



Project Data Sheet

ARSOLux - A Project of the Helmholtz Centre for Environmental Research - UFZ Arsenic-Biosensor based on Bioreporter Bacteria



Approximately 137 million people around the world consume arsenic contaminated water, which largely exceeds the World Health Organization's (WHO) threshold of 10 µg/L. Estimates show that about 50 million people in Bangladesh alone are directly affected by a fluctuating release of arsenic into the groundwater (Ravenscroft, 2009). The changing concentrations therefore necessitate regular field testing of wells.

ARSOLux is a robust, precise and easy to handle water test kit. It is possible to detect the arsenic concentration in drinking water sustainably and in a simple procedure directly in the field. In 2010, the ARSOLux team together with the responsible authorities organized a measuring campaign in Bangladesh. Many wells in the areas Satkhira, Narayanganj, Chandpur, Pabna und Patuakhali were randomly tested. Additional measuring campaigns are planned in Bangladesh, Nepal, India and Mongolia.



The patented arsenic-biosensor emits light when brought into contact with arsenic dissolved in water. The bioluminescence of the genetically modified bioreporter bacteria *E.coli* K12 is detected by a portable measuring device called 'luminometer'. The quantifiable light intensity correlates directly with the arsenic concentration in the water sample. Our software stores the test results electronically and can easily transfer them to a computer. In comparison to chemical tests, the ARSOLux-biosensor is free of toxins, easy to handle and suitable for many parallel measurements.

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