SUPER – Stuttgart University Program for Experiencing Research
Project Information

Institute’s Information
Name of Institute  VEGAS, University of Stuttgart (Research Facility for Subsurface Remediation)
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Duration of Project/Number of Students
June/July  X
June/July/August  X
Number of Students  1

Name of Project  Mobility of Contaminants: Testing Immobilization Approaches with PFAS-contaminated Soils

Beneficial Skills & Knowledge  Experimental/practical work in our test facility and analytical laboratory

Description of Work
In the region Rastatt/Baden-Baden in the Upper Rhine Valley, Germany, approximately 800 ha of predominantly agricultural land has been contaminated with per- and polyfluoroalkyl substances (PFASs) about one decade ago when paper-fiber biosolids mixed with compost were applied. These substances affect various land uses (agriculture, open pit gravel quarries, and urban planning) and the underlying aquifer as the main drinking water resource for surrounding cities and municipalities.

Remediation attempts have been limited to date, particularly due to the large spatial extent of the contamination and the related high costs. One strategy currently being investigated is to immobilize the PFASs in the soil in-situ. Substances with a high sorption capacity would be applied on the ground surface and mixed with the soil. The then altered soil should still fulfill its original purpose (e.g., for agriculture). Another strategy could be to remove the contaminated soil and use it for construction (e.g., noise protection embankment) after treatment with the immobilization agents.

In the ongoing research a test-strategy to evaluate the long-term leaching characteristics of soil treated with substances to increase its sorption capacity is being developed. Treated soil is tested on three different scales (batch experiments, column experiments, lysimeters) and under different saturation conditions (saturated, variably saturated).

The SUPER-student will be involved in the set-up, operation and evaluation of column and batch experiments and related studies.