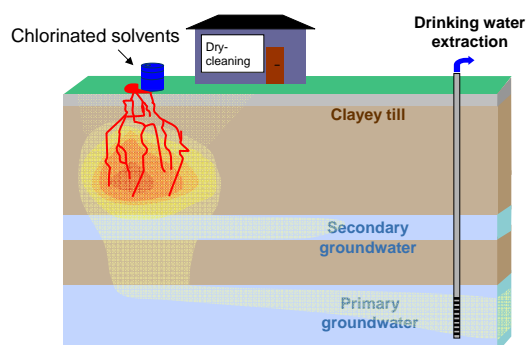


Enhanced remediation of low permeability clayey till deposits contaminated with chlorinated solvents

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Introduction

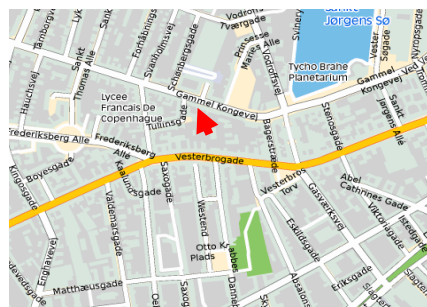


Objective

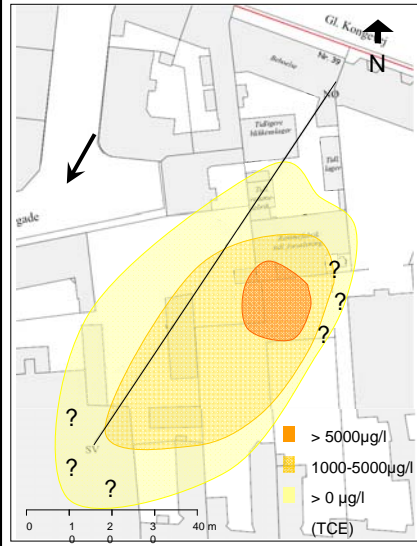
- Develop new methods for enhanced remediation of low permeability deposits contaminated with chlorinated solvents.
 - Site selection
 - Detailed site characterisation
 - Biostimulation and bioaugmentation of anaerobic dechlorination
 - Investigate the effect in groundwater and matrix

Gl. Kongevej 39

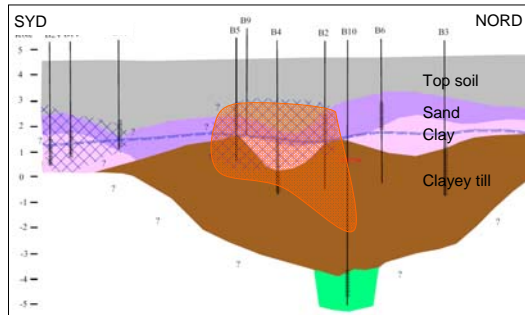
- Facts:
 - Galvanizing factory 1963-87
 - Contamination with: TCA, TCE, oil, heavy metals, PAH, Cyanide



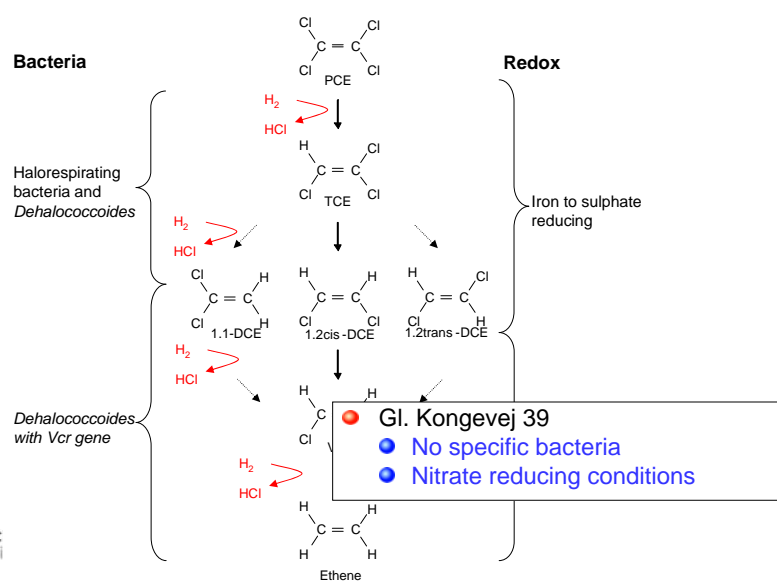
Gl. Kongevej 39



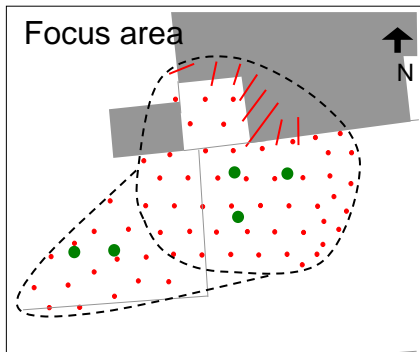
- Contamination has already reached primary aquifer
→ Risk to drinking water



