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Editorial

Microplastics in Water Bodies and in the Environment

Hrissi K. Karapanagioti [1,*] and Ioannis K. Kalavrouziotis [2]

[1] Department of Chemistry, University of Patras, 26500 Patras, Greece
[2] School of Science and Technology, Hellenic Open University, 26335 Patras, Greece; ikalabro@eap.gr
* Correspondence: karapanagioti@upatras.gr

Nowadays, plastics and microplastics, along with nanoplastics, are pollutants of emerging concern [1]. The topic of microplastics in water bodies especially freshwater ones has only scarcely been studied and requires more attention. Many people drink raw water without any treatment and no treatment for microplastic removal is currently employed for drinking water. In general, we know that much lower particles were observed in treated water compared to raw water. Thus, this is a topic directly related to human exposure and needs to be further addressed. This Special Issue could include studies related to microplastics found in water bodies such as the oceans, seas, lakes, rivers, creeks, streams, canals, fjords, ponds, wetlands, and water reservoirs but also aquifers and especially karstic systems. It could also include studies related to microplastics found in drinking water sources as well as in drinking water both tap and bottled water.

This Special Issue includes studies from different parts of the world, i.e., Russia [2], India [3], and Mediterranean Regions such as Italy [4], Greece [5], and Cyprus [6]. These are mainly baseline studies that monitor microplastics in different areas. There seems to be a trend of correlating the concentration of microplastics with surrounding land uses. Nevertheless, it seems that microplastics are present in all areas even in remote rural ones [2,3], as well as in agricultural lands [5]. However, the presence of a wastewater treatment plant (WWTP) in the vicinity seems to play a crucial role in the concentration of microplastics in a lake [4].

Different sampling and analytical techniques are employed to determine the microplastics in the different studies. One sampling technique is to directly sample water [2,3] or soil [5] and the other one is to sample organisms that have interacted with microplastics such as zooplankton [6] or zebra mussels [4]. Analyses were performed optically with SEM/EDS, microscopes, stereoscopes, ATR-FTIR, μFTIR, and combinations of them for all of the samples or selected ones. The difference in the methodology creates difficulty in comparing the different findings. Thus, the reporting of results and comparison with future studies should include the limitations of the methodology used in each study.

Studies that were able to analyze smaller fractions of microplastics showed that the smaller size fraction was more abundant than the larger size one. In the case of soil [5], this suggested that the smaller fraction was degradation fragments from the larger pieces. To summarize the findings, it is obvious that the most common microplastics identified are fibers and fragments. The most common polymers are polyethylene and polypropylene for fragments and fibers, whereas most of the fibers are made from PET in the case that a WWTP is close to the sampling point [4].

This Special Issue could be used in microplastic monitoring method development studies; in reviews related to microplastics' distribution in different water bodies, e.g., freshwater systems, phytotoxic assessments due to the pollution of water bodies and soils; or risk assessment studies and health risk studies. Since these are baseline studies, they can be compared with future studies, although the analytical techniques used might be a burden in their use once more advanced techniques are available. Nevertheless, they provide valuable environmental information for unique water and soil ecosystems and organisms.

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