



## **Fate and transport of microorganisms in an alluvial gravel aquifer**

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Subsurface media are being used around the world as a means to mitigate microbial contamination, but vary widely in their ability to remove pathogens. To help to provide accurate risk assessments of microbial contamination of groundwaters, and establish safe setback distances between receiving waters and disposal fields, this study aims to use aquifer tracer tests and column tests to evaluate the ability of subsurface media to attenuate these pathogens.

The novelty of this work is the use of a variety of different tracer substances (e.g. phages, spores, microspheres, conservative tracers) together in field experiments. This will be done by means of injecting these substances under a forced gradient in an alluvial gravel aquifer in the Obere Lobau, Austria. The extraction of the tracers will be monitored in a pumping well at a distance of 30m downgradient. This will be able to provide us with insight to the characteristics of microbial transport and how the microorganisms react to the subsurface in the study site. Subsequent numerical modelling of the experiments can tell us more about quantification of subsurface processes such as attachment/detachment, inactivation and die-off of these substances.

The first field experiments with conservative tracers (NaBr) have been carried out in September – November 2017. The first column experiment has been carried out in December 2017. The results of these tests shall be presented, as well as 2018 plans for subsequent tests with pathogenic indicators.