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The electrokinetic technology for the remediation of soils, sediments, and groundwater relies on the application of a low-intensity electric field directly to the soil in the polluted site. The effect of the electric field mobilizes weak species that are removed from the soil and collected at the electrodes. At the same time, the electric field provokes the mobilization of the interstitial fluid in the soil, generating an electroosmotic flow toward the cathode. The electroosmotic flow permit the removal of soluble contaminants. The success of the electrokinetic process rely on the effective extraction and solubilization of the contaminant and on their transportation toward the electrodes, where they can be collected, pumped out, and treated. Many studies have been carried out to determine the influence of the operating conditions and the effect of the soil and contaminant nature in order to improve the applicability and effectiveness of the electrokinetic treatment.

Numerous bench-scale studies that use ideal soils such as kaolin spiked with a selected single contaminant (e.g. lead or phenanthrene) to understand the contaminant transport processes have been reported. However, only a limited number of studies have been reported on real-world soils contaminated with a wide range of mixed contaminants, and these studies have been helpful in recognizing complex