BRIEFING NOTE

VIRUSES AND DRINKING WATER

SUMMARY

- **UK water suppliers place the highest priority on assuring the quality of water provided to their customers.**
- **There is a very low risk of a waterborne outbreak of viral disease from drinking water treated and distributed in accordance with established good practice as well as meeting the other microbiological standards in the drinking water directive**
- **It is neither practical or necessary to set specific standards for viruses in UK Regulations or in any revision of the EU Drinking Water Directive**
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TECHNICAL BACKGROUND

Where do viruses come from?

Viruses are extremely small. They are amongst the simplest of all living organisms, have no independent metabolic systems, and are dependent on specific host cells for replication. Outside a host, viruses can survive for weeks or even months but replication is impossible. They can cause a variety of diseases but are not all pathogenic to humans. They leave the infected host in faeces and bodily fluids. Such material will contain large numbers of viruses and is the primary source of infection.

Viruses could reach water sources from effluents or by direct discharge of infected material, particularly faecal material. Wastewater treatment and natural in-river processes will reduce the number of viruses present as they are readily aggregated and adsorbed to other particles. Some groundwaters may also be vulnerable to contamination from infected stock, slurry and leaking septic tanks.

What standards apply to viruses in drinking water?

UK Regulations and the EU Drinking Water Directive require that drinking water is free from any microorganism in numbers that constitute a potential danger to human health. However, it sets no specific parametric value for any virus and there is no monitoring requirement specified in the directive.

Detection of viruses when present in high numbers, for example in faeces, is relatively simple. However, they are much more difficult to detect if only a few are present in large volumes of water. Traditional techniques have required replication in cell cultures but new potential methods of identification and quantification are being researched.

How is the quality of drinking water assured?

During water treatment, viruses will tend to be adsorbed onto particulate matter. Therefore, all sedimentation or filtration processes will significantly reduce their numbers.

However, the main barrier against viruses is disinfection. Significant amounts of data are available concerning the inactivation of viruses in water, most dealing with chemical disinfectants such as chlorine, chlorine dioxide or ozone or by physical means such as UV-radiation. Reliable inactivation is achieved with normal disinfectant concentrations and reaction times.

Viruses are not a problem for well-designed and operated treatment and distribution systems. There is little or no evidence of outbreaks of waterborne viral illness associated with properly installed and operated treatment plants.