

Improved "Membrane interface probe" with detection limits up to ppb level for reliable, accurate site investigation

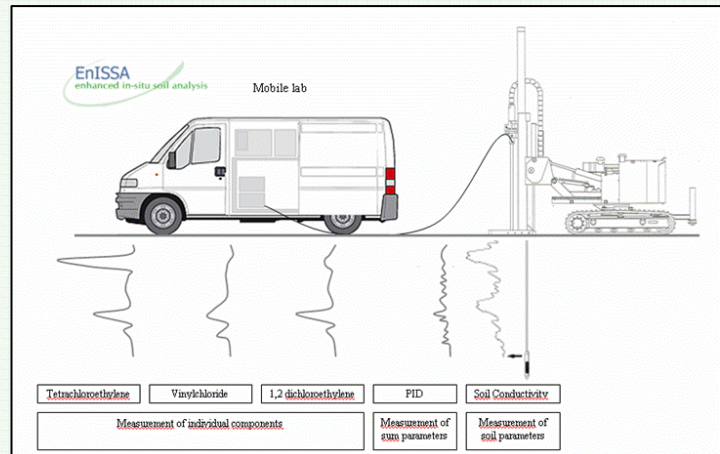
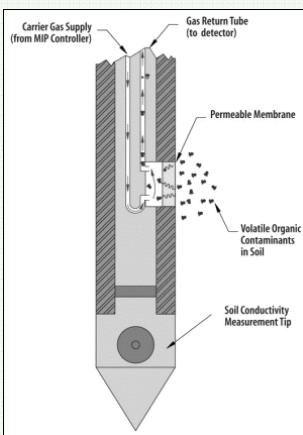
- DETAILED SOIL PROFILES OF INDIVIDUAL COMPONENTS.
- DETECTION LIMITS BELOW SOIL CLEANUP REFERENCE VALUES.
- 400 DATAPOINTS PER DAY.
- RELIABLE ON-SITE DECISIONS

The concern about soil contamination is becoming more and more important in almost all European countries. Certain regions have already taken legislative initiatives for quite some time. Most of these initiatives aim at identifying and evaluating the risks of historical soil contamination due to more than 100 years of industrial evolution, and at avoiding new additional contamination.

Our team has built up definite expertise in the detection and mapping of soil contamination. This expertise has lead to the development of **a fast quantitative in-situ soil analysis method with low detection limits (ppb-level) using the membrane interface probe (MIP).**

Membrane Interface probe

The Membrane Interface Probe (MIP) is a screening tool with semi-quantitative capabilities to measure volatile contaminants in the subsurface. The membrane is semi-permeable and is comprised of a thin film polymer impregnated into a stainless steel screen for support.



The membrane is placed in a heated block attached to the probe. This block is heated to 120 C°. Heating the block helps accelerate diffusion of the contaminants through the membrane.

Diffusion occurs because of a concentration gradient between the contaminated soil and the clean carrier gas behind the membrane. A constant gas flow carries the contaminants to the gas phase detector at the surface.

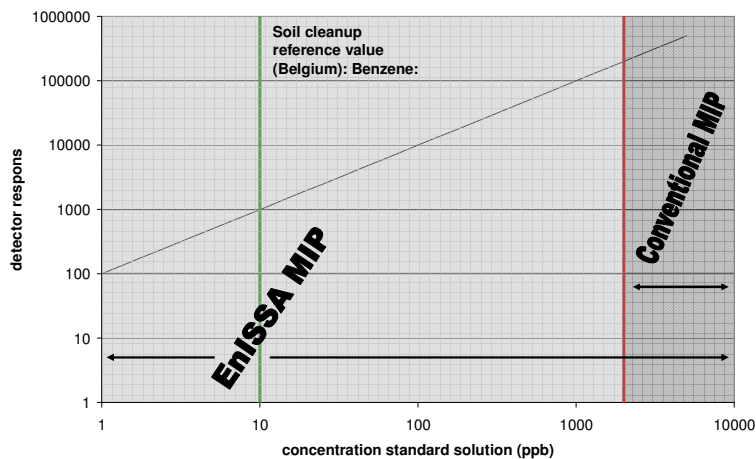


EnISSA Membrane Interface probe

Accurate soil investigations and their sampling programs are a critical component of reliable, efficient and cost-effective cleanup processes.

Traditional sampling methods are characterized by low detection levels and a broad analysis spectrum. However delineation of the contaminated area by traditional sampling methods is not only a time and cost consuming task but also parts of the contaminated area could be overlooked.

