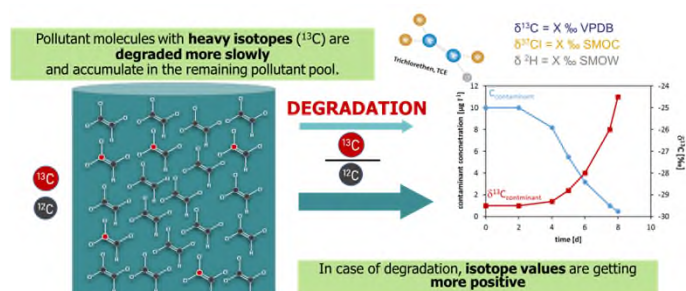
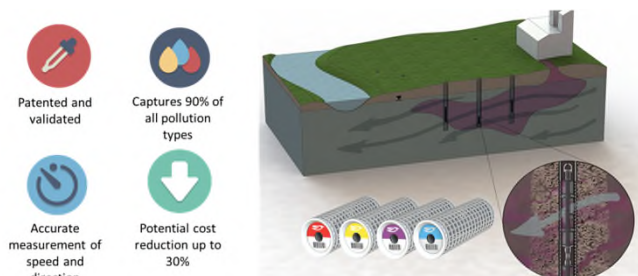


We present the first-time validated **combination** of contaminant flux measurement using **iFLUX Samplers** and **compound-specific stable isotope analysis (CSIA)** as a novel and highly innovative tool to verify and to manage sustainable mass flux reduction. The IsoFLUX tool allows the **precise determination of *in situ* degradation rate constants** combined with groundwater and mass flow data, key parameters for modeling the contaminant plume magnitude and behavior in space and time. Besides the evaluation of pollutant degradation by isotope measurements, the contaminant mass input from different sources is important to evaluate the overall impact and quantify each source contribution.



iFLUX samplers measures the transport of groundwater and contaminant. It allows to determine preferential pathways. Flux measurements are performed over a longer period, preventing peak values, high or low. Flux measurements helps to better understand the fate and spreading of groundwater contaminant plumes.

CSIA provides reliable source characterization via the isotopic fingerprint of the source contaminant. Moreover, CSIA is the most-conclusive tool for evaluation of contaminant degradation, as changes in isotope ratios are directly linked to this process. Specifically, CSIA quantifies bond breaking processes over non-degradative losses such as sorption or dilution.

Workflow

- In a joint concept, we select target contaminants and spots of the field site to be investigated.
- We provide IsoFLUX samplers and protocols for installation.
- We analyze mass flux, water flux, and stable isotope ratios of target pollutants.
- We qualitatively and quantitatively evaluate the flux and isotope data to use pollutant degradation in the context of a sound site concept and a cost-efficient remediation strategy.

Outcome

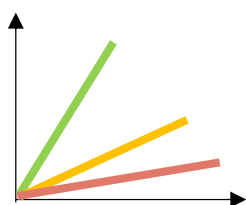
- Comprehensive insights of site conditions over a clearly defined timeframe including mass discharge and preferential pathways.
- Proof and quantification of pollutant degradation and validated site concept.
- Cost savings through reduced sampling and transport costs.

Validated Contaminants: BTEX, chlorinated ethenes

R&D: pesticides, PFAS or on demand



**Precise
determination of
pollutant flux
reduction**



**Quantification of
in situ pollutant
degradation**



Easy to sample



Lower costs