

Title: **Analysis of organophosphorus flame retardants in marine biota**

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Flame retardants (FRs) are chemicals added to materials in order to slow or prevent the start or growth of fire. The use of organophosphorus FRs (OPFRs) has increased the last years because the use of polybrominated diphenyl ethers (PBDEs), that are other type of FR, is currently banned. OPFRs can substitute PBDEs because of their technical characteristics, and they are also used as plasticizers and anti-foaming agents. Although there is controversy about their toxicity, there can be found some general toxicological effects of the OPFRs: reproductive and developmental toxicities, association with neurotoxicity, endocrine disruption and carcinogenicity. This project will focus on the analysis of 19 OPFRs in biota samples of environmental interest as bioindicators, specifically in sea turtles and marine fish. The analytical method is based on turbulent flow chromatography (TFC) in combination with high pressure liquid chromatography (HPLC) coupled to tandem mass spectrometry (MS-MS). The extraction was performed by ultrasound liquid extraction, and purification was done with the TFC system. This method has allowed the evaluation of OPFRs in turtle and fish samples archiving satisfactory results. OPFRs were detected in all analysed samples, showing their ubiquity in the environment as well as their capacity for bioaccumulation.

Keywords: organophosphorus flame retardants, plasticizers, marine biota, high performance liquid chromatography, tandem mass spectrometry, turbulent flow chromatography.