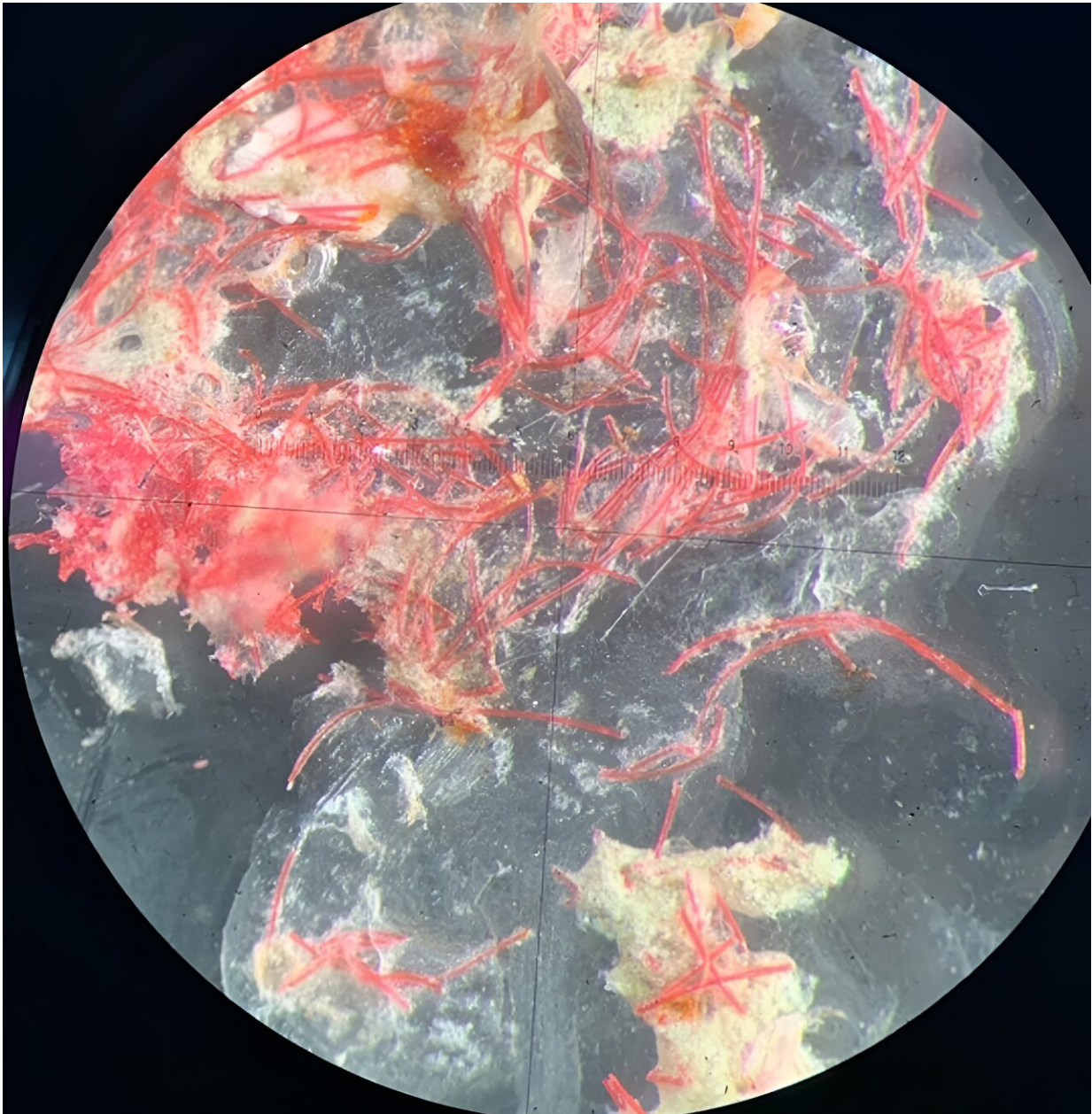


# **Laundry is a top source of microplastic pollution—here's how to clean your clothes more sustainably**

January 15 2024, by Judith Weis

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Red microfibers collected from coastal waters in a towed sample off Newport, Ore. Credit: [NOAA Fisheries](#)

Microplastics are turning up everywhere, from [remote mountain tops](#) to [deep ocean trenches](#). They also are in [many animals](#), [including humans](#).

The most common microplastics in the environment are [microfibers](#)—plastic fragments shaped like tiny threads or filaments. Microfibers come from many sources, including [cigarette butts](#), [fishing nets](#) and ropes, but the biggest source is [synthetic fabrics](#), which constantly shed them.

Textiles shed microfibers while they are manufactured, worn and disposed of, but [especially when they are washed](#). A single wash load can release [several million microfibers](#). Many factors affect how many fibers are released, including fabric type, mechanical action, detergents, temperature and the duration of the wash cycle.

