

## Summary

### **“Validation of inverse column test for evaluation of environmental impacts of construction materials on *sewer pipe rehabilitation* using flooding method”**

The assessment of the environmental impacts of construction materials is based on the principle of “assessment of the effects of construction materials on soil and groundwater” by the German Institute for Structural Engineering. The inverse column test is used to examine the leaching potential of mobilizable substances in construction materials.

The research project objective was to adapt and standardize the inverse column test for construction materials with respect to *sewer pipe rehabilitation* using the flooding method.

Investigation results fundamentally prove the suitability of the inverse column test for the evaluation of the environmental impacts of construction materials on sewer pipe rehabilitation.

The parameters pH, conductivity, TOC,  $\text{Al}^{3+}$ ,  $\text{Na}^+$  and  $\text{K}^+$  indicate a different expression in the release behavior. However, the concentrations of released ingredients decreased to the level of the blank value after a few days. The conducted ecotoxicological tests show a different effect of the eluates of the maximum release phase. Overall, no lasting increased load of toxic substances was detected.

In the investigation of this special construction material by the inverse column test, considering the saturation condition of column sand is important. To minimize injection faults, the construction material should be injected into an unsaturated column. The use of coarser-grained sand would also be beneficial for injection.