

The potential for binding PFAS using biochar and phytoremediation

PFAS is a group of long-lasting chemicals with multiple known toxicological effects which has been found everywhere in nature. One of the possible source points of PFAS is via landfill through leachate leaving the area. It is therefore important to investigate and implementing remediation techniques to reduce the contamination risk. This thesis focuses on two components, first a literature study with the goal of collecting information regarding PFAS and how they are affected by biochar and phytoremediation. The second part focuses on a landfill outside of Höganäs and the usages of *Salix* and *Miscanthus* to decrease the leachate volumes within the area, as well as investigating *Salix* for phytoremediation of PFAS. The leachate uptake for both species was calculated using a Penman – Monteith equation for the evapotranspiration, from which water balances for the landfill could be made, and the PFAS uptake used an equation where that was based on the biomass production. The literature review showed that the combination of biochar and phytoremediation could be useful as these two techniques targets different variations of PFAS which shows a potential for them to target a larger range of PFAS variations if they were to be applied together and should be further investigated. The case study results showed that *Miscanthus* and *Salix* can be useful to reduce the amount of leachate within the landfill, leading to lower release rates from the landfill. Furthermore, based solely on biomass production it does seem that *Salix* can be useful for accumulating PFAS which can then be removed from the landfill.

Key words: Physical geography, ecosystem analysis, PFAS, Per-and polyfluoroalkyl substances, remediation, phytoremediation, biochar

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