

MASTER THESIS

Felipe Farias da Rocha
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MAGYAR AGRÁR- ÉS
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Master Environmental Engineering

**Detection and mapping of per- and polyfluoroalkyl
substances in the drinking water supply of Budapest.**

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**Institute/Department: Institute of Aquaculture and
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Summary

Thesis title: Detection and mapping of per- and polyfluoroalkyl substances in the drinking water supply of Budapest.

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Course: MSc Environmental Engineering

Institute/Department: Institute of Environmental Sciences

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Poly and perfluoroalkyl substances (PFAS) are a group of artificial organic chemical substances globally used in industries that have been the focus of attention for their unique chemical properties and environmental concern (Boiteux et al., 2012; Ericson et al., 2009; Hu et al., 2019). PFAS are thermodynamically stable and highly resistant to several forms of degradation, making them persistent in the environment and difficult to remediate (Boiteux et al., 2012; Kucharzyk K.H et al., 2017). These high stability and lipid and water repelling attributes make PFAS attractive for several purposes, for example: paper industry, medical devices, pesticides, metallurgical and packing, and also for the use of costumers like, cosmetics, paints, aqueous film forming foams (AFFFs) and several waterproof products (Rayne and Forest, 2009; USEPA, 2012).

The wide use of PFAS make them an emergent contaminant in the environment. PFAS has the capacity to bioaccumulate in organisms, and many types of PFAS are considered toxic, and can lead to multiple types of negative health impacts (Cousins et al., 2017; European Environmental Agency, 2019). It is important to understand these substances better and also to detect them in water supplies.

In this study, thirty-two samples of drinking water were collected from various locations in Budapest and applied to the guideline of USA EPA Method nr. 537.1 for PFAS detection. Using

this method the result the PFAS identified were visualized using an interpolated map utilizing the QGIS software to estimate the PFAS values of the surroundings of the samples. The results showed varied PFAS distribution, with higher concentrations in northern regions, suggesting potential contamination sources from pipelines or water treatment processes, necessitating further investigation for safeguarding public health.