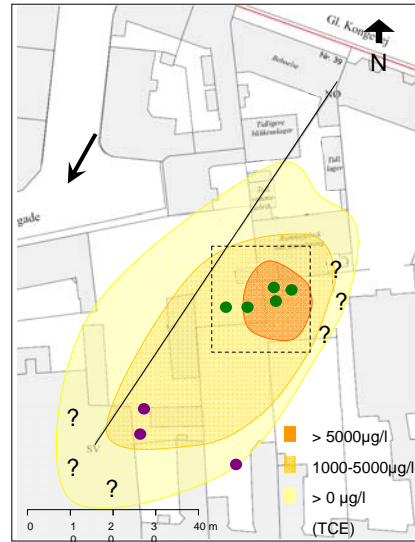
Anaerobic dechlorination



Enhanced anaerobic dechlorination in the clayey till



- Risks:**
- Hydrogen sulphide
 - Methane
 - Transport of NVOC and bacteria

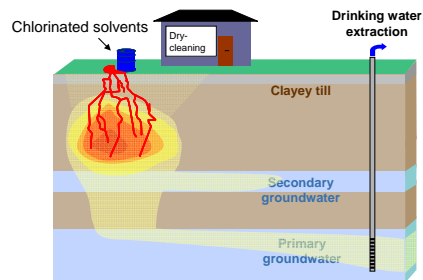


Remediation Criteria

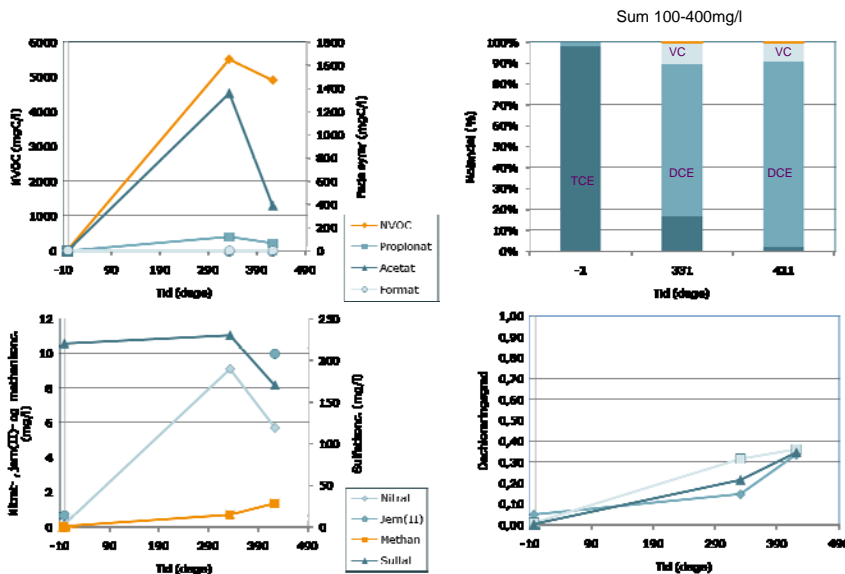
- Success Criteria:**
- Establishment of remediation
 - Expected processes will start
 - The effect will be seen both in groundwater and matrix

- Stop Criteria:**
- Factor of 50 reduction of flux

- Clean up Criteria:**
- Reduction of flux within 5 years
 - No backwash of chlorinated ethenes after electron donor is used



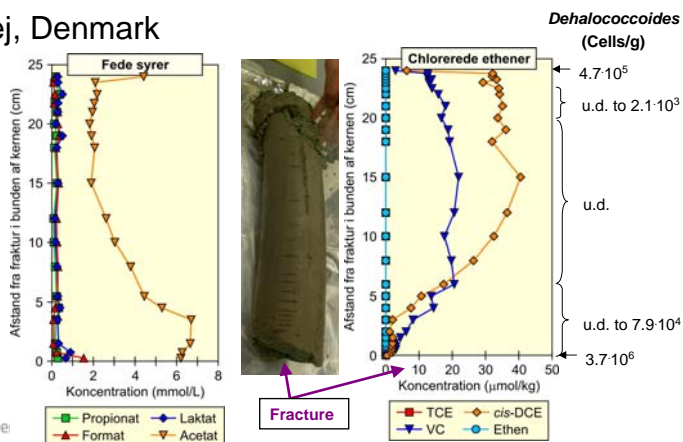
Results – Ground Water



(Miljøkontrollen, 2007)

Results - Matrix

- Gl. Kongevej???
- Rugårdsvej, Denmark



Conclusions

- Contamination with chlorinated solvents in clayey till serve as a long term risk to the groundwater
→ Enhanced methods for remediation of clayey till
- Several risks are related to remediation with enhanced anaerobic dechlorination
- Necessary to monitor and evaluate risks through out the remediation period

References

- Jørgensen T. H., Nielsen L., Weeth E. B., Scheutz C., Broholm M., Bjerg P. L., Durant N. D., Cox e., Christophersen M. og Rasmussen P. (2007a). Oprensning af klorerede opløsningsmidler i moræneler med stimuleret reduktiv deklorerings. Pilotforsøg Hovedrapport. Region Syddanmark. november 2007

Site Details:

- Miljøkontrollen (2007): Status for monitoring af afværgen. Gl. Kongevej 39. Orbicon. december 2007
- Miljøkontrollen (2006): Test af reduktiv dechlorering som afværgeteknologi. Gammel Kongevej 39. Hedeselskabet. Januar 2006
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