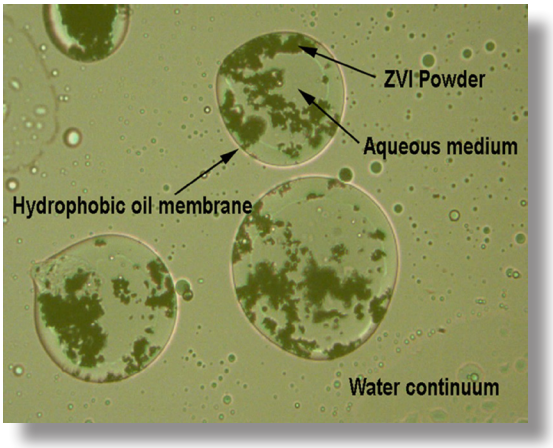
# Emulsified Zero-Valent Iron (EZVI)

Emulsified Zero-Valent Iron (EZVI) is a water in oil emulsion consisting of nano/micro scale zero-valent iron, surfactant, food grade vegetable oil, and water that reductively dehalogenates halogenated hydrocarbons (e.g. PCE, TCE, CFC, VC). EZVI uses a patented micellular structure to deliver reactive iron which mimics the physical chemistry of DNAPL. It has the ability to mix with DNAPLs present in the subsurface environment. Thus, EZVI is a "source area" remediation technology.




**TEA is the largest custom manufacturer/supplier of EZVI, providing reactive, stable emulsions since 2005. TEA's EZVI products have been utilized at multiple locations across the United States as well as internationally.**

### EZVI AWARDS:

- 2007 - Induction into the NASA's Space Technology Hall of Fame
- 2006 - Excellence in Technology Transfer awarded by Federal Laboratory Consortium (FLC)
- 2005 - Awarded Governmental Invention of the Year by NASA
- 2005 - Awarded Commercialization Invention of the Year by NASA

## ADVANTAGES AND BENEFITS

- Developed/patented by NASA
- Field-tested by the U.S. EPA under the SITE Program
- Primarily used for in-situ DNAPL source area destruction
- Typical source concentration decrease ~90+% within 3 months
- Surfactant-stabilized water-in-oil emulsion with zero-valent iron particles
- Hydrophobic, dense emulsion absorbs DNAPL, delivering contaminant to iron
- In-situ chemical reduction of chlorinated solvent to ethene and water
- Injection or soil mixing using conventional technologies
- Does not promote mobilization of DNAPL

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