

***In situ* remediation of arsenic at a highly contaminated site in northern Germany**

**T. KRÜGER¹, H. M. HOLLÄNDER^{1,2}, P.-W. BOOCHS¹,
M. BILLIB¹, J. STUMMEYER³ & B. HARAZIM³**

¹ *Institute of Water Resources Management, Hydrology and Agricultural Hydraulic Engineering, Leibniz University of Hannover, Appelstr 9A, D-30167 Hannover, Germany*
krueger@iww.uni-hannover.de

² *CSIRO Land and Water, PB No. 2, Urrbrae 5064, South Australia, Australia*

³ *Federal Institute of Geosciences and Natural Resources (BGR), Stilleweg 2, D-30655 Hannover, Germany*

Abstract High arsenic concentrations (up to 9000 µg/L) were detected in groundwater at a military site in northern Germany. The majority of the arsenic is organically bound (80–95%). Arsenate and arsenite (each <10%) were also detected. In soil column studies it was shown that the arsenic can be immobilized effectively using bivalent iron chloride, reducing concentrations from 9000 µg As/L to 1000 µg As/L. This process forms the base of an *in situ* treatment technique, which allows the immobilization of arsenic within the aquifer. A pilot plant consisting of two wells which can be used for alternately pumping or infiltrating water enriched with reactive chemicals, in this case iron chloride (FeCl₂) and oxygen, was built. Preliminary experiments with a NaCl tracer instead of FeCl₂ injection were carried out to find an optimal operation cycle for the creation of a defined and stable reactive area in the underground zone around the wells.