



ENVIRONMENTAL TREATMENT:

In Situ Chemical Oxidation (Potassium Permanganate Injection)

Shaw Air Force Base, S.C.

Also known as “in situ chemical oxidation,” or ISCO, chemical injection is one of the most rapidly growing cleanup technologies applied at hazardous waste sites and is being used at thousands of sites worldwide. In situ is a Latin phrase that simply means “in its original place.” As such, ISCO simply involves injecting a chemical oxidant into soil or groundwater in order to turn contaminants into less harmful chemicals. Chemicals injected include sodium permanganate, peroxide, ozone and potassium permanganate.

HOW DOES IT WORK?

Potassium permanganate, which is pink or purple in color, is pumped into groundwater through injection wells at a specified concentration and rate. The chemical is not toxic at the low concentrations used for the treatment process. In fact, this compound has long been used to treat swimming pools.

Once introduced into groundwater, the potassium permanganate chemically reacts with the trichloroethylene, causing it to oxidize and break down into harmless natural chemicals. Permanganate can remain in the groundwater injection wells for nearly a year, continuously breaking down trichloroethylene.

Scientists tested this here over a period of several months in 2006, while regularly sampling the groundwater to monitor the effectiveness of treatment. The injections were found to significantly lower the concentrations of trichloroethylene in the groundwater where it was used.

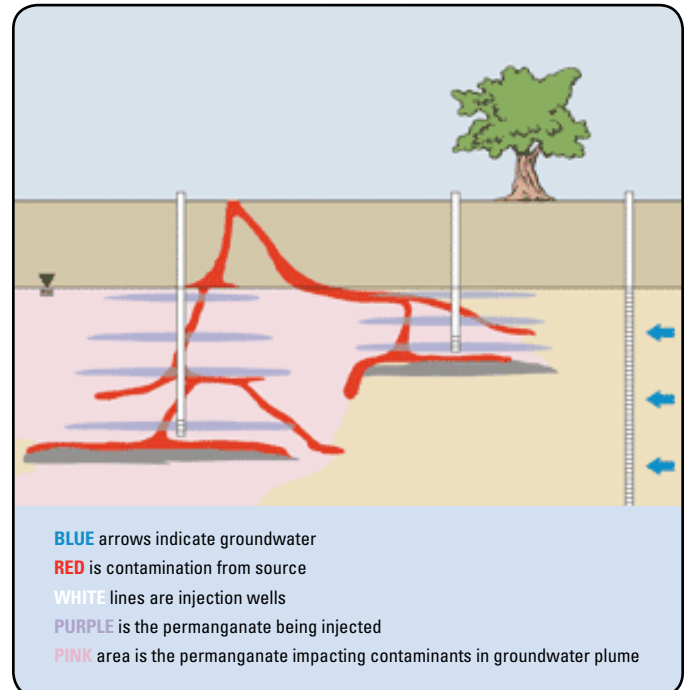
WHAT ARE THE BENEFITS?

Potassium permanganate is a stable chemical and relatively safe for workers to handle. It is an effective and relatively fast treatment method for cleaning up trichloroethylene and widely in use around the world.

WHERE IS ISCO TREATMENT USED AT SHAW?

The Air Force is utilizing potassium permanganate injections at Shaw at two groundwater sites contaminated with trichloroethylene: site OU-2D (trichloroethylene Groundwater Site #2) and site SD-33 (trichloroethylene Groundwater Site #3). The system has already significantly reduced trichloroethylene levels in groundwater at the site. Treatment at the sites is overseen by the South Carolina Department of Health and Environmental Control.

ISCO PERMANGANATE INJECTIONS



Potassium permanganate is injected into groundwater through wells that are placed at strategic locations in the groundwater plume. Once introduced into groundwater, the potassium permanganate chemically reacts with the TCE, causing it to oxidize and break down into harmless natural chemicals.

POINTS OF CONTACT

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