



Department of Chemistry Seminar Series Fall 2022

Friday, November 21, 2022, 3:30 PM - **HS1 O112 (Health Sciences)**

Host: Cherie Yebstrebsky

How do we get rid of 'forever chemicals'?

A presentation on the topic of PFAS, the products they are in, and the challenges we face when these end up in waste to be recycled or incinerated



Dr. Stina Jansson

Assistant Professor, Department of Chemistry,
Umeå University, Umeå, Sweden

Nothing lasts forever... Except possibly PFAS, i.e. per- and polyfluoroalkyl substances, which is a collective name for a group of chemical substances sometimes referred to as 'forever chemicals'. They have received a lot of attention in recent years, due to their toxicity and wide-spread distribution in the environment.

PFAS is a large and complex group of more than 4,700 identified substances with varying properties and extensive use within many different areas of application. They all consist of a carbon chain where the hydrogen atoms are fully or partially replaced by fluorine atoms. The C-F bond is one of the strongest chemical bonds known, a feature that makes the PFAS substances extremely stable and persistent in the environment.

Because of their stability, we can not assume that PFAS will degrade in the incineration process, fully or even partially. There is only a handful degradation studies in the scientific literature, and these show that there is a risk that very potent fluorinated greenhouse gases are formed. Could it be that as we are attempting to solve a contamination problem of a specific type, we are adding to the environmental burden elsewhere?

Stina Jansson is an Associate Professor in Environmental Chemistry at Umeå University, Sweden. In addition to waste management processes, her research group studies thermochemical conversion of biomass and other biomaterials, and more specifically how organic environmental contaminants are formed, transformed and degraded in high-temperature systems.