

Introduction

The implementation of the Water Framework Directive (WFD) requires the monitoring of micropollutants in the aquatic environments to prevent any damages to both human health and ecosystems. Passive samplers allow measuring these compounds at trace levels by accumulation and concentration over long-term exposure. Moreover, the use of passive samplers (PS) allows a better representativeness of measurements because it takes into account the episodic pollution [1]. Such passive sampling techniques have been recommended in the European Commission Guidance Document on surface water chemical monitoring, as complementary methods to improve the level of confidence in water monitoring data in comparison with conventional spot sampling [2].



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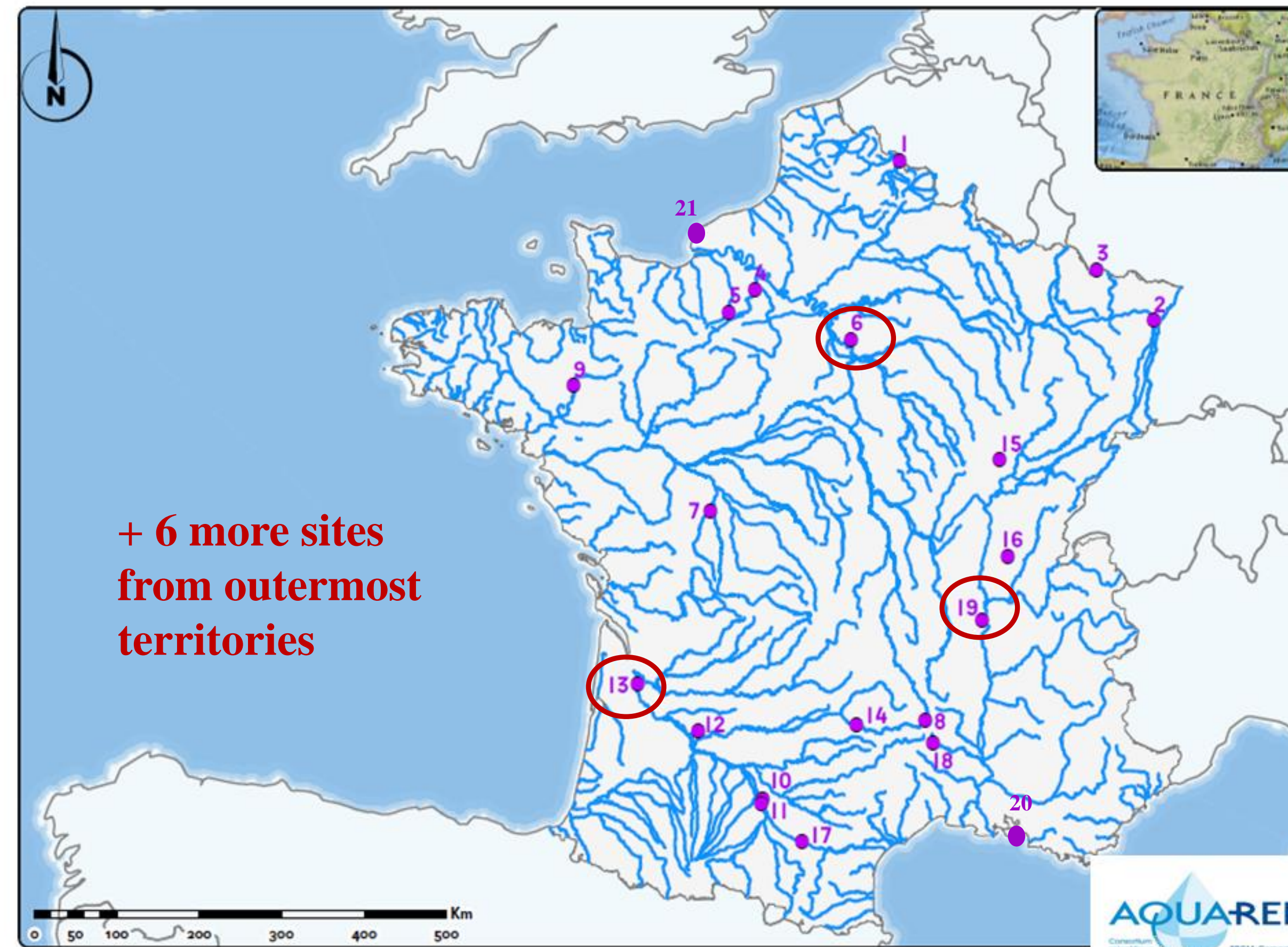
OBJECTIVE

In the context of the WFD monitoring programs, French government has mobilized the expertise of AQUAREF for two main objectives:

To demonstrate, in-situ, the relevance of PS for monitoring of regulatory substances in aquatic environments

