



## Independent project/degree project

**Title:** Biochar as a metal trap in contaminated soil- experiments and modelling

**Credits:** 30 credits

**Level:** Master

**Subject:** Soil Science /Environmental Science

**Programme:** Soil, Water and Environment, Civilingenjörsprogrammet Miljö- och vattenteknik

**Start:** January 2022 (if possible)

### Background

Metal contaminated soils are a problem worldwide. One new, emerging remediation action is to add biochar to such soils, which can immobilize the metals and make them less bioavailable and less prone to leach. Biochar is pyrolysed biomass, and it has many favorable properties- it increases the water, nutrient and air holding capacity in the soil. In this project soil from a full-factorial field study at Helsingborg will be used. The soil is polluted with Cu, Zn, and Pb, and amended with biochar and peat at different percentages and aged for three years. The aim of the study is to determine how much of the metals that is immobilized in the different treatments using batch experiments. The results will ultimately be used to test a geochemical equilibrium model (Visual MINTEQ).

### Issues

The proposed work is part of a four-year project sponsored by Vetenskapsrådet, in cooperation with SGI (Swedish Geotechnical Institute) who is responsible for the field study at Helsingborg. The soil was sampled in 2021.

### Performance

- 1) Literature review
- 2) Batch experiments in which metal solubility as a function of pH is being studied of the various treatments.
- 3) Evaluating results from the experiments using geochemical modelling (Visual MINTEQ) (optional)
- 4) Writing a report
- 5) Oral presentation of results at SLU

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