
Microplastics in Portugal and the Atlantic Ocean (2018-2021)

José Miguel Almeida*^{†1}, Vanessa Morgado^{1,2}, Luís Gomes¹, Ricardo Bettencourt Da Silva², and Carla Palma¹

¹Instituto Hidrográfico – Rua das Trinas 49, 1249-093 Lisboa, Portugal, Portugal

²Centro de Química Estrutural, Institute of Molecular Sciences, Departamento de Química e Bioquímica, Faculdade de Ciências, Universidade de Lisboa – Campo Grande, 1749-016 Lisboa, Portugal, Portugal

Abstract

Microplastics are any synthetic solid particle or polymeric matrix with the size ranging from 1 μm to 5 mm. Due to their reduced size, microplastics easily enter in the trophic chain since they are misunderstood with food or adsorbed, causing serious and dangerous effects in the marine ecosystems. The Instituto Hidrográfico has participated and conducted scientific projects – AQUIMAR, Sagres 2020 and Mar Aberto – to sample for microplastics in distinct areas. This work is framed in the efforts to understand the impacts of microplastics in the several aquatic systems and matrices, thus contributing to assess and improve ocean health. In the context of the AQUIMAR project, surface water and seafloor sediment samples were collected in three coastal areas and four inland waters in Portugal between 2018 and 2020. A correlation between higher microplastics concentrations and higher human activity (urban areas, agricultural and industrial activities) was found in the coastal areas, particularly in the southern coast, and in the estuaries. For the Sagres project (between January and May 2020) and the Mar Aberto project (between December 2020 and February 2021), subsurface water samples from the Atlantic Ocean and between Lisbon and Cape Verde were collected. The places where higher microplastics concentrations were found are close to urban areas in Cape Verde, Rio de Janeiro, and to South Africa. These results are helpful for future studies on identifying possible sources and ecotoxicological risks from microplastics, particularly in areas with higher concentrations.

Keywords: Microplastics, Portugal, Atlantic Ocean, surface water, seafloor sediment

*Speaker

[†]Corresponding author: Jose.Almeida@hidrografico.pt