UVCB fate-directed toxicity testing and risk assessment (UVCB-FATETOX)

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Background

UVCBs are substances of unknown or variable composition, complex reaction products or biological materials. UVCB substances consist of many different chemical constituents, some which may be unknown.

Examples include petroleum substances, chlorinated paraffin's (CPs), flavoring agents, essential oils & their derivatives, natural oils and extractives, and biofuels.

Assessing the environmental and human risks posed by UVCB substances is a challenge currently confronting chemical industry and regulators.

Focus & Objectives

The **project focuses** at the toxicity and bioaccumulation testing of those UVCB constituents that are persistent.

The **objectives** are:

(1) to develop approaches for fate-directed ecotoxicity assessment of UVCBs based on new analytical methods, dosing methods, fate directed fractionation, toxicity testing and models

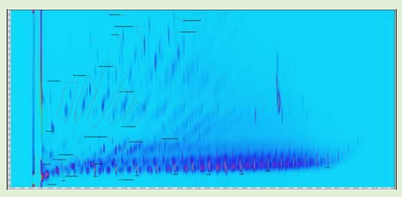
(2) to conduct a case study on selected UVCBs and develop a generic risk assessment strategy for UVCBs

(3) to cross fertilize and partially align ongoing research activities at three European research institutes.

Planned research and tasks

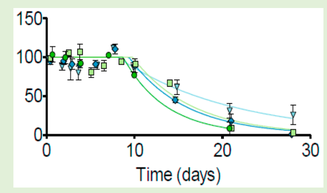
Work package 1: Combining State of the art dosing & analytical techniques with UVCB fate testing.

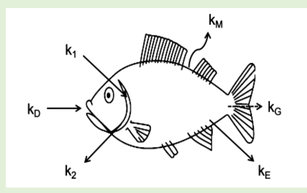
- *Passive dosing of UVCBs by polymer water partitioning and application to toxicity testing*
- *Aquatic biodegradation testing at environmental low concentrations coupled to advanced analytical instruments*
- *Bioaccumulation testing of UVCB mixtures coupled to Headspace-SPME and/or purge-and-trap*



Work package 2: Fate directed ecotoxicity and bioacumulation testing.

- *Literature review on fate-driven toxicity testing*
- *Aquatic toxicity testing with and without fate directed pre-treatment*
- *Bioaccumulation testing linked to biodegradation pre-treatment*
- *Linking toxicity to equilibrium concentrations in polymer and lipid – baseline versus excess toxicity*





Work package 3: Development of fate-directed hazard and risk assessment of UVCBs.

- *Case studies of fate-directed vPvB/PBT assessment of UVCBs*
- *Case studies of fate-directed risk assessment of UVCBs*
- *Development of an integrated risk assessment strategy for UVCBs*

Expected outcomes

Short-term: Scientific and technical progress that will support fate-directed toxicity testing of UVCBs, and a case study that will illustrate a fate-directed risk assessment methodology for selected UVCBs.

Long-term: More scientifically informed and higher quality testing of UVCBs, and thus an improved basis for future environmental risk assessment of UVCBs.

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