Master 2: Research Training 2023-2024

Laboratory: PC2A

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Eventually CaPPA Work Package: WP-1 From gas phase to aerosols

Environmental fate of melamine and its degradation products

Abstract

Melamine is an s-triazine with three amino groups and is mainly used to synthesize melamine-formaldehyde (MF) resins which are added to kitchenware, textiles, foamed plastics, electric appliances, and flooring to impart fire resistance. Aside from MF resins, melamine is also used in paints and coatings, flooring, machine wash liquids, leather treatment products and is commonly used as material for baby and children cutlery and plates. It is a high production-volume chemical with an import volume of up to 1000000 tons per year into the EU.

Melamine has been recently suggested as a persistent, mobile and toxic (PMT) substance and has gained increasing public attention worldwide. In order to protect public health and aquatic ecosystems and improve water quality, it is essential to understand the occurrence and fate of melamine and its related triazines (i.e., atrazine, cyromazine, ammeline, etc.) in waters.

The overall objective of this internship is to explore the chemistry (reactivity, reaction pathways and kinetics) related to the atmospheric degradation of melamine in the aqueous phase.

This project will also aim to contribute to a larger research program devoted to the study of atmospheric processes (Labex CaPPA, CPER Ecrin). The work will take place at PC2A laboratory, Lille University and will be performed in collaboration with Prof. Roxana Suehring from Toronto Metropolitan University in Canada

Key words: molecular simulations, atmosphere, melamine, reactivity, water