



# Editorial: Challenges in Marine Pollution Diagnosis

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## Editorial on the Research Topic

### Challenges in Marine Pollution Diagnosis

In the Anthropocene, legacy and contemporary anthropogenic pollutants as well as naturally occurring pollutants, have modified their behavioral patterns and exposure pathways in the oceanic environment. The factors that contribute to this trend include the increase in the number of so-call emerging pollutants (of which little is known), being ocean plastics (macro and microplastics) and pharmaceuticals among those of major concern. This whole scenario raises the toxicological risks and harmful effects to ecosystem health, to people's physical, mental and social well-being and to marine-based socio-economic structures. Human beings long understood the key role of the oceans in the sustainable development of the planet. However, it is only recently that a comprehensive strategy emerged, partly due to the inclusion of the fourteenth Sustainable Development Goal (SDG14 - Life below water) (United Nations, 2015) and the subsequent creation of the Conference on the Oceans. In order to reach such an objective, championing good management decisions and appropriate prevention and mitigation efforts are of paramount importance and urgently needed. These actions are challenged by the certainty and timing of the marine pollution diagnosis. In particular, assessment of marine chemical pollution involves an intrinsic complexity, since the transport and fate of pollutants vary according to their own physical-chemical characteristics and origin, the specific attributes of the receiving ecosystems and the presence of other stressors. In that sense, a holistic understanding of the problem is required.

This Research Topic brings together five original studies, presenting different tools for marine pollution diagnosis, within different scenarios and types of pollutants. Minh Le et al. place value on historical monitoring and research data of *polychlorinated biphenyls* and *metals* in the Belgian Part of the North Sea. The authors developed and applied approaches in order to solve barriers emerging from data gaps and methodological differences, making them useful for conservation and management. Franceschini et al. focused on hotspots of *macroplastics* accumulated in the seabed around the island of Sardinia, Italy. Through a modeling approach, they assessed the relationship between the amount of this type of litter and the amount of *microplastics* ingested by an edible crustacean. Melvin et al. refer to shoreline surveys as an internationally common and accessible method of monitoring *micro and macro plastics* pollution in aquatic environments. Based on a systematic literature review, they discuss some of the shortcomings and the diverse and critical goals of plastic pollution research on shorelines. Yin et al. present a method for the monitoring and hazard assessment of offshore *oil spills*. Their proposal aims at a novel real-time technique to estimate oil slick thickness, relying on surface plasmon resonance sensors. d'Errico et al. tackled the need for an interdisciplinary evaluation in case of *dredging activities*. The authors focused on the harbor of Leghorn as a case of study and considered all phases of the process, including disposal of removed sediments.

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Each of the above mentioned articles provides valuable information for those involved in the assessment of marine pollution. Accordingly, they contribute to the conservation and sustainable use of the world's oceans, seas and marine resources, as is pursued in SDG14.

## AUTHOR CONTRIBUTIONS

MG wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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