

## **Treatment of Vapor-Phase Organohalide Contaminants using Fe(0) and Bimetallic Reductants**

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The reduction of gaseous *cis*-1,2-dichloroethylene (*cis*-1,2-DCE) with Fe(0) and Ni/Fe reductants has been investigated as a model system for the treatment of organohalides in landfill gases and soil vapor extraction offgases. Initial batch reactor studies in aqueous conditions indicate that the rate of reduction of *cis*-1,2-DCE varies linearly with Ni loading for Ni surface concentrations < ~30% and then plateaus at higher Ni loadings. A shift in product distribution is also observed with Ni coverage, favoring the production of ethane at high nickel loadings. In gaseous column reactors containing a Ni/Fe reductant, the complete degradation of *cis*-1,2-DCE is observed within 15 minutes of contact time at an average flow rate of 3 ml/min corresponding to an approximate 30-fold increase in reactivity as compared to columns containing an Fe(0) reductant.