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Phthalates, organotin compounds and *per*-polyfluoroalkyl substances in semiconfined areas of the Spanish coast: Occurrence, sources and risk assessment

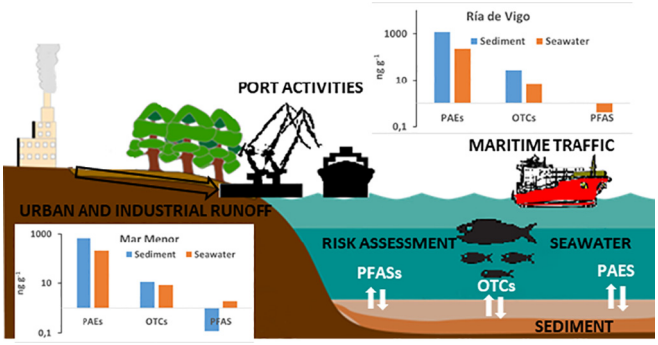
Estefanía Concha-Graña [a], Carmen Moscoso-Pérez [a], Verónica Fernández-González [a], Purificación López-Mahía [a], Jesús Gago [b], Víctor M. León [c], Soledad Muniategui-Lorenzo [a,*]

[a] Grupo Química Analítica Aplicada (QANAP), Instituto Universitario de Medio Ambiente (IUMA), Centro de Investigaciones Científicas Avanzadas (CICA), Facultade de Ciencias, Universidade da Coruña, 15008 A Coruña, Spain
[b] Instituto Español de Oceanografía, Centro Oceanográfico de Vigo, Subida a Radio Faro 50, 36390 Vigo, Pontevedra, Spain
[c] Instituto Español de Oceanografía, Centro Oceanográfico de Murcia, 30740 San Pedro del Pinatar, Murcia, Spain

HIGHLIGHTS

- The ubiquity of PFAS, OTCs and PAEs was confirmed in coastal areas.
- TBT concentrations in seawater were above MAC value of WFD.
- High ecological risk: TBT, BBP, DBP and DEP in sediments; TBT in seawater.
- No correlation between seawater-sediment distributions was found.
- Monitoring of PFAS, OTCs and PAEs is recommended in coastal areas.

GRAPHICAL ABSTRACT



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ABSTRACT

In this work two sensitive areas of the Spanish coast located in the Atlantic (Ria de Vigo) and Mediterranean (Mar Menor lagoon) have been studied regarding their contamination by phthalates, organotin compounds and *per*-polyfluoroalkyl substances (seawater and sediments) in two different campaigns (spring and autumn in 2015). PFAS and OTCs were detected in seawater and sediments at low concentrations (few ng L^{-1} or ng g^{-1}), whereas PAEs were detected at levels two orders of magnitude higher, particularly in Mar Menor lagoon due to its semi-confined characteristics. However, PAEs and OTCs concentration in sediments were higher in Ría de Vigo than in Mar Menor lagoon as a consequence of the influence of the important urban nuclei and port in that area.

The ecological risk assessment revealed that in both areas tributyltin, dibutyltin and diethylphthalate pose a significant risk in sediments, whereas in seawater tributyltin in both areas resulted in a high risk.

1. Introduction

Per- and polyfluoroalkyl substances (PFAS) organotin compounds (OTCs) and phthalates (PAEs) are considered global environmental contaminants due to their wide usages, resistance to

* Corresponding author.
E-mail address: soledad.muniategui@udc.es (S. Muniategui-Lorenzo).

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