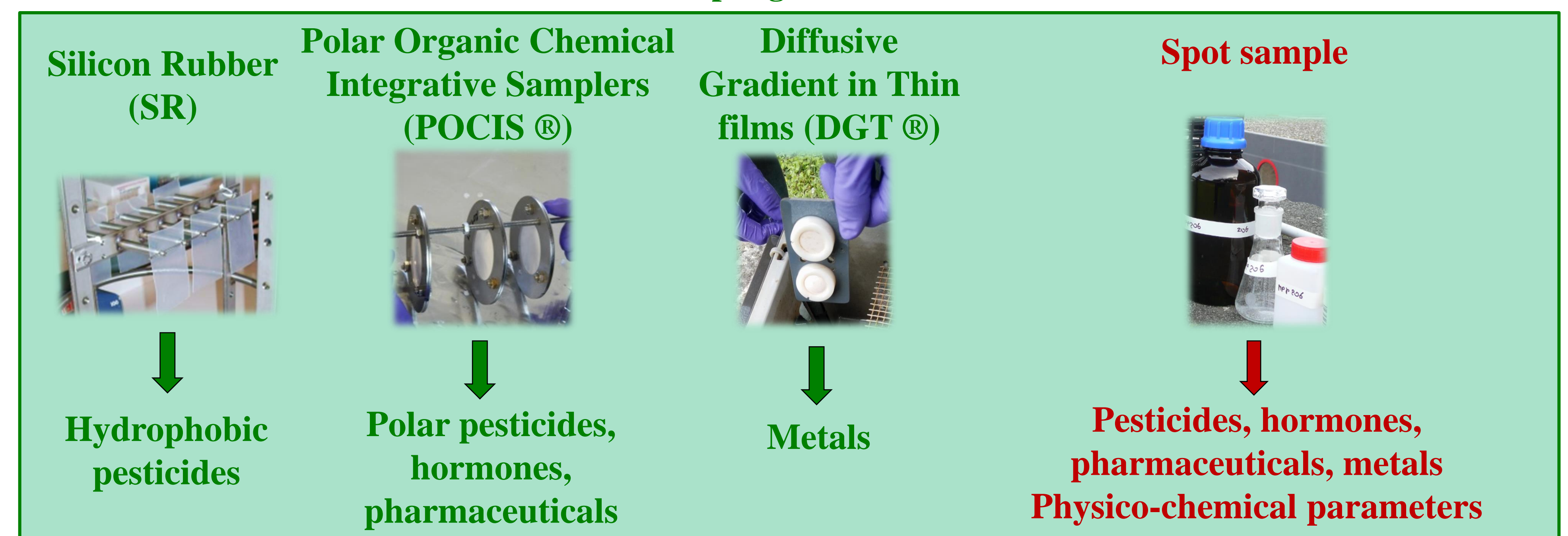
Diffuse protocols and guidelines
Design and initiate formation of future stakeholders

Two kinds of campaigns in French sites (2017-2018):



Micropollutants studied
Pesticides, biocides, pharmaceuticals, metals, organometallic compounds, organophosphate and hormones selected from directive 2008/105/EC, watch list of substances established in commission implementing decision (EU) 2015/495 and the order of 7 August 2015 amending the decree of 25 January 2010.

Sampling

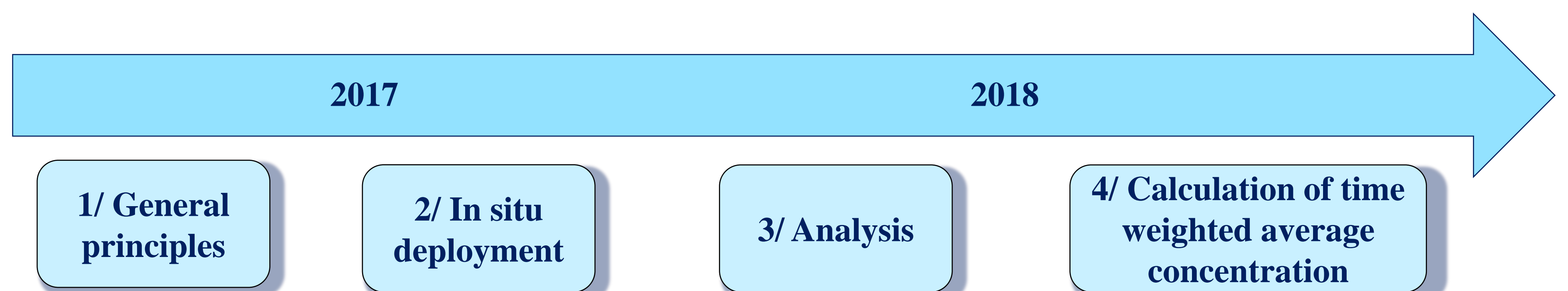


- **Intensive monitoring** of 56 micropollutants on 3 sites over 1 year long
 - 26 successive 15-days long-exposure of PS
 - versus
 - Spot water samples every 2 weeks

→ To compare the mean annual concentrations +/- uncertainties
- **A large scale exploratory monitoring** of 108 micropollutants on continental and marine sites, 20 homeland and 6 more from outermost territories
 - PS exposure for 2 weeks
 - versus
 - Spot samples (at day 0 and day 15)

→ To compare gradient of concentrations, site classification and the identification of highly contaminated sites

The formation of stakeholders is also a strategic challenge → To develop training tools and organize at a national scale 4 types of formation :



These formations will be open to the Water agencies and offices, design offices, sampling operators and analytical laboratories.

Issues :

- Improve reliability of annual mean concentrations to meet regulatory requirements for Environmental Quality Standards (EQS)
- Achieve acceptable limits of quantification established by the WFD and increase the frequency of quantification
- Obtain a better temporal representativeness of the contamination

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References:

- [1] Miège, C., Mazzella, N., Allan, I., Dulio, V., Smedes, F., Tixier, C., Vermeirssen, E., Brant, J., O'Toole, S., Budzinski, H., Ghestem, J. P., Staub, P-F., Lardy-Fontan, S., Gonzalez, J-L., Coquery, M., & Vrana, B. (2015). Position paper on passive sampling techniques for the monitoring of contaminants in the aquatic environment—Achievements to date and perspectives. Trends in Environmental Analytical Chemistry, 8, 20-26.
[2] European Commission, Guidance Document n°19 – Common implementation strategy for the Water Framework Directive (2000/60/EC). Guidance on surface water chemical monitoring under the Water Framework Directive. Technical Report (2009) 025, 132 p.

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