

WORKSHOP: USING GEOPROBE FOR INVESTIGATIONS AT CONTAMINATED SITES

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The GeoProbe platform consists of a drilling rig that can be equipped with tools for sampling of soil and groundwater, but also various probes for real-time measurements of contaminant type, contaminant level, geology, groundwater pressure, and more. The MIP-system is probably the most commonly known application associated with the GeoProbe. However, during recent years several probes and other tools have been developed and used by NIRAS in projects in both Denmark and Sweden. These include:

- MIHPT (Traditional MIP equipped with a Hydraulic Profiling Tool) that provides a determination of the soil hydraulic conductivity, K, over the probing depth,
- Low Level MIHPT, which enables detection of contaminants down to the µg/l-scale. Hence, contaminant plumes can be identified and characterized with a single push.
- LIF (Laser Induced Fluorescence), which in real-time provides high resolution information of PAH concentrations over the probing depth. To be used when characterizing creosote- or petroleum contaminants.
- MIP-probe attached directly to a mass spectrometer (MS) resulting in continuous and real time detection and speciation of VOC's over the entire probing depth.

Furthermore, the GeoProbe can perform continuous soil sampling (Dual Tube) and water sampling through standard filters, level-specific filters or as grab samples. Separate soil-, groundwater- and gas samples can be analysed in the field with stand-alone on-site analytical methods using GC or MS based systems.

Given this toolbox - and depending on the project aim - the GeoProbe can be used for either cost efficient screening investigations or for detailed characterisation of source zones and plumes at DNAPL/LNAPL contaminated sites. Since probing data is generated in real-time, a dynamic investigation approach is often used in the field.

NIRAS suggest a 6 hour workshop, with the following outline:

1. 10.00 - 10.15 Introduction to the typical challenges involved when investigating and selecting remedy options at LNAPL/DNAPL sites (Anders)
2. 10.15 - 11.30 Introduction to the GeoProbe system and the various tools illustrated by data from NIRAS field sites (Anders)
3. 11.30 - 12.15 Lunch break
4. 12.15 - 13.15 Case Study: Investigation of PCE DNAPL and dissolved/sorbed phase at a former dry-cleaning facility - a comparison of traditional and high resolution methods (Nicklas)
5. 13.15 - 14.00 Case Study: Investigation of a large LNAPL source area with jetfuel using LIF (Laser Induced Fluorescence) (Anders)
6. 14.00 - 14.45 Case Study: Injection experiments with amendments in support of a pilot-test with ERD (Enhanced Reductive Dechlorination) (Nicklas)
7. 14.45 - 15.45 Case Study: Dynamic investigations (TRIAD) at contaminated sites (Anders)
8. 15.45 - 16.00 Closing remarks facility (Nicklas)