

Microplastic emissions from household washing machines: preliminary findings from Greater Kuala Lumpur (Malaysia)

ABSTRACT

Microplastics have been recognized as emerging pollutants with potential ecotoxicological impact. The contribution of washing machine use to microplastics emission at the household level is still not completely understood. This study aims to characterize microplastic emissions in laundry water from household washing machines from Greater Kuala Lumpur (Malaysia). Microplastics were found between $6.9E-3$ and 0.183 g/m³ in laundry water at household level. Microplastic shapes of fiber and fragment consist of polyester, nylon, and acrylic with average length of 2258.59 μ m and were also identified in these laundry water samples. Questionnaire survey findings demonstrated fabric properties and washing parameters both likely contribute to microplastic emissions in laundry water and, ultimately, wastewater treatment plant influent. The impact of fabric properties and washing parameter factors on microplastic emission in laundry water at the household level merits further investigation. The findings of this study demonstrated the potential of laundry water as a microplastic source at the household level within a developing country.

Keyword: Microplastics; Emission; Laundry water; Source