

Title: **Analysis of plasticizers and flame retardants in marine biota**

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Flame retardants (FR) have been used since ancient times in order to reduce and prevent the spread of a fire avoiding injuries and deaths. However, the use of organophosphorus FRs (OPFRs) was extended after brominated FRs (BFRs) were banned due to their biotoxicity, bioaccumulation, environmental persistence and migration characteristics. Currently, it seems that OPFRs could be also recognised as pollutants because they easily end up inside animals and human bodies. This is concerning due to their diverse toxic effects like neurotoxicity, endocrine disruption and intracellular accumulation that they can induce.

This project will be focus on analysing 19 OPFRs as bioindicators in order to know whether they could be bioaccumulated and biomagnified in biota samples. These bioindicators will be detected and quantified in three fish species, caught in different locations of the Mediterranean Sea, that are usually consumed in Spain. Furthermore, it will be analysed the OPFRs average ingestion by a Spanish person in order to advise whether they could have affections in human health. To proceed with this analysis, OPFRs will be extracted from samples by ultrasound liquid extraction. Then, a turbulent flow chromatography (TFC) system will be used for purification, combined with a high-pressure liquid chromatography (HPLC) for OPFRs separation coupled to tandem mass spectrometry (MS-MS) for OPFRs final detection.

The methodology applied allows to asses OPFRs in fish samples obtaining satisfactory results. Bioaccumulation of OPFRs has been confirmed in all samples analysed but at different levels of concentrations depending on the fish species whereas biomagnification of OPFRs is potential to appear.

Keywords: organophosphorus flame retardants, marine biota, fish, bioaccumulation, biomagnification, toxicity, human health, high performance liquid chromatography, tandem mass spectrometry, turbulent flow chromatography.