Overview of DCL Biosolv

DCL Biosolv is a simple to use, patent pending, product developed primarily to treat soil and groundwater contaminated with chlorinated solvents, for example tetrachloroethene (PCE) and trichloroethene (TCE). It can be used in a number of different configurations depending on the subsurface distribution of contaminants, for example:

- Source area dissolved phase and sorbed contaminants.
- Permeable reactive barrier arrangement to control plume migration by intercepting and degrading mobile dissolved phase contamination.
- Concentrated free phase contamination, i.e., DNAPL.

How it works

DCL Biosolv promotes the natural biodegradation of target contaminants by a process known as reductive dechlorination. It essentially acts as nutrient source for cell growth and as an electron donor for energy generation. The end result is that chlorinated solvents such as PCE and TCE are biologically degraded into non-toxic end products.

DCL Biosolv is usually introduced into the ground using injection rods installed by small tracked direct push drilling rigs. A mixing / injection unit is then connected to the rods and remediation product injected into single or multiple locations. As the remediation product is injected, the rods are withdrawn so that distribution is achieved across the required vertical treatment zone.

When injected into the ground DCL Biosolv is fermented to hydrogen and low-molecular weight fatty acids. These short-chain molecules (such as acetate, butyrate and propionate) in turn provide carbon and energy to the microorganisms which facilitate reductive dechlorination. In the reductive dechlorination process, microorganisms sequentially replace chlorine atoms with hydrogen forming more reduced dechlorination products. For example, chlorinated solvents are transformed sequentially from tetrachloroethene to ethene via the intermediate compounds trichloroethene, dichloroethene and vinyl chloride.

Advantages

DCL Biosolv is safe, non-toxic and easy to handle. It is supplied as a concentrated liquid formulation which is then diluted with water prior to use. DCL Biosolv was designed primarily for the treatment of soil and groundwater contaminated with chlorinated solvents, for example trichloroethene, but is also effective against certain other contaminants including pesticides and nitroaromatics.