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ABUNDANCE AND DISTRIBUTION OF MICROPLASTICS IN SURFACE WATER AND SEDIMENT OF TWO SELECTED RIVERS IN BANGLADESH

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Abstract

Microplastic pollution is an emerging issue of increasing concern in the environment. The abundance and distribution of microplastics in surface water and sediment in the Jamuna River and Turag River in Bangladesh have been determined in this study. Surface water and sediment samples were collected in triplicate for each station from 6 sampling stations of two rivers in July 2019. Of all the microplastics were identified by a digital binocular microscope. A total of 145 and 261 microplastic particles were identified in the surface water samples, while the sediment samples, it accounted for 93 and 774 particles in Jamuna River and Turag River, respectively. The mean abundance of microplastics was 16.11 ± 2.22 particles/100L in the surface water of Jamuna River and for Turag River it was 29.00 ± 10.68 particles/100L. The mean abundance of microplastics in sediment was observed 10.33 ± 1.45 particles/kg for the Jamuna River and 86.00 ± 12.17 particles/kg for the Turag River. Recorded microplastics were categorized into shape, size, and color. Among which foam and film were the most abundant shape of microplastics in both surface water (foam= 52%; film= 31%) and sediment (foam= 31%; film= 45%) of Jamuna River and Turag River, respectively. Small sizes of microplastics were common in both the rivers except surface water of Turag River while white color of microplastics was the most dominant in both rivers. Turag River was found more abundant with microplastics than that of the Jamuna River. The industrial establishments along the pathway of Turag River could be the source of abundant microplastics. This is the first time study on microplastics in surface water and sediment in Jamuna River and Turag River. The outcome of the study could be a baseline for microplastic pollution in such a large freshwater ecosystem of Bangladesh. Findings can also provide a better understanding of sources of microplastic pollution towards planning for remedy.

Keywords: Jamuna River, microplastics, sediment, surface water, Turag River

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