

Thermal Soil Remediation

Beneath building with stringent cleanup criteria | Case Study

Customer

The Capital Region of Denmark

Location: Pilehøj Vænge, DK

Technology

Thermal Conduction (TCH)

Keyfacts

Target temperature: 100 C

Treatment volumen: 8.120 m³

Number of heater wells: 63

Heating period: 105 days

The client's needs

This TCE contaminated site located in the outskirts of Copenhagen posed multiple challenges. First of all stringent cleanup criteria was set at an average of 0,1 mg TCE/kg DM and no samples above 0,5 mg TCE/kg DM. Secondly most of the contamination was located to a depth of 14 meter beneath a building with extremely narrow spaces in places like toilets, kitchens etc. Third the contamination was not delineated completely and hence the remediation technology should be part of the investigation and still flexible enough to enlarge the treatment area in parts of 10 m².

Our solution

To manage the clients risks and perform a safe and predictable remediation we chose Thermal Conduction. The technology is extremely flexible and heater wells do not need to be installed in an exact pattern enabling us to handle potential even odd sized enlargements of the treatment area. Krüger has quite some experience installing the system in narrow and confined spaces. Normally heaters are installed in 6" boreholes but can be installed in boreholes as small as 4".

Krüger has a unbeaten track record using Thermal Conduction an eventhough the cleanup criteria were stringent and succeeding is not trivial we believe this was the most certain and robust approach. The target tretatment temperature was set to 100 C.

A total of 63 heater wells were installed to depth of 16 meter below surface. To avoid any vaporized contaminants to migrate into the building every heater well was supplemented with co located extarction.

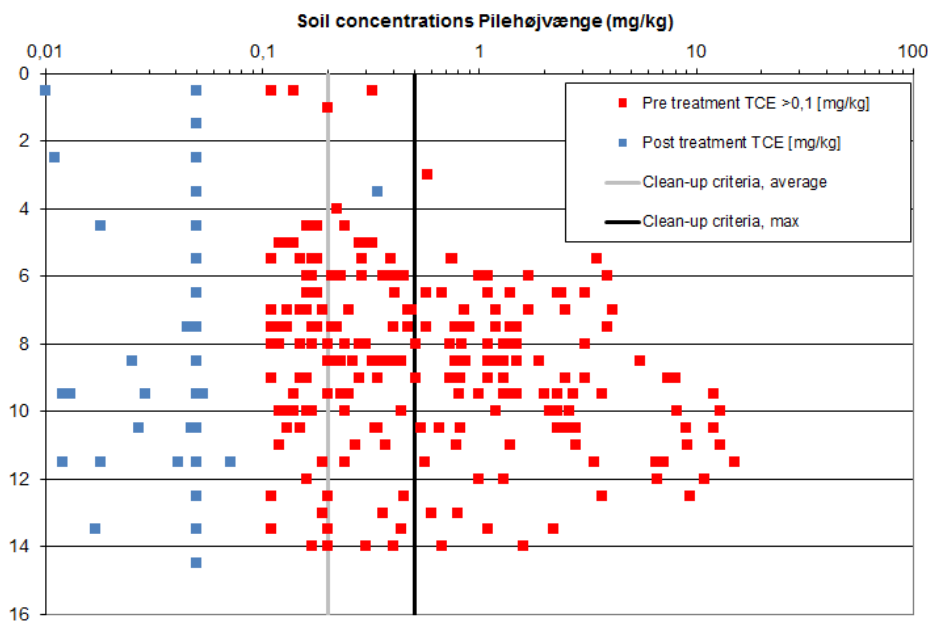


Results

The treatment area increased by 45% based on the new subsurface information achieved during installation of heater wells.

After 105 days of treatment 118 soil core samples were taken. 18 samples showed levels above detection limit (0,01mg/kg) and 100 samples were below detection limits.

Max concentration was 0,34 mg TCE/Kg DM and average was 0,011 mg TCE/Kg DM. The average is based on a assumed concentration of half detection limit on all non detects.



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