

### Preparation of emulsified zero-valent iron

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Nanoscale zero-valent iron is more efficient for TCE degradation than microscale one due to the high surface area. When the iron is directly injected through the well of the groundwater, it can hardly reach DNAPL pool. If emulsion containing nanoscale zero-valent iron is prepared, its problem can be solved because oil membrane easily contacts with DNAPL source, and then TCE reacts with zero-valent iron in inner phase of emulsion. In addition, emulsions are made of biogradable or harmless materials for environment and human health except n-hexan, which reduces the viscosity of corn oil. In this study, using nanoscale zero-valent iron, corn oil, n-hexan, Span 85, Tween 80, and water. The W/O emulsion is prepared by the mixer according to an appropriate ratio. Its size is 4~20 micro miters but its size distribution is very broad. To make the long-term stable emulsion, a material should be added, which can reduce the viscosity of corn oil and is lighter than water, miscible with corn oil. It also should be desired to be odorless and biocompatible. Additionally, the stability of emulsion should be enhanced and it should be distributed in a narrow range.