

ESR20-013 - Health risk of emerging concern: PFAS in the urban water cycle

Abstract

The increasing release of persistent and toxic chemicals in the urban water cycle is a matter of emerging concern for public health and for the good status of water bodies. One of the most critical groups are the poly- and perfluoroalkyl substances (PFAS). Especially for the new substitutive compounds of this group little is known regarding sources, fate and health risks. Foreseeable changes in the future urban environment, such as growing population density, increasing use of chemicals, climate change, circular economy and associated potential concentration of chemicals in products via recycling, are likely to exacerbate human and environmental health risks if proper countermeasures are not implemented. The project aims to investigate 1) the sources of the most toxicologically relevant PFAS (e.g. PFOA, PFOS, GenX, Adona) within the City of Vienna, 2) their transfer via transport in the Danube and through bankfiltration into groundwater and 3) the potentially harmful effects of waterborne PFAS exposure on zebrafish embryos and human cells. An interdisciplinary team of scientists from the fields of engineering, natural and life sciences will integrate these specific objectives by developing a cutting-edge, holistic fate and risk model. Such tool will be highly relevant for city planners and policy makers across sectors in Vienna and beyond and will contribute to achieving several UN Sustainable Development Goals.

Scientific disciplines:

Water quality (50%) | Toxicology (25%) | Risk research (25%)

Keywords:

PFAS, organic micropollutants, water quality, hydrology, groundwater, drinking water, wastewater, human health, environmental health, material flow analysis, fate and risk model

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Further links to the persons involved and to the project can be found under

<https://www.wwtf.at/funding/programmes/esr/ESR20-013/>