

Recommendations for the monitoring of priority substances in freshwater fish based on practical experiences

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The Water Framework Directive (WFD) and in particular Directive 2013/39/EU set requirements for monitoring of environmental quality standards (EQS). For compounds, which tend to bioaccumulate in biota and show a risk of secondary poisoning or for human health by fish consumption, EQS were derived for biota (fish, mollusc and shellfish). To support the implementation of biota monitoring in Germany a research project was initiated with the aim to integrate all legal requirements into an appropriate monitoring concept.

A comprehensive sampling campaign including six sampling locations (rivers, lake and a lagoon at the Baltic Sea) and three fish species with twenty individuals per species was conducted. Beside biometric data, concentrations of total mercury and organic substances such as perfluorooctanesulfonate (PFOS), brominated diphenyl ethers (BDE) or hexachlorobenzene were determined in pooled fillet and carcass samples. This data set allows the evaluation according to fish species, age, size, weight, sex and trophic level. Furthermore, the concentrations in fish fillet and whole fish were compared as the use of fillet samples better reflects protection of human health via fish consumption, which is the protection goal for five of the nine biota EQS for fish. Based on the results of this study, recommendations for future monitoring are given. Special focus is laid on a good compromise between scientific justification and aspects of practical implementation.