

PCE AND TCE TREATABILITY STUDIES IN SOIL USING VTX TREATMENT

BACKGROUND

The contamination of soils, surface and groundwater by chlorinated solvents has become a widespread problem in the environment. These compounds including tetrachloroethylene (PCE) and trichloroethylene (TCE) are of significant concern because of their resistance to efficient re-mediation.

Although TCE can be effectively treated with specialized aerobic bacterial cultures, PCE remains resistant to aerobic biodegradation. Therefore, Advanced Oxidation Technology, Inc. has also developed an aggressive approach for treating recalcitrant chlorinated organic solvents utilizing chemical oxidation. The technique known as the VTX Process involves a proprietary chemical procedure designed to completely mineralize chlorinated solvents such as PCE and TCE.

MATERIALS AND METHODS

Soil oxidation experiments were conducted in one gallon Rubbermaid containers with fitted lids. One kg of soil was contaminated with approximately 50 ppm of both PCE and TCE and allowed to equilibrate for 24 hours. The oxidation treatment consisted of adding 5 mL of VTX catalyst, 15 mL of oxidizer and 120 mL of distilled water. The soil was exposed to the VTX oxidative treatment and allowed to oxidize for four hours.

RESULTS

The initial concentration of TCE was 18 ppm while the initial concentration of PCE was 31 ppm. After one treatment the concentration in the soil was reduced to undetectable levels for TCE and to less than 2 ppm for PCE.