

How Clothes Are Polluting the Food Supply

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STORY AT-A-GLANCE

- › The clothes we wear and wash on a daily basis contribute to environmental pollution. Microfibers in particular pose a serious threat to marine life, and migrate into fields and onto our plates
- › Synthetic microfibers make up 85% of shoreline debris worldwide, and have been found in both table salt and fish sold for human consumption
- › These microscopic plastic fibers soak up toxins like a sponge, concentrating PCBs, pesticides and oil in ever higher amounts as you move up the food chain

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Every day, each and every one of us contribute to the ongoing destruction of the environment simply by participating in modern society.

Not only do people inappropriately dispose of drugs by flushing them down the toilet, the cleaning and personal care products we use and the clothes we wear and wash on a daily basis also contribute to the environmental pollution.

Indeed, the environmental impacts of our clothing choices are shocking, as studies assessing toxic effects of various fabric treatments (such as dyes, flame retardants and stain-resistant chemicals) to laundry detergents and the fabric fibers themselves need serious attention.

The Drawback of Fleece

Microfibers¹ in particular have gained notoriety for posing a serious threat to marine life and migrating into fields and onto our plates. As noted by NPR:²

"The innovation of synthetic fleece has allowed many outdoor enthusiasts to hike with warmth and comfort.

But what many ... don't know is that each wash ... releases thousands of microscopic plastic fibers, or microfibers, into the environment – from their favorite national park to agricultural lands to waters with fish that make it back onto our plates. This has scientists wondering: Are we eating our sweaters' synthetic microfibers?

Probably, says Chelsea Rochman, [Ph.D.], an ecologist and evolutionary biologist at the University of Toronto, St. George. 'Microfibers seem to be one of the most common plastic debris items in animals and environmental samples,' Rochman says."

Microfibers Have Become a Very Significant Water Pollutant

Indeed, synthetic microfibers make up 85% of shoreline debris worldwide,³ and tend to be found in higher concentrations in beach sediment near wastewater treatment plants.⁴

Water testing done by the Rozalia Project also showed microfibers are showing up in most water samples collected from the Hudson River.⁵ The fibers have also been found in both table salt⁶ and fish sold for human consumption.⁷

A 2015 study from the University of California Santa Barbara (UCSB) directly linked microbead plastics and man-made microfibers to the pollution in fish,⁸ and when Abigail Barrows – chief investigator for Global Microplastics Initiative and partner scientist working with the Adventurers and Scientists for Conservation – sampled over 2,000 marine and freshwater fish, 90% had microfiber debris in their bodies.

Near identical results have been reported by Amy Lusher, a microplastics researcher based in the U.K. who co-authored a study⁹ on microplastic pollution in the northeast Atlantic Ocean, published in 2014. There really does not appear to be any place on Earth that remains unspoiled by plastic pollution. In an article published by The Washington Post, Barrows said:¹⁰

"Working in this field of research ... can be really depressing. I open up a box of water – it's from some beautiful place in Palau, and it's just full of plastics.

Or it's from Antarctica, and I think there's definitely not going to be anything in here. And it's just full of fragments. I haven't seen a sample that doesn't contain an alarming amount of plