

Strategies for the aerobic co-metabolism of chlorinated solvents

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Abstract:

Recent field and laboratory studies have evaluated the potential for aerobic co-metabolism of chlorinated solvents. Different co-metabolic substrates and different methods of application have been tried, including growing indigenous microbes in situ, and injecting into the soil subsurface strains grown in subsurface reactors for their co-metabolic potential. There is much potential for using co-metabolism for treating a broad range of chlorinated aliphatic hydrocarbons. Recirculation wells have potential for adding soluble co-metabolic substrates (i.e. phenol and toluene) into contaminated aquifers, while direct addition of gaseous substrates (i.e. methane and propane) into aquifers also holds promise. Aromatic substrates (phenol and toluene) are best used for treatment of chlorinated ethenes, whereas gaseous co-metabolic substrate (methane and propane) are better suited for the treatment of chlorinated methanes and ethanes. Many factors can enhance co-metabolic transformations, such as nutrients and available energy sources.

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