

# MIP

## Membrane Interface Probe

The **Membrane Interface Probe (MIP)** is a screening tool used to log the relative concentration of volatile organic compounds (VOCs) with depth in soil. The probe is robust and percussion driveable (hammerable) with direct push machines.



The MIP membrane is comprised of a semi-permeable, thin film polymer impregnated into a stainless steel screen for support. The membrane is placed in a heated block that is advanced into the soil. Dakota uses a photoionization detector (PID), a flame ionization detector (FID), and a halogen specific detector (XSD).

### Targeted Contaminants

The XSD is highly specific to halogenated compounds and is used for logging chlorinated solvent plumes or source areas (TCE, PCE, Carbon Tet, etc.).

The PID provides sensitivity to aromatic compounds (BTEX) as well as confirmation of chlorinated ethylene compounds detected by the XSD.

The FID is a general detector useful for hydrocarbon detection as well as confirmation of high concentration of all compounds seen on the other two detectors.

### Low Level MIP

Low Level MIP greatly increases the sensitivity (and therefore utility) of the MIP. The technology results in an increase in the concentration of VOC contaminant delivered to the MIP detectors and is most useful when low contaminant concentrations are present.

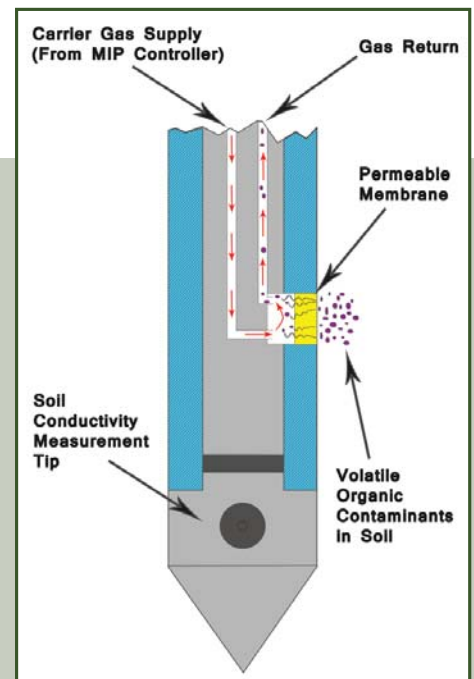
### Electrical Conductivity

Electrical Conductivity (EC) is a built in component of the MIP system. EC logs are collected in real-time and are displayed next to detector (signal) logs. The EC logs are useful in determining site lithology in unconsolidated formations.

### Features of the MIP include:

- ☞ Detects and logs chlorinated and non-chlorinated VOC contaminants
- ☞ Detects contaminants in coarse and fine grained soils, and in saturated and unsaturated soils
- ☞ LL MIP able to detect certain contaminants at or below the 100 ppb level
- ☞ Standard tool configurations combine the MIP with HPT (**MiHpt**) for lithology and permeability logging
- ☞ Shows distribution and relative magnitude of VOC contaminants
- ☞ Real-time mapping of dissolved petroleum and chlorinated VOC plumes allows an adaptive approach to site investigation

*The downhole permeable membrane serves as an interface to the detectors at the surface. With heat, volatiles diffuse across the membrane and partition into a stream of carrier gas where they are swept to the detectors. The MIP acquisition software logs detector signal with depth.*



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