Occurrence and distribution of microplastics along the Colorado River, Patagonia Argentina

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Abstract

Contamination of microplastics (MPs) in freshwater ecosystems has been scarcely studied in comparison to marine ecosystems around the world while the riverine contribution to the global plastic budget remain as a gap. The Colorado River is one of the most important rivers in Patagonia, Argentina, including various land uses in its basin which migth contribute to plastic inputs, namely, livestock and irrigated agriculture, the extraction of hydrocarbons and minerals, and sound urbanization. Then, the aim of this study was to identify and quantify for the first time the load of MPs in the Colorado River. 12 sites along the river (approximately 1000 km) were selected and samples were collected by filtering 100 L of water. The average MPs concentration was 245 ± 204.38 MPs.m-3, indicating a high level incidence of plastic pollution of the freshwater ecosystem when compared to other studies in worldwide rivers. The maximum concentration found (760 MPs.m-3) was in the middle section of the basin, which exhibit the greater urban and industrial development. The most frequent MPS shapes were fibers (95.2%), prevailing the colours blue (50.3%) and black (34.2%). The fibers length range was between 0.0146-4.7 mm. This preliminary study highlights for the first time the high level of MPs at the Colorado River, describing its distribution and the contribution of the basin to the Atlantic Ocean, as well as its possible impacts on the environment. This knowledge is essential for the preservation and sustainable management of water resources at the Patagonia.

Keywords: MICROPLASTICS, RIVERS, POLLUTION, PATAGONIA

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