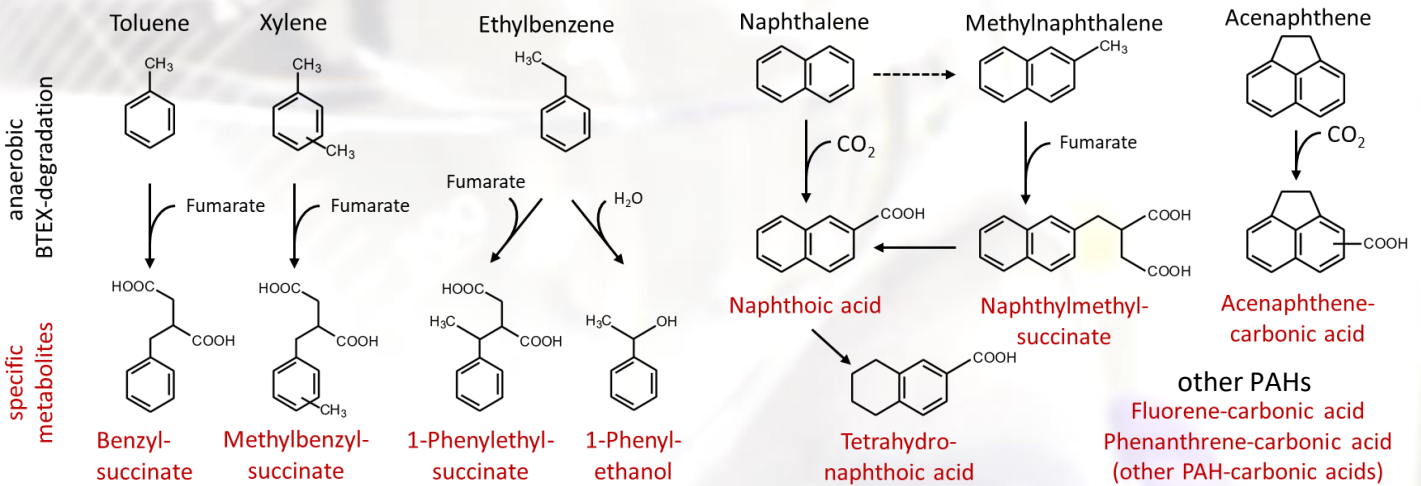




Metabolite analysis

The microbial degradation of organic compounds consists of many individual steps of enzymatic transformation reactions. The intermediate products of these individual steps are known as metabolites. The detection of metabolites is a simple and quick method for providing evidence of *in situ* pollutant biodegradation. It is applicable to a wide variety of aromatic and aliphatic hydrocarbons. In addition, a distinction between aerobic and anaerobic degradation processes is possible.



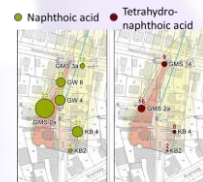
Sampling



Extraction



Analysis



Expertise

Detection of *in situ* biodegradation for

- Monoaromatics: BTEX, alkylbenzenes, ...
- PAHs: naphthalene, phenanthrene, ...
- *n*-alkanes and cycloalkanes
- Others: pesticides, explosives, ...

Workflow

- We provide sampling equipment.
- We perform metabolite analysis.
- We interpret metabolite data.

Result

Direct evidence of *in situ* biodegradation

Cost

300 – 450 € per sample

TAT

2 - 4 weeks

Further reading

Griebler C, Safinowski M, Vieth A, Richnow H-H, Meckenstock RU (2004) Combined application of stable carbon isotope analysis and specific metabolites determination for assessing *in situ* degradation of aromatic hydrocarbons in a tar oil-contaminated aquifer. *Environ. Sci. Technol.* 38, 617–631.

Gieg L.M., Toth C.R.A. (2017) Signature metabolite analysis to determine *in situ* anaerobic hydrocarbon biodegradation. In: Boll M. (eds) *Anaerobic Utilization of Hydrocarbons, Oils, and Lipids. Handbook of Hydrocarbon and Lipid Microbiology.* Springer, Cham.

Brzeszcz, J., Kaszycki, P. (2018) Aerobic bacteria degrading both *n*-alkanes and aromatic hydrocarbons: an undervalued strategy for metabolic diversity and flexibility. *Biodegradation* 29, 359–407.