[My research](#) focuses on coastal ecology and [water pollution](#), including work in New York and New Jersey marshes and estuaries that are heavily affected by human activities. Here are some things to know about reducing microplastic pollution from your washing machine.

## **From fabric to water and soil**

Once garments release microfibers in washing machines, the fibers enter the wastewater stream, which generally goes to a [wastewater treatment plant](#). Advanced treatment plants [can remove up to 99% of microfibers](#) from water. But since a single laundry load can produce millions of fibers, treated water discharged from the plant still contains a huge number of them.

Microfibers that are removed during treatment end up in [sewage sludge](#)—a mix of solid materials that is processed to remove pathogens. In many cases, treated [sewage sludge](#) is applied to soil as a fertilizer. This allows microfibers to enter air and soil, and to be transferred to soil organisms and up the terrestrial food web or [taken up by crops](#).

Microplastics that wash into rivers, lakes and bays can have many

harmful effects. They may be consumed by fish and other aquatic animals, affecting their [biochemistry, physiology, reproduction, development or behavior](#). These microplastics contain chemical additives, including substances like [phthalates](#) and [bisphenol A](#) that can leach out and may have health effects in humans and animals, including [effects on the endocrine system](#).

Textile microfibers also contain additional chemicals that [have been shown to be toxic](#), such as [fabric dyes](#), [anti-wrinkle agents](#) and [flame retardants](#). In addition, contaminants that are present in the water, such as metals and pesticides, can stick to microplastic particles, turning them into a veritable cocktail of contaminants that may be [transferred into animals that eat them](#)

## **Washing more sustainably**

Not all fabrics shed microfibers at the same rate. A loosely woven fabric that feels fluffy or fuzzy, such as fleece, sheds more than a tightly woven one. While garments made of [natural fibers](#), such as cotton and wool, would appear to be a solution, unfortunately they [also shed microfibers](#) that can pick up pollutants in the environment.

Some textile scientists and manufacturers are developing [fabrics that shed less than existing ones](#), thanks to features such as longer fibers and coatings to reduce shedding. Meanwhile, here are some ways to reduce microfiber shedding from your laundry:

- Do laundry less often. Washing full loads instead of partial loads reduces release of microfibers because garments are [exposed to less friction](#) during the wash cycle.
- Use cold water, which [releases fewer microfibers](#) than hot water.
- Use less detergent, which increases [microfiber](#) release.
- Use a front-loading washing machine, whose tumbling action

produces less microfiber release.

- Dry laundry on a clothesline. Running clothes in dryers releases additional microfibers into the air from the dryer vent.

Several types of products collect microfibers in the washer before they are released with wastewater. Some are laundry bags made of woven monofilament, a single-polyamide filament that does not disintegrate into fibers. Laundry is washed while enclosed in the bag, which traps microfibers that the garments release. A study of one such product, Guppyfriend, found that it collected about one-third of released microfibers.



External filters, like this Samsung version, can be attached to washing machines to remove most microfibers from wastewater. Credit: [Samsung U.S.](#), [CC BY-ND](#)

Another device, the [Cora Ball](#), is a plastic ball with spines topped with soft plastic disks that capture microfibers. It [reduces microfibers by about 25% to 30%](#), but may not be suitable for loose knits because it can snag on threads and damage clothing.

## Filter your washwater

Several brands of [external filters are available](#) that can be [retrofitted onto existing washing machines](#). External filters can [remove up to 90% of microfibers from rinse water](#). Their average cost is about US\$150. Owners need to clean the filters periodically and dispose of the collected microfibers with other solid waste, not down the drain, which would put them back into the wastewater stream.

In a 2021 study, researchers installed [washing machine](#) filters in 97 homes in a town in Ontario, Canada, which represented about 10% of the households in the community. They found that this [significantly reduced microfibers in treated water](#) from the local treatment plant.

Some companies are now manufacturing washers with [built-in microfiber filters](#). France has [enacted a requirement](#) for all new washing machines to be equipped with filters by 2025, and Australia has announced that [filters will be required](#) in commercial and residential washers by 2030.

In the U.S., a similar requirement was passed by the California legislature in 2023, but Gov. Gavin Newsom [vetoed the bill](#), saying he was concerned about the cost to consumers. An economic study commissioned by Ocean Conservancy found that filters would increase the price of washing machines by [only \\$14 to \\$20 per machine](#). Several states are [considering regulations that would require filters in washers](#).

In my view, requiring manufacturers to add filters that can trap

microfibers to washing machines is a reasonable and affordable step that could rapidly reduce the enormous quantities of microfibers in wastewater. The eventual solution will be reengineered textiles, which won't shed, but it will take some time to develop them and move them into clothing supply chains. In the meantime, filters are the most effective way to tackle the problem.

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