

Microplastics, PAEs and Di(2-Ethylhexyl) adipate in an urban freshwater lake.

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In the last two decades, worldwide microplastic studies have attracted immense attention from the scientific community. Microplastics and emerging contaminants have been discussed in freshwater ecosystems, but more studies need to be on a particular topic. The pollution/contamination in these systems is primarily driven by anthropogenic influence due to various environmental activities. Tracing these pollutants becomes more and more critical to overcome all these challenges. Microplastics identified in our study based on Sukhna Lake (Urban Freshwater Lake) are dominated by Polypropylene (PP), Polyethylene (PE), Polyethylene terephthalate (PET) and Polystyrene (PS) types of polymers. The abundance of microplastics in sediment samples is 170-2320 n/kg; in water samples, it ranges between 05-75 n/litre. Different morphologies, fibre, fragment, foam, film, and pellets, were observed in the lake sediments, which also signify the physiochemical and hydrological conditions on or near the lake. On the other hand, Phthalates and additives in plastics were also investigated in the lake: Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP) and Bis (2 – ethylhexyl) phthalate were found in the sediment samples. A significant correlation between MPs and PAEs was observed in lake samples, suggesting the contaminants input from a common source. The presence of MPs and PAEs and their correlation in the system shows a significant contamination level and the need for proper management policies to ensure the sustainability of Sukhna Lake.