



## Independent project/ degree project

### Title: Solubility of lead in Swedish contaminated soils – experiments and modelling

**Credits:** 30 ECT

**Level:** Master

**Subject:** Soil Science/Environmental Science

**Programme:** Civilingenjörsprogrammet Miljö och vattenteknik, Soil and Water management

**Start:** January 2016 (if possible)

#### Background

Sweden has several contaminated sites from different industries with high concentrations of various toxic metals. There is a risk that the metals will leach to the surrounding environment. The chemistry of the metals determines how much of them that will leach and the toxicity of the metals. One very toxic and common metal at these sites is lead (Pb). The chemistry of Pb is however very complex and it is challenging to model using geochemical models, which in turn makes it difficult to make correct risk assessments of the sites. This research project therefore aims at examining how soluble Pb is at four different contaminated sites and how well Pb chemistry can be modelled using a geochemical model.

#### Issues

The proposed work is part of a Formas sponsored project, which is a collaboration between Göteborg University and SLU, that seeks to investigate if toxic metals from contaminated sites will leach more with the increasing rain falls expected with climate change. We have collected soils from four highly contaminated sites in Sweden:

1. Åsbro (Wood impregnation)
2. Pukeberg (Glassworks)
3. Gyttorp (Shooting range)
4. Vinterviken (Industry)

#### Performance

- 1) Literature review
- 2) Batch experiments in which Pb solubility as a function of pH is being studied.
- 3) Ultra filtration experiments to discover the truly dissolved fraction of Pb.

- 4) Evaluating results from the experiments using geochemical modeling (Visual MINTEQ)
- 5) Writing a report
- 6) Oral presentation of results at SLU

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