

## Description Master thesis

### **Title**

Testing some materials as adsorbents and biofilm carrier for the removal of pharmaceutical residues in wastewater and compare them to activated carbon, at different operating conditions

### **Problem description**

Many pharmaceutical residues and other priority pollutants pass through modern wastewater treatment plants (WWTPs) and end up in recipients, which may affect aquatic organisms in different ways. Further, antibiotics in the environment may contribute to the rise of antibiotic resistant genes in bacteria, which is a serious threat to the society's possibility to cure life-threatening diseases on a global scale. Current WWTPs are not able to meet these new challenges if not existing processes are enhanced or complemented with other removal processes. The objective of this thesis would be on testing some materials as adsorbents and biofilm carrier for the removal of pharmaceutical residues in wastewater and compare them to activated carbon (already several tests performed), at different operating conditions. This study further aims at identifying factors that promotes adsorption and biological degradation of the pharmaceutical residues.

The specific objective of the study is to test the potential of bark and biochar material as adsorbents and biofilm carrier for the removal of pharmaceuticals from wastewater.

### **Work description**

The main part of the work will consist of lab- or pilot-scale column tests of bark (the latter maybe in collaboration with the company Kark Consulting AB) and to compare these with GAC. IVL has done several pilot-tests with granulated activated carbon (GAC) and study results including operating conditions are available. Test columns will be packed with bark activated carbon and then fed with wastewater and the effluent from the column will be collected. The concentration of pharmaceuticals will be analysed in the influent and effluent of the column. SLUs expertise consists of experts in organic chemistry and microbiology, besides wastewater treatment.

### **Contact**

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