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Emerging POPs in L'Albufera Natural Park (Valencia, Spain)

Maria Lorenzo (1), Julian Campo (2), and Yolanda Pico (1)

(1) Food and Environmental Safety Research Group (SAMA – UV), Desertification Research Centre, Valencia, Spain, (2) Environmental Forensic and Landscape Chemistry, Desertification Research Centre, Valencia, Spain (julian.campo@uv.es)

The screening of emerging persistent organic pollutants (ePOPs) in a coastal wetland as L'Albufera Natural Park from Valencia (Spain) is crucial to understand their transport, accumulation and fate in sensitive areas. These areas are severely threatened by water pollution, disturbances of the water regime, industrial pressures, high population density, etc. The concern about the occurrence and distribution of ePOPs is raising because they are one of the factors that adversely affect the fragile aquatic ecosystems, including their biota. In this study, sixty-seven samples including surface water, sediment, fish, influents and effluents from waste water treatment plants (WWTPs) were collected. Considered ePOPs were extracted by solid phase extraction (SPE) and determined by liquid chromatography triple quadrupole mass spectrometer (LC-QqQ-MS).
The results show the presence of organophosphate flame retardants (PFRs) and perfluoroalkyl substances (PFASs) in all environmental compartments. WWTPs were identified as an important but not unique point source. High levels of target compounds (mainly PFASs) in wastewater effluents suggest the presence of precursors in water and their poor removal through the treatments. Tris(2-chloroisopropyl) phosphate (TClPP) and perfluorooctane sulfonate (PFOS) were at the highest concentrations in all water samples. PFOS was also the most detected compound in sediment and fish samples. The mean levels of PFOS in water and fish were higher than the annual average of the environmental quality standards (EQS) established by the European Union Directive 2013/39/EU. Such result points out the need of these type of studies and their environmental forensics utility, since they could help to identify ePOPs sources to the environment.

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