

EMERGING CONTAMINANTS

Detailing plastic pollution

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Credit: Paulo Oliveira / Alamy Stock Photo

Several studies have estimated the amount of plastics released into the environment, but these studies tend to concentrate on either macroplastic or microplastic without combining both. Around the world, microplastic contamination in freshwaters has been documented. Microplastic contamination of soil is less understood but accurate measurement methods are being developed. Microplastics may be released into the environment from wear and tear of plastic products like textiles, construction and agricultural plastics. In addition, they are released as microbeads from personal care products, as microfibrils produced during clothes washing, and through macroplastic degradation.

Delphine Kawecki and Bernd Nowack from Empa, Switzerland, developed a material flow analysis model to calculate the emissions of seven different types of

plastic released in Switzerland in 2014. They calculated that 40-times as much plastic mass was released to land as to water. Around 97% of the plastics were released as macroplastics, and consumer bottles were the most common. Littering was the leading emission pathway to both land and water. In addition, substantial amounts of microplastics were released. The authors estimated that each person released 610 g to soil and 15 g to freshwater of both macroplastics and microplastics in a single year. This detailed understanding of plastic release can be used to identify better policies to reduce pollution.

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