Environmental Toxicology

Occurrence of Microplastics in Borehole Drinking Water and Sediments in Lagos, Nigeria

Babalola Aisosa Oni, Samuel Eshorame Sanni

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Abstract

We investigated the occurrence of microplastics in samples of borehole drinking water and sediments obtained from borehole sites in Lagos Island, Nigeria. The samples were digested with hydrogen peroxide, pretreated, and filtered through a polytetrafluoroethylene membrane. The filtered microplastics were examined/analyzed under an attenuated total reflection Fourier-transformed infrared device, to quantify the microplastics. The results showed the presence of microplastics in drinking water and sediments from the sites, with plastic concentrations ranging from 206 to 1691 items m^{-3} and 9–47 items kg^{-1} for drinking water and sediments, respectively; polypropylene was the most common and was approximately 61.9% for borehole drinking water. In terms of shape distribution, plastic fragments were the highest, at 73.02%. The detected microplastics had a size range of 0.02–0.5 mm. In addition, sites with a lower percentage of microplastics had lower population densities and lower industrial activity, whereas areas of high industrial activity had high amounts of microplastics. *Environ Toxicol Chem* 2022;41:1721–1731.