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ÖKOLOGISCHES KOLLOQUIUM
des Instituts für Zoologie in person in room 0.024

Wednesday, 20.11.2024, 01:15 pm

Dr. Meike Hahn
Bundesanstalt für Gewässerforschung BfG

Host: Prof. Dr. von Elert

Identification of pollutants and their sources in rivers

Surface waters are exposed to a variety of stressors of anthropogenic origin[1]. Among these, the input of pollutants plays a key role[2], either via diffuse sources like agricultural land or point sources like industrial dischargers. Accordingly, only 29 percent of European surface waters reached a "good" chemical status[3]. In the context of chemical pollution, the increasing input of new unknown pollutants is a rising problem as the input of these pollutants cannot be controlled by introducing thresholds.

The presented project has the aim to develop a workflow for the identification of unknown relevant pollutants as well as their sources in river systems. For this purpose, a case study at the river Elbe as well as selected tributaries was conducted. Environmental samples were investigated concerning different ecotoxicological endpoints (endocrine disruption, genotoxicity, etc.) as well as their chemical composition. The results are used to develop a model that predicts ecotoxicity of environmental samples based on their chemical composition and toxicity databases. In a next step those samples, for which the ecotoxicity prediction is deviating most strongly from the predicted ecotoxicity are prioritized for further investigation. It is hypothesized that the observed unpredicted ecotoxicity levels can be explained by unknown pollutants that are not identified by the analytical investigation. These samples qualify for effect-directed analysis with the aim to identify unknown pollutants which explain the measured ecotoxicity. The obtained information on pollutants and their sources can be used for the development and prioritization of measures in the context of riverine ecosystem management.

[1]Dudgeon et al. 2006, Biol. Res., 81:163-182

[2]WasserBLIcK/BfG & verantwortliche Bundesbehörden, 29.03.2022

[3]EEA report 07/2024

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