



IT'S NOT ABOUT THE STATE OF THE POLLUTION  
- IT'S ABOUT HOW AND WHERE IT FLOWS



SORBISENSE

# SITE INVESTIGATION AND MONITORING

# PROBLEM

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## **ASSESSING POLLUTION RISK IN GROUNDWATER IS COMPLICATED, AND EXPENSIVE**

A problem for authorities monitoring the groundwater is how to obtain precise information on the extent and development of the plume from point-source pollution in order to direct the necessary resources to the sites that pose the highest threat to drinking water aquifers or other critical recipients.

Acquisition of 3-D flux-based assessments that include both direction and mass flow of contaminants is of crucial importance for site management. However, traditional groundwater sampling techniques are time-consuming, provide only snapshots of pollution events, and do not allow direct assessments of flow direction and mass fluxes.

**USE SORBISENSE SAMPLERS TO TRACK AND  
MONITOR POLLUTION FLOW IN THE GROUNDWATER**

# SOLUTION

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**SORBISENSE OFFERS A UNIQUE SAMPLING TECHNOLOGY, THAT  
WILL CREATE ADDED VALUE AND EASE YOUR WORK AT EVERY  
STAGE OF ASSESSING GROUNDWATER CONTAMINATIONS**

## **DIRECT AND SPECIFIC SITE INVESTIGATIONS**

- Screening for pollutions and groundwater flux with just the one sampler
- Direct measurements of Darcy Flux and contaminant mass discharge
- Direct measurements of risk – e.g. movement towards drinking water abstraction sites or residential areas
- Continuous performance evaluations of remediation

## **EFFICIENT FOR ALL TYPES OF RISK SCREENING AND RISK ASSESSMENTS**

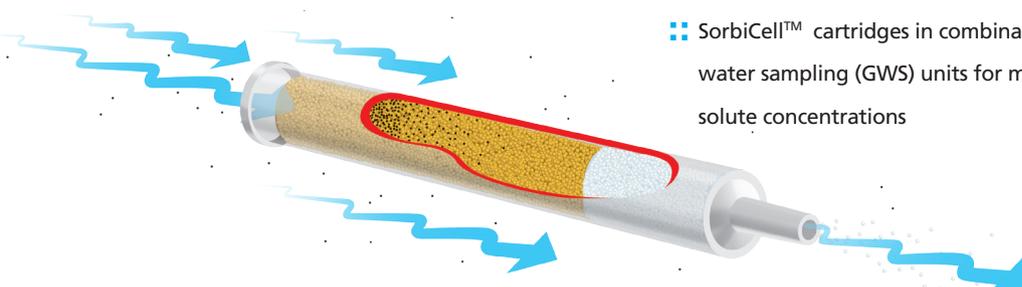
- Save up to 80% of the time normally spent in the field
- Easily installed in normal wells/screens
- Creates a wider and better range of data
- Provides highly improved sample handling



**PATENTED SAMPLING TECHNOLOGY**

# PRODUCTS

- SorbiCell™ cartridges in combination with the groundwater sampling (GWS) units for monitoring time-averaged solute concentrations



A diagram of a SorbiCell cartridge, which is a cylindrical device with a grey outer shell and a white inner section. A red outline highlights the internal components, including a yellow sorbent bed and a white filter. Blue arrows indicate the flow of groundwater through the cartridge.

Package incl. bag of 6 SorbiCell-VOCs, 1 GWS 40/70 mounting, 6 analyses for VOCs and report from Eurofins: EUR 1128 excl. VAT

- Fluxsampler™ sampling units for direct monitoring of groundwater Darcy flux, solute mass fluxes and flow direction in groundwater



A diagram of a Fluxsampler unit, a vertical cylindrical device with a black top section and a white mesh body. A red oval highlights the internal components, including a yellow sorbent bed and a white filter. Blue arrows indicate the flow of groundwater through the unit.

Package incl. 1 Sorbisense Fluxsampler VOC, 1 mounting kit (12 m), 3 analyses for VOCs and report from Sorbisense/Eurofins: EUR 1517 excl. VAT

- Suitable for virtually all contaminants: organic volatiles AND non-volatiles, inorganic macro AND micro constituents
- Direct, transparent volume-based calculation of solute concentrations and fluxes = no equilibrium assumptions, no diffusion calibrations
- Flux- and resident concentrations combine to calculate particle migration velocities and in-situ mass transfer rates



# AUTHORITIES

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Authorities need efficient regulation and management of the human and industrial impact on nature and environment, from prioritizing and precise risk assessments of a rising number of groundwater pollutions, to monitoring of remediation and groundwater.

To comply with the law, authorities need technically approved methods and solid documentation for existing methods before new technologies are applied.

For authorities, the Sorbisense technology is an efficient and approved tool for solving multiple tasks with fewer resources, such as manpower, hardware, etc. Continuous measurements by Sorbisense samplers allows for better decision-making, and direct measurements of groundwater and contaminant fluxes provide exact knowledge of risks and the effect of remediation.

