# Ad-hoc Assessment for Water Monitoring of the Future

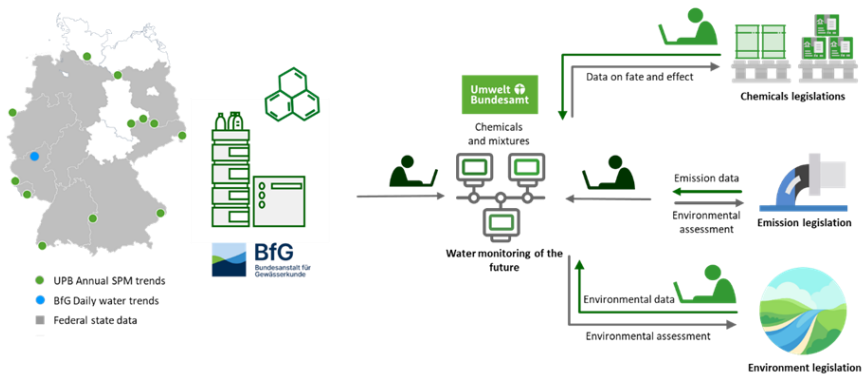
## REFOPLAN (3722 22 201 0): 01.09.2022-28.02.2026

With the Green Deal, Europe is breaking new ground in environmental policy. The Zero Pollution Ambition aims for a pollution-free environment and, together with the new chemicals strategy, will ensure a sustainable chemical market that protects human health and the environment from hazardous substances.

With conventional target analysis (examines specific individual substances), only a small part of the anthropogenic substances in water bodies could be analysed so far. Therefore, comprehensive analytical methods such as Non-Target Screening (NTS) are becoming increasingly important for future water monitoring. NTS is a mass spectrometric method in which no preselection takes place. Due to the generic extraction and applied measuring mode NTS is generally not as sensitive as target analysis, but allows the detection of substances and mixtures that have not been considered so far. Results from NTS are qualitative detections and semi-quantitative intensities.

The aim of the project "Ad-hoc assessment for water monitoring of the future" is to develop assessment options for the large amount of NTS data (Figure 1). We provide tools to quickly identify new problematic substances and develop measures to mitigate exposures. An essential part of the project is the development of curated substance lists with regard to the intended use and the underlying chemical legislation (e.g. REACH EC 1907/2006, Plant Protection Products EC 1107/2009, Pharmaceuticals 2001/83/EC, Biocides EU 528/2012). Thus, we want to support the assessment of potentially problematic substances with chemical data from water bodies. In addition to single substances, we also consider frequently occurring chemical mixtures and develop options for their assessment.

**Figure 1:**




Schematic workflow in the project “Ad-hoc Assessment for Water Monitoring of the Future”. Source: Umweltbundesamt.

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The central element of the Water Monitoring of the Future is the NTS Portal, which the German Federal Institute of Hydrology (BfG) is developing on behalf of the UBA in the REFOPLAN FKZ 3720 22 201 0. It contains federal and state NTS data from water monitoring in Germany. Together, we intend to continuously improve the NTS Portal so that it becomes the central point of contact for overarching questions on substances in chemicals and environmental legislation. To archive this goal, we integrate assessment-relevant properties, such as physico-chemical parameters and (eco-)toxicological endpoints into the NTS Portal. In line with the risk and hazard assessment, data on persistence and accumulation in food webs are also considered, so that we simultaneously support the establishment of an early warning system for contaminants of emerging concern. The environmental specimen bank is of particular importance as it allows retrospective measurement of samples as well as tracking of contamination over time or long-term changes in contamination patterns.

The project is divided into nine work packages. Eight work packages deal with the expansion of the NTS Portal. In the ninth work package, Department II 2.5 (Laboratory for Water Analysis) will set up its own analytics in the field of liquid chromatography coupled with high-resolution mass spectrometry (LC-HRMS) for suspect and non-target screening. Thereby, the department will become a contact point for suspect and non-target screening. We work closely with Department II 3.3 (Water Treatment). The LC-HRMS of Department II 1.3 (Indoor Hygiene) can be used jointly for analytical measurements.

The project is preceded by the following NTS projects at the UBA, the results of which are directly or indirectly incorporated into the Water Monitoring of the Future:

► Ad-hoc Assessment for Water Monitoring of the Future I (REFOPLAN FKZ 3720 22 201 0)

► NTS measurements of the environmental specimen bank (REFOPLAN FKZ 3717 22 230 0, REFOPLAN FKZ 3717 22 267 0)