

Overcoming Key Design and Implementation Issues for In- Situ Chemical Oxidation

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In-situ chemical oxidation (ISCO) is one commonly used remediation technology for treatment of hydrocarbon-impacted sites. However, the level of success in meeting the treatment goals is highly variable; in large part due to the differences between the state of the practice and the state of the art in the design and implementation of the technology. In this presentation we will discuss the key design and implementation parameters that cause the variability in the results of applying ISCO technology.

One primary implementation issue that will be discussed in detail is the frequent preferential treatment of the most transmissive zones at a site, leaving residual NAPL or dissolved-phase matrix storage after remediation. Untreated, these can produce long-term emissions that affect groundwater quality. Research to determine if high/low permeability interface treatment using chemical oxidants can result in sustained reduction in emission from the low permeability zones will be discussed with test results.

Additional common errors in design and implementation will be highlighted; including the need, benefits and application of bench treatability studies, appropriate site characterization data collection, chemical dosing and injection approach and chemical distribution design.