

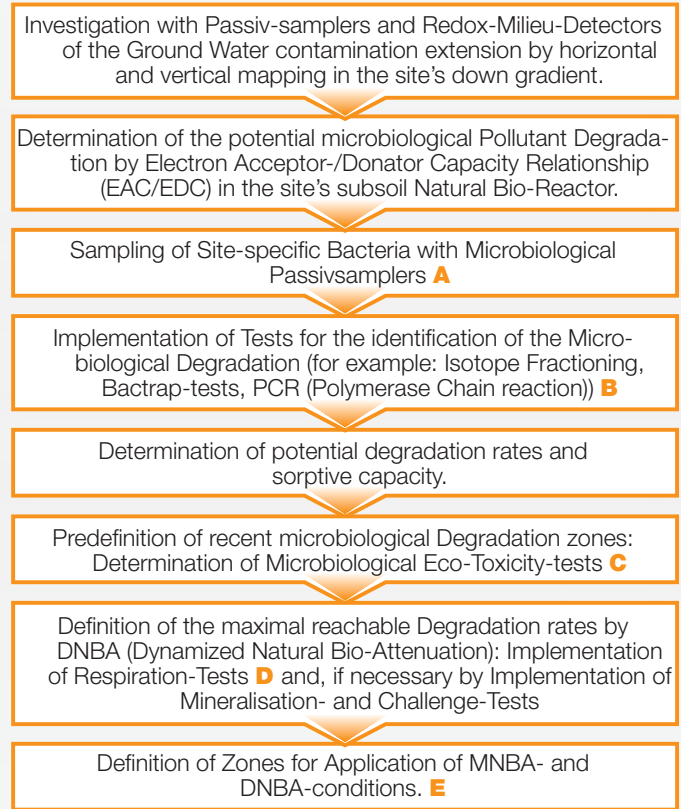
NBA *Natural Bio-Attenuation*

Feasibility-study for the Application of Monitored Natural Bio-Attenuation (MNBA) and/or Dynamised Natural Bio-Attenuation (DNBA)

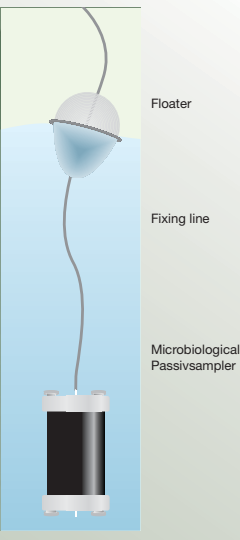
Conceptual Scheme/Targets:

- Utilisation of the natural microbiological degradation forces in the sub-soil for an Optimum Management of low Clean-up-Costs
- Identification of Zones, in which is MNBA possible or which needs an active remediation like in-situ DNBA (or ENA)

Proceeding of the M/DNBA-Feasibility-study:

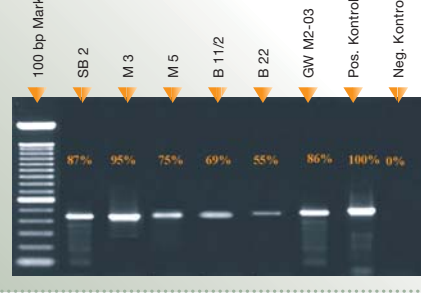


A Sampling of site specific Bacteria with Microbiological Passivsamplers



The diagram shows a sampler with a floater at the top, a fixing line, and a Microbiological Passiv sampler at the bottom.


B PCR-Gene-test



100 bp Mark
SB 2 M 3 M 5 B 11/2 B 22 GW M2-03 Pos. Kontrolle Neg. Kontrolle


87% 95% 75% 69% 55% 86% 100% 0%

D Respiration-Test



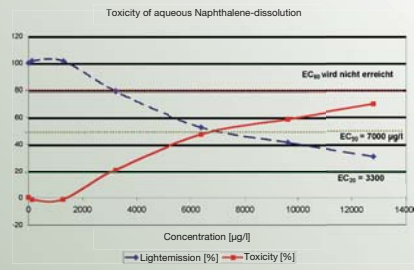
Pressure sensor

C Microbiological Ecotoxicity-Test



non-toxic sample → Toxicity effect on Bio-luminescence

toxic sample →



Graph: Toxicity of aqueous Naphthalene-dissolution

EC₅₀ wird nicht erreicht

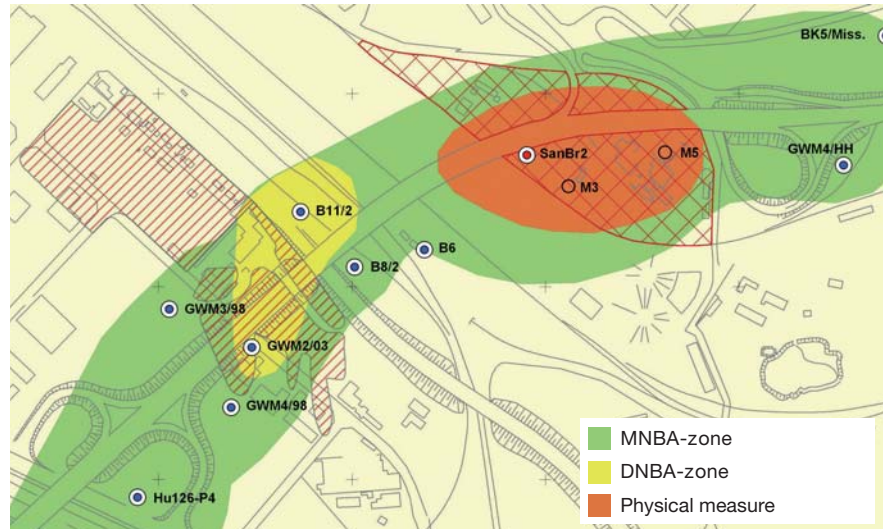
EC₅₀ = 7000 µg/l

EC₁₀ = 3300

Concentration [µg/l]

Lightemission [%] Toxicity [%]

E



Legend:

- MNBA-zone (Green)
- DNBA-zone (Yellow)
- Physical measure (Red)

Map labels: BK5/Miss., SanBr2, M5, GWM4/HH, M3, B11/2, B6, B8/2, GWM3/98, GWM2/03, GWM4/98, Hu126-P4