

Combined ISCR and ERD remedial approach knocks down PCE concentrations in Poland



CASE STUDY

Rapid groundwater treatment achieved at manufacturing plant, without daughter product build-up



INTRODUCTION

At an active manufacturing plant in the region of Greater Poland, in the West of the country, historical perchloroethylene (PCE) contamination was found to be impacting both soil and groundwater. The site investigation performed by the environmental company PROTE determined that contamination originated from a number of spills and leakages that occurred over the >20 years of manufacturing on the site.

PCE concentrations of up to 1,500 µg/L exist on site and because of the highly aerobic environment in the shallow permeable aquifer, there appears to have been very little biological degradation, evidenced by no detectable daughter products (cis-1,2 DCE, VC).

The canal adjacent to the site was identified as a potential downgradient receptor vulnerable to impact from offsite advection of the contamination. Therefore remediation was driven by a requirement to remove the site owner's potential liability, whilst being completed within strict budgetary restrictions.



SITE TYPE

Active
Manufacturing Plant



GEOLOGY

Made Ground
and Sand



CONTAMINANTS

Perchloroethylene (PCE)



PROJECT DRIVER

Removal of Liability



TREATMENT

Well Injections
in Grid Formation



TECHNOLOGIES

S-MicroZVI,
3-D Microemulsion



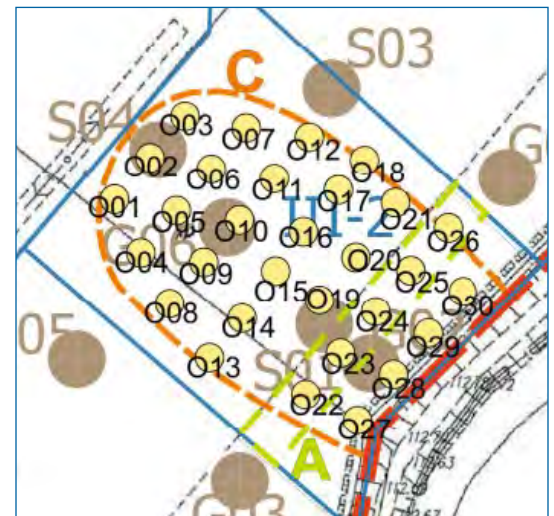
APPLICATION

A grid of 30 injection wells spaced 4m apart was installed to be used for the injection works. A combination of two liquid amendments was chosen: **S-MicroZVI®**, a colloidal sulfidated zero-valent iron (ZVI), and **3-D Microemulsion®**, a long-term release electron donor.

These products combine in situ chemical reduction (ISCR) and enhanced anaerobic biological degradation (ERD) to provide rapid chlorinated solvent reduction, with no build-up of daughter products.

Both technologies are optimised for wide-area distribution in the subsurface, ensuring interlocking radii of influence between injection locations in order to treat the entire target volume.

Each well received a dose of approx. 750L of the combined remediation substrates, across a 3m treatment layer (from 1 to 4 m BGL), using injection pumps set at a low pressure.



RESULTS

Ongoing quarterly groundwater monitoring campaigns show a rapid and significant drop in PCE concentrations in the entire treatment area. Within the first 3 months PCE concentrations reached below target (<50 µg/L) in most validation wells, with no daughter products being detected.

Monitoring will continue to confirm a continued reduction in concentrations. The combined *in situ* approach has been shown to provide a rapid and effective solution for the reduction in PCE with low costs and minimal site disturbance.

The Owner of Area approach to remediation is worth following in the Polish reality of groundwater decontamination and sets new standards for Project Regulators.



CLIENT REFERENCE

“ The collaboration with REGENESIS, both during the design phase and the operational phase of the remediation works, has enabled us to apply cutting-edge technologies that reached the remediation objectives in a short period of time, whilst respecting the surrounding environment and minimising impacts on the commercial activities on the site.”

Michał Tatera, Kierownik Projektu ds. Ochrony Środowiska
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