Groundwater Quality Management in a Rapidly Changing World
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Challenges in Urban Hydrogeology

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Abstract

Urban areas are a focus of increasing conflict with regard to water use and water protection. Half of the world's population and about 80% of Europeans live in cities. More than 90% of the population increase in developing countries occurs in cities. As a direct and/or indirect consequence of human activity, urban water systems are frequently polluted with organic contaminants such as xenobiotics. A xenobiotic (Greek, xenos "foreign"; bios "life") is a compound that is foreign to a living organism. Xenobiotics related to human behaviour and activity, such as pharmaceuticals, fragrances and endocrine-active substances are increasingly found in urban water systems. However, the behaviour and the effects of these xenobiotics in the environment have been widely unknown until now. Consequently, an interdisciplinary project on the assessment of risk of urban water pollution, focussing on xenobiotics, has been initiated at the UFZ. The aim is to explore new integrated methodologies (including flux calculations as well as chemical, toxicological and immunological investigations) for determining the impact of human activities on urban water systems and on processes within the urban watershed. The overall goal is an integrated model which can be used for assessing the risks to humans and ecosystems, and for supporting the development of suitable management strategies.

Key words urban groundwater; xenobiotics; contamination; investigation techniques; modelling

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