Monitoring of in-situ remediation of chlorinated solvents contamination with the use of the Direct Current resistivity and time-domain Induced Polarization method

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A significant number of sites contaminated with chlorinated solvents has been identified in Sweden. For remediation the soil is mostly excavated and moved to a secondary location, where it is treated. This technique migrates the problem, adds an extra cost in the treatment procedure and introduces a risk for secondary exposure, however it is used because it is well known and easier to control in comparison with in-situ remediation. For that reason, we are aiming to improve the control of the effectiveness of in-situ remediation by using the Direct Current resistivity and time-domain Induced Polarization (DCIP) method.

In Alingsås (Central Sweden), a dry-cleaning facility was operated for many years, and large amounts of the solvent PCE were spilled in the ground which contributed to an increasing concentration of PCE beneath the building. A pilot in-situ remediation program was launched in November 2018. For that reason, a fully autonomous and automatic monitoring system was installed to perform frequent automated DCIP measurements, supplemented by TDR, temperature, water levels, etc., to provide information about the changes in the subsurface. One of the challenges in this project is the processing of such data to successfully identify changes in the subsurface due to the remediation. The potential changes will be verified by the results from direct methods such as the Compound Specific Isotope Analysis (CSIA) and the Physical and BioGeochemical Characterisation (PBGC). Preliminary results will be presented at the workshop.