

**SCR-PRA-030**

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**SCREENING METHODS**  
DNA-binding assay applied to POPs

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• **Context**

The analysis of dioxins, furans and dioxin-like polychlorobiphenyls as per the reference method (isotopic dilution for the sample preparation and GC-HRMS measurement) is time-consuming and costly. A strong demand for the use of alternative screening methods is emerging, in order to face crisis situations or extensive routine control plans. Several approaches have been developed for a few years, such as immunoassays, DNA-binding assays or cell-based bioassays. Some of them are already implemented for specific matrices. They are all using a step of the toxicity pathway of dioxin-like compounds and give a unique information relative to a toxicity or a TEQ.

• **General objective(s)**

To show how a DNA-binding assay with q-PCR measurement can be performed. This includes the sample preparation, the assay reactions and the q-PCR measurement.

• **Main items**

Screening method / Dioxins / PCB / DNA-binding / Immunoassay / q-PCR

• **Pedagogical objectives**

- ✓ To point out the benefits of a screening method in the field of dioxins monitoring
- ✓ To see how the whole procedure of a DNA-Binding assay is run
- ✓ To point out the limitations and coming improvements of a method under development

• **Pedagogical tools**

- ✓ PowerPoint slide show
- ✓ Procept kit (DNA-binding) presentation
- ✓ q-PCR equipment and software presentation

• **Duration**

- ✓ 1h20

• **Pre-requisite**

- ✓ Basics of molecular biology (Cell Biology, DNA structure and replication)
- ✓ Knowledge of the chemistry of contaminants of interest (REG-THE-010)
- ✓ Theoretical lecture on sample preparation (SAM-THE-040)
- ✓ Theoretical lecture on advanced screening technologies (SCR-THE-010, SCR-THE-030)