

Risk analysis of microbial contamination of drinking water wells and determination of preventive measures phase 1

Context

A speciality of Berlin's drinking water production system is the absence of disinfection measures in routine operation. Declared goal of the BWB is to maintain this natural treatment scheme without disinfection. The protection against microbial contamination relies on two barriers – i) the retention capacity of the sediment between infiltration point and well and ii) the protective equipment of the well (clay sealing, sealed well head).

In connection with prolonged periods of repeated heavy rain events, a potential failure of the natural or constructive barrier systems has been observed leading to the detection of hygienically relevant microorganisms in the raw water of drinking water wells. However, neither bank filtration as semi-natural pre-treatment step nor the effectiveness of the constructive barriers have been studied systematically yet with regard to expected changing climatic conditions, i.e. increasing frequency of extreme rainfall.

Objectives

- Investigation of the actual occurrence and concentrations of hygienic relevant microorganisms in different contamination sources (surface water, precipitation, groundwater)
- Confirmation of the functioning of bank filtration under extreme conditions (floods, heavy rainfalls)
- Assessment of construction type and hydraulic pathways in the well surrounding

Systematic microbiological field investigations in the saturated and unsaturated zone, biomolecular methods, tracer tests and borehole geophysical logging aim at detecting and monitoring the sources, entry paths and concentrations of microbiological contaminants. This serves as a reliable basis to develop recommendations for microbiological monitoring and avoidance strategies



Water and Soil sampling to investigate bacteria transport in soils

Duration: 01/2012 - 02/2013

Project Volume: 180.000 €

Contact

HELLA SCHWARZMÜLLER
Kompetenzzentrum Wasser Berlin gGmbH
hella.schwarzmueller@kompetenz-wasser.de

→ www.kompetenz-wasser.de

Project Partners

KOMPETENZZENTRUM
WasserBerlin

Berliner
Wasserbetriebe

Blue Biolabs

Sponsoring

Berliner
Wasserbetriebe