



**Professor Ian Cousins**

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**Title:**

Sources, transport and fate of various PFAS in the atmosphere.

**Abstract:**

Per- and polyfluoroalkyl substances (PFAS) are synthetic organic chemicals which have been observed in the global environment, even in locations far away from where they are emitted. In this presentation, I will provide an overview of current knowledge of sources of PFAS to the atmosphere and how they are transported in air. In particular, I will focus on two areas of research in my group; (1) transport of PFAS on sea spray aerosols (SSA) and (2) fluoropolymer manufacturing sites as a source of PFAS to the atmosphere. Several laboratory studies from our group have demonstrated the water-to-air transfer of certain PFAS in SSA simulation experiments, suggesting that SSA is an important vector of certain PFAS to the atmosphere. I will present additional data from recent monitoring studies that provides convincing field evidence for the importance of SSA as a global source of PFAS. Certain PFAS are also known to be emitted to the atmosphere via the flue gas stacks of fluoropolymer manufacturing plants, but there are few measurements of PFAS in the air surrounding these plants. I will present atmospheric measurements undertaken with different sampling methods (including high volume air samplers connected to cascade impactors) downwind of fluoropolymer manufacturing sites demonstrating the long-range atmospheric transport of certain PFAS that are emitted from fluoropolymer manufacturing plants.

**Bio Data:**

Prof. Cousins has worked at the Department of Environmental Science at Stockholm University since 2002. His research comprises a combination of experimental and modelling approaches to investigate the sources, transport, fate and exposure of contaminants. For the last 20 years, he has conducted research on per- and polyfluoroalkyl substances (PFAS) and works closely with analytical chemists in his department to better understand the environmental behaviour of these contaminants. Prof. Cousins has published more than 170 peer-reviewed articles and 8 book chapters. He was designated as a Highly Cited Researcher in 2018 and 2020. In 2020, Prof. Cousins kicked off the PERFORCE3 project, which is a Europe-wide multi-partner doctoral research training programme in the field of PFAS that he coordinates. He recently became an Associate Editor of Environmental Science and Technology.

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