SERVICES:

CHEMICAL INJECTION

OVERVIEW:

In-situ chemical oxidation (ISCO) and in-situ chemical reduction (ISCR) of contaminants are gaining increasing acceptance as technically sound and potentially cost effective methods for use in soil and groundwater remediation and capable of achieving source zone contaminant mass reduction in a relatively short period of time.

Chemical oxidation and reduction can treat a broad range of soil and groundwater contaminants including Petroleum Hydrocarbons, volatile Hydrocarbons (such as BTEX, and organic solvents, chlorinated solvents), Polyaromatic Hydrocarbons (PAHs), Methyl-tertiary-butyl-ether (MTBE), Chlorinated Solvents and petrochemically-derived reagents such as Phenols, Aldehydes and Ketones.

The effective distribution of chemical reagents in-situ is key to achieving effective outcomes and can be achieved through careful site characterisation, in combination with on-site monitoring and the use of programmed injections by utilising direct-push methods or permanent/temporary well installations.

FACTORS TO CONSIDER:

- Nature of contaminants
- Contaminant distribution
- Current site conditions
- Site lithology
- Site hydrology
- Cost
- Time-frame for remediation

SERVICE:

ERS has pioneered the use of ISCO/ISCR in Scotland. Extensive knowledge of drilling and direct push technologies and support from expert chemists, geologists and hydrologists enables us to offer unrivalled expertise for precision in-situ application.

Employing our own in-house REMEDI-RIG and injection pumps to suit all remediation contexts we can mobilise our trained and experienced injection crew to site rapidly and at competitive rates.

EQUIPMENT:

ERS REMEDIATION RIG

Our highly flexible REMEDI-RIG operates a hydraulic percussive system to drive injection rods to desired depths across the contaminant smear zone. Where groundwater treatment requires ISCO/ISCR application via wells, the rig can be adapted for cable percussive or rotary drilling for effective well installation.

The rig is mounted on rubber tracks for superior mobility across all but the most demanding terrain, leaving little evidence of its presence once the job is complete. The rig has been fitted with spark arrest facilities

EQUIPMENT CTND:

and chalwyn valve allowing us to operate safely on hydrocarbon contaminated sites, or where combustible materials or flammable liquids may be a risk.

Through on site changes to our tooling system we can recover high quality soil samples and install monitoring wells in the same visit as undertaking chemical injection so avoiding re-mobilisation costs for delineation/validation sampling costs.

A bespoke hydraulic mixing tank operates directly from the rig has in conjunction with powerful pumps that ensure maximum speed and efficiency of reagent application.

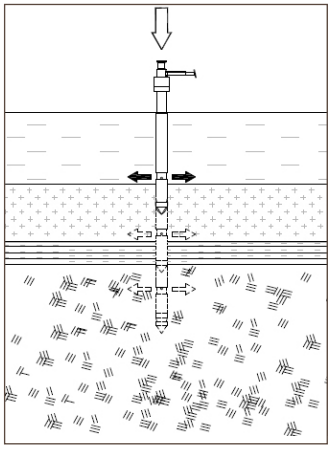
SITE ACCESS:

The compact nature of our rig allows us to access restricted areas through spaces as small as standard width doorways by dismounting the drive mast and operating remotely from the power source.

Injection Pump

ERS has several pumps permitting the injection of a range of oxidants and reducers to suit specific on-site problems. Our DP800 injection pump is capable of delivering chemicals or semi-abrasive materials in high volumes. At 40 litres per minute the DP800 can pump most chemicals. With an outlet pressure of up to 650psi we can inject into most superficial deposits.

MATERIAL INJECTION PROCEDURES AND TOOLS:



ERS is capable of both “bottom up” or “top down” injections using our extensive tooling range.

By employing our Pressure-Activated Injection (PAI) probe we are capable of accurately delivering materials across the contaminant smear zone.

Unlike conventional (lost point) injection methods the PAI ensures accurate placement of material into the intended injection interval.

The probe also features a backflow valve keeping injection materials IN and not ON the ground ensuring that dosages budgeted for are used efficiently with minimum wastage.

Post-Method Performance Monitoring

After the injection, treatment progress should be monitored by collecting groundwater and/or soil samples and undertaking laboratory analysis.