Lehrstuhl für Siedlungswasserwirtschaft
Department of Civil and Environmental Engineering
TUM School of Engineering and Design
Technische Universität München

Study Project

"Testing biocide and heavy metal removal performance of green roof substrates according to VSA guidelines"

About us

The Chair of Urban Water Management is involved in the education of students (Bachelor and Master) in environmental and civil engineering. Research focuses on urban water supply, wastewater treatment and energy recovery, water recycling, drainage systems, industrial wastewater treatment and the urban water-food-energy nexus. The "Energy-efficient wastewater treatment" research group is particularly concerned with innovative processes for increasing energy efficiency and maximizing energy recovery from the treated residues, such as in the form of energy-rich biogas.

Topic

Scientists are searching for new methods to decrease the negative impact of climate change on us. Cities are especially affected by these changes. Higher temperatures and increased impervious surfaces support the heat island effect with all its negative side effects. One way to decrease these effects is green roofs; they combine many important factors to mitigate the impacts of climate change, such as water retention and lower roof temperatures, and they can even increase biodiversity. In theory, they are also able to retain certain contaminants. This study will show if green roof substrates can retain heavy metals and biocides according to the VSA guidelines.

Tasks

- Literature research on common removal mechanisms from green roof substrates
- Running experiments according to the VSA guideline, including preliminary batch tests and columns tests, as well as tests to characterize the green roof substrate
- Taking samples and analyzing them in the laboratory
- Analyze the data and make a statement on their removal

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Time Range

Starting as soon as possible is preferred. There will be an introduction to the topic. You should get familiar with the different test setups (batch and column) and start with the characterization of the material. A preliminary batch test will be done to check the contaminant removal; this should take 1 to 2 weeks. Further column tests will follow to check the performance during flow, which will take another full week. The experiments should be finished in 2-3 months of part-time work, with additional time to write the study project.

Requirements

Lab practice, minimum requirement “Hydrochemistry Lab” or similar

Contact

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