**Analytical tools for target and non-target screening of ubiquitous environmental pollutants in textiles and laundry wastewater**

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**Abstract:**

Production of textiles is a long multistep-chain, involving numerous hazardous chemicals. It is estimated that more than 3,500 chemicals are currently used worldwide within textile production and approximately 2,000 of these have not yet been registered in REACH. Thus, clothing textiles might be one of the most common and largest sources of harmful chemical exposure among the general population, e.g. diffusive transport over the epidermal barrier. Analytical methods are necessary for screening and quantification purposes to facilitate the evaluation of risk assessments related to the subsequent production of less hazardous materials.

The research group by Prof. C. Östman have emphasized the presence of several hundreds of chemicals in textile articles of which several have shown adverse effects within natural biota. An ongoing project has identified textile chemicals with biological effects in sewage water from Swedish wastewater treatment plants. Suspect- and non-target screening methodologies are evaluated using data processing software, e.g. MS dial and Compound Discoverer.

Based on the current societal status, methods for identifying regulated and non-regulated chemicals will be developed. In just a few years from now, a new national legislation will be introduced, forcing the retailers to pay an additional tax assuming that they fail to prove that the fibres are free from hazardous substances. In the long run, our research will facilitate future guidelines and regulations regarding chemicals that are found in textiles, which hopefully will enable a sustainable circular economy worldwide.

The major aim of this project is to develop and apply screening methodologies for both target and suspect screening of xenobiotic compounds in textiles and laundry effluents. The samples will consist of a wide variety of materials, e.g. newly produced and recycled textiles, as well as wastewater occurring from laundry of textiles.

**Biography of presenting author**

Tim studied general chemistry at Stockholm University, Sweden, and obtained his B.Sc. in 2017. He then decided to study more chemistry on advanced level and ended up studying analytical chemistry for two years. During his last year of studies a project related to environmental science was performed at the division of exposure and effects, Stockholm University. The research topic was related to a development of an analytical method for characterization of bio-molecular modifications in serum albumin caused by exposure to smoke from incomplete combustion. He finally received an MSc in analytical chemistry in 2019. He applied for a PhD position in C. Östmans group in the end of 2020 and started his studies in February 2021.

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