“On site” soil characterization technologies such as the MIP and ROST techniques are already frequently applied to obtain additional information which cannot be obtained by traditional sampling methods. Although **conventional MIP** has proven its use in source zones survey, the characterization of plumes is not possible due to the rather high **detection limits (3000-10000 ppb)** of the conventional detectors (PID, ECD, FID). Secondly, since the conventional detectors are sum detectors the information obtained by MIP cannot be correlated with **soil clean-up reference values** which are determined for individual components.



The **EnISSA method** uses a GCMS system which is connected to the MIP by an innovative gas sampling system. A highly improved analysis method results in **cycle times of 1 min.**

Using this technique, individual components can be characterised with detection limits in the range of **1-10 ppb**. The combination of smart method optimisation and innovative gas sampling is unique and makes it possible to qualify and quantify pollutant cocktails within the time frame of conventional MIP.

CHARACTERIZATION OF SOURCE AND PLUME

Since individual components are measured well below the soil-cleanup values, both source and plume delineation is possible resulting in highly detailed soil profiles which allow reliable “on site” decisions. Using different push technologies, depth up to 40-50 m are possible.

FAST IN SITU METHOD

Using the conventional MIP-speed (30 cm/min), each 30 cm a full characterisation of the pollution is possible on ppb level using the EnISSA method.

REDUCED SAMPLING COSTS AND TIME

Time inefficient and cost consuming classic sampling methods are still needed for the characterization, confirmation and the delineation of the entire contaminated area when using conventional MIP. EnISSA MIP measures both source and plume making it possible to place sampling wells at strategic locations and reducing sampling costs and time. Costs for the EnISSA MIP are comparable to qualitative conventional MIP.



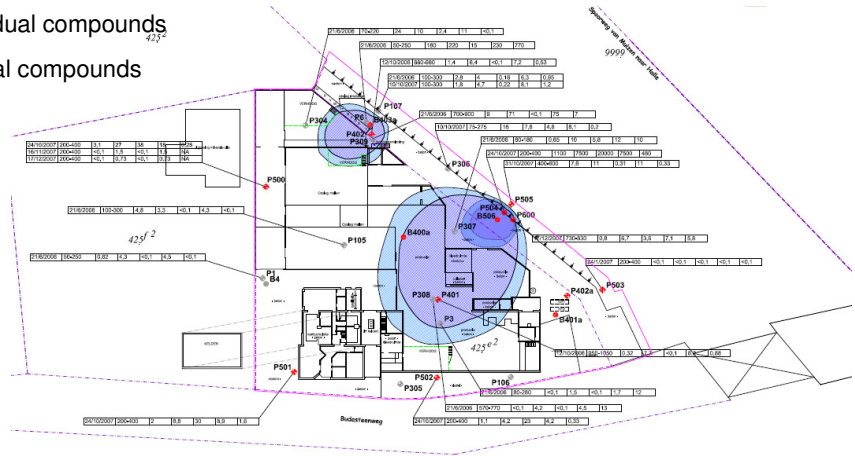
Data Visualization

Typically each 30 cm, concentration data for individual compounds are generated. The data is generated on the field which makes it possible to dynamically delineate source and plume.

The information for individual compounds and the electrical conductivity of the soil are graphed on-line. This allows the operator to determine the location of the contaminant, the relative concentration of the contaminant and the soil in which the contaminant is located. The EnISSA results can be used to determine the location where monitoring wells should be placed or the interval for injection of remediation materials.

Parameters which are available on the field are:

- Characterization of individual compounds
- Concentration of individual compounds
- PID results
- depth
- soil conductivity
- probing speed
- Membrane temperature
- gas flow pressure





MAIN ADVANTAGES of EnISSA MIP

- **Entire delineation of contamination: source + plume**

EnISSA MIP measures on ppb level

→ source and plume

(Conventional MIP measures on ppm level)

- **“On site” information on pollution cocktails:**

EnISSA MIP measures individual compounds in contrast to the sum-detectors used in conventional MIP

- **Strategic sampling well locations:**

The entire delineation of source and plume obtained by EnISSA MIP makes it possible to place sampling wells at strategic locations reducing sampling costs and time.



For detailed information please contact us:

EnISSA (MAVA)
Gorislaan 49
1820 Steenokkerzeel
Belgium

TEL: +32 2 759 59 30
FAX: +32 2 759 55 40

email: info@enissa.com

www.EnISSA.com

contact:

samuel.vanherreweghe@EnISSA.com
wouter.vandeputte@EnISSA.com

www.mava.be