

Case study – the Netherlands

In Situ Chemical Oxidation using NaMnO₄ and CAP18TM injection :

- **Former dry cleaning**
- **Geology** : very fine to fine sand.
- **Groundwater level** : ca. 1 m-bg.
- **History** : Since 1997 there were excavations, P&T and molasse injections.
- **Groundwater pollution of** :
 - Tetrachloroethene (PCE);
 - Trichloroethene (TCE);
 - Cis-1,2-dichloroethene (CIS);
 - Vinyl Chloride (VC).
- **Still three hotspots to treat, remediation in September 2005** :
 - **ISCO** : High concentrations next and under a building, ca. 15 m² : injection of 1.000 kg 40% NaMnO₄ till a depth of 5 m-bg;
 - **CAP18TM** : ca. 40 m³, 4 injections from 3 to 18 m-bg, injection of ca. 725 kg CAP18TM;
 - **CAP18TM** : ca. 15 m³, 2 injections from 2 to 11 m-bg, injection of ca. 135 kg CAP18TM.
- **Injection method** : direct push.
- **Remark** : site is delivered up.



ISCO with NaMnO₄



CAP18TM injection