

## Source tracking microbiological recontamination of drinking water

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In The Netherlands we have an outstanding quality of drinking water. However, the production of drinking water from surface water is a complex process and is greatly affected by the purity of our water sources, e.g., surface waters like Lake IJssel and the rivers Rhine and Meuse. Consequently, chemical and pathogenic contamination of drinking water is a constant concern in the production chain. For biological applications some newer (chemical) analytical techniques are being more regularly applied, which results in new insights and allow more sophisticated problem tracing.

In this presentation, I will lead you through a casus from the laboratory point of view that was tasked to find and identify contamination incidents in drinking water production. This specific casus deals with an unknown faecal contamination of water expected suitable for consumption.

We developed a method capable of identifying the unique enterococcus faecal fingerprint of an organism using MALDI-TOF techniques. We applied this method to the contamination event by collecting a faecal fingerprint of contaminated water and a number of animals (including humans) using a field study. The resulting fingerprint distributions in both sample and possible sources permitted us to identify a suspect source. This new knowledge prompted further field studies and with these we were able to confirm the suspect and apply suitable yet simple prevention measures. The method was capable of solving a high-impact faecal contamination event improbable to be solved by traditional methods.