Electrochemistry as an efficient remedy for tetrachloroethylene plumes

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Reactants can be generated and subsequently reduce or oxidize the chlorinated ethenes and their chlorinated degradation products. Abiotic reduction and oxidation processes of chlorinated ethenes and their chlorinated degradation products.

Optimized means of protecting the groundwater from these contaminants are commonly used pump-and-treat facilities for hydraulic containment. These are long-term solutions with substantial operation and maintenance costs, limited efficiency towards chlorinated intermediates and a significant carbon-footprint. Optimized means of preventing the groundwater from these contaminants are requested. We propose establishment of electrochemical zones for in situ destruction of chlorinated ethenes and their chlorinated degradation products.

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The compound’s properties challenge the current treatment technologies, e.g. the commonly used pump-and-treat facilities for hydraulic containment. These are long-term solutions with substantial operation and maintenance costs, limited efficiency towards chlorinated intermediates and a significant carbon-footprint. Optimized means of preventing the groundwater from these contaminants are requested.

We propose establishment of electrochemical zones for in situ destruction of chlorinated ethenes and their chlorinated degradation products. 

Focus has been on the influence from electrode materials [6,7,9] and configurations [10,11], and of system parameters such as current density [8,9,10,11], flow rate [8,7] etc. for TCE in spiked, synthetic liquid phase.

The power consumption is influenced by the ionic strength of the saturated matrix studied.

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