



Optimizing the removal of DOC and trace organics in artificial recharge systems

Context

Subsurface passage as utilized during bank filtration (BF) and artificial groundwater recharge (AR) for drinking water production has been proven to be an effective barrier for multiple substances present in surface waters during drinking water production. However, there are limitations concerning the removal of DOC and specific trace organics. A combination of oxidation processes (e.g. ozonation) and optimized subsurface passage has the potential to overcome these limitations.

Objectives

- to investigate the potential for enhanced removal of trace organics and DOC by combining oxidation processes & subsurface passage
- to assess the technical and economical feasibility of such a system
- to develop a concept for optimizing the design of infiltration ponds with respect to redox conditions

1st Results

- pre-treatment of surface water from Lake Tegel with ozone will reduce the contact time necessary for maximum DOC removal by 80%
- many trace organics with high potential for breakthrough in BF & AR systems are efficiently transformed by ozonation (e.g. Carbamazepine)
- BF as pre-treatment for ozonation will enhance the efficiency of transformation of recalcitrant substances like ETBE or MTBE



Continuous ozonation of large scale columns



Infiltration at Tegel waterworks (Berlin)

Duration 11/2007 - 03/2011

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