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# Sources of Microplastics

## Breakdown of Larger Plastics

Plastics in bottles and bags, cigarette butts, packaging materials, human-made fibers in textiles, larger pieces of consumer products, balloons, plastic utensils, and similar materials can be improperly disposed and break down in the environment to microplastics.

## Plastic Manufacturing

Air and wastewater emissions from factories release plastic to the environment. Spillage and poor handling of raw materials used in plastic production provide sources of microplastics.

## Consumer Products

Microplastics are intentionally added to many everyday consumer products, such as cosmetics, paints, toothpastes, cleansers, detergents (pods), and textiles. Washing synthetic clothes and using and rinsing off personal care products sends microplastics to wastewater treatment plants (WWTPs).

## Paint and Household Products

Paint flaking off buildings contributes to microplastics in stormwater. Abrasives, such as sandpaper, commonly have microplastics as a component and are released during construction and maintenance activities.

## Wastewater Treatment Plant Discharges

Household waste and industrial sewage can be a source of microplastics to WWTPs. Microplastics can spread when WWTPs release treated water into surface water and groundwater. As part of the treatment process, WWTPs generate nutrient-rich biosolids (sewage sludge), which can contain microplastics. The biosolids can be placed on cropland as fertilizer or in landfills. This can result in microplastics being taken up by crops, sinking into groundwater, and running off into streams after heavy rain or too much irrigation. Sludge disposed in landfills can lead to microplastics leaking into groundwater.

## Tire and Road Wear

Tires, and in many instances, road materials and paint markings, contain plastics. Regular use and abrasion releases tire and road particles into the air and roadside soils. Ground-up tires are used for cushioning in some synthetic turf fields, which are made of plastic. Use of those fields, combined with wind and stormwater runoff, allows plastic and microplastics to move through the environment.