

EGU2020-20643, updated on 22 Jan 2021

<https://doi.org/10.5194/egusphere-egu2020-20643>

EGU General Assembly 2020

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Wastewater as a potential source of microplastics in aquatic environments

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Rapid increasing production and utilization of microplastics (MPs) raise concerns about environmental risks globally. Literature indicates that wastewater and wastewater treatment plants (WWTPs) play critical sources in releasing MPs to the environment. Among different MPs, microbeads added into the facial cleanser, and toothpaste can be directly discharged into wastewater through human activities. Synthetic clothing, i.e., polyester (PES) and nylon, might shed thousands of fibers into wastewater during the washing process. WWTPs are not designed to capture MPs, and therefore, a huge amount of MPs load can be discharged without or poor treatment, and can accumulate in aquatic environments. This work shows a comprehensive overview of available information on the presence of MPs in different freshwater environments, particularly rivers, along with MPs types, sizes, shapes, and properties. Moreover, the study also indicates significant technical advancement in MPs detection, characterization, and quantification from the complex sample matrix.