## BETTER DATA FOR BETTER DECISIONS

- Darcy flux, mass flux, and flow direction with ONE single sampler installation
- Data represent a 1-3 month period rather than a snapshot value = more consistent results, fewer outliers
- Groundwater is not agitated/disturbed during sampling
- No losses from volatilization or sorption to tubing
- Discrete well-defined sampling depths: suitable for multi-level sampling and precise plume delineation





# AVIATION

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Airports are restricted areas with high standards for safety and continuity of operations. The combination of having to cater both for round-the-clock operations and routine maintenance and other services is a serious challenge for the management.

This also applies to the investigation and monitoring of the environmental impact of the airport, where much of the work is in its operational sector.

Here the Sorbisense technology can be used to great effect, reducing the time required for security checks of technical staff and equipment, reducing downtime because of the significantly shorter time spent sampling, and also through preciser knowledge of site conditions from the continuous measurements.

## **UNIQUE LOGISTICS AND IMPROVED SAFETY AND HEALTH**

- Spend less time at dangerous sites/sampling points
- User-friendly and operator-independent deployment
- Samples are well conserved and not prone to loss of analytes
- No expensive transport of liquids in cooling boxes
- Samples can be stored in a sample archive and analysed on a need-to-know basis, even volatiles





# OIL AND GAS

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The energy sector has an important task in providing oil and gas for society. From oil rigs and refineries to distribution systems and filling stations, the oil and gas industry is a very international business, and there is a demand from both the industry and authorities for a new and more efficient technology for investigation and monitoring of sites.

The sector has an obvious need to efficiently monitor all processes, but is also very restricted in their methods for health and safety reasons.

Spending less time at hazardous sites reduces risk, and with the Sorbisense technology staff can significantly reduce time on site and avoid the use of electricity for sampling. The continuous sampling by Sorbisense samplers further allows stable data to be acquired-, and constitutes a sampling method that can be applied internationally with a much improved sample handling.

## **BE EFFICIENT - REDUCE SAMPLING TIME BY UP TO 80%**

- No well-purging required; installation takes only 15-20 minutes per well
- No electrical components and subsequent safety precautions at hazardous sites
- Easy field procedure, single-person operation
- Highly improved sample handling - no tedious liquid sample handling
- No filtration steps needed
- No handling/discharge of (contaminated) groundwater





# UTILITIES

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Delivering sufficient and clean drinking water to society is becoming a challenge for almost all water utilities around the globe. In this regard, information on and protection of aquifers are essential, and many actions are taken both near wells and in the surrounding extraction areas to secure the water quality for the coming generations.

Nevertheless, much of the knowledge about the aquifers is based on groundwater models supported by only a few measurements in the aquifer.

Sorbisense samplers can be used as an efficient tool to validate groundwater models and to monitor water quality near extraction areas and wells. Water utilities will be able to obtain more knowledge with the same or fewer samples, but are also able to monitor the actual impact of the aquifer protection programmes.

## **LONG-TERM MONITORING FOR LONG-TERM DECISIONS**

- Level-specific monitoring near extraction wells for better use of wells and aquifers
- Direct measurement of fluxes and water quality in recharge zones for efficient water resource management
- Long-term water quality control for 30 to 90 days with just one sampler

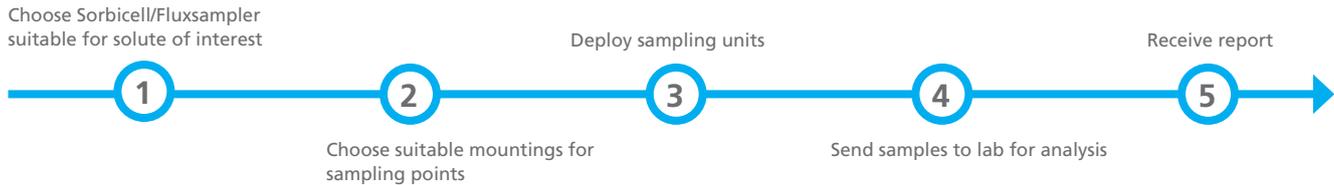


# HOW TO GET STARTED

**SORBISENSE SAMPLING UNITS AND MOUNTINGS ARE  
AVAILABLE FOR ALL WATER TYPES AND ARE SUITABLE FOR A FULL RANGE OF SOLUTES**

Use Fluxsampler/SorbiCell VOC for organic contaminants and use Fluxsampler/SorbiCell CAN for inorganics.

Install the sampling units simply and easily in the screened section of a groundwater well, at a precisely defined depth. Remove the units after 1-3 months and ship to the laboratory for analysis of solute concentrations and/or mass flux. Choose from a full range of accredited laboratory analyses, offered by our global laboratory partner Eurofins™. Sorbisense offers online and worldwide support for planning of projects and for interpretation of results.



Please contact us for further information: [info@sorbisense.com](mailto:info@sorbisense.com)



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