**Cefic LRI ECO43 - Advancements in Science**

The Cefic LRI ECO43 project has advanced the state of the science in several ways. A summary of the advancements is provided below:

1. In general: Advanced knowledge on fate, bioavailability, and toxicity of very hydrophobic organic chemicals (VHOCs) in sediments.
2. Explanation for the often-observed false negatives and false positives in sediment toxicity tests and the very slow bioaccumulation kinetics of VHOCs.
3. Improved experimental approaches for spiking, equilibration (aging), and sampling VHOCs, minimizing experimental bias, making Equilibrium Partitioning Theory work, and criticizing OECD standard protocols.
4. Novel information on the behavior and performance of the polymer PDMS when used for passive sampling/dosing of liquid substances.
5. Extension of the applicability domain of passive sampling and the Equilibrium Partitioning-Target Lipid Model (EqP-TLM) to VHOCs.
6. A standard protocol for passive sampling was developed and published in the scientific literature.
7. Advanced knowledge on toxicokinetics/dynamics of VHOCs in sediment-dwelling organisms.
8. Novel information on the phase distribution of VHOCs in sediments; particularly the concentration above which liquid substances form a separate phase (location, OC-dependence, and ways to determine this concentration, i.e., the so-called CSPC).
9. A test design to discriminate actual sediment toxicity from physical (false positive) effects was developed and conclusive evidence was obtained that *Lumbriculus variegatus* is fouling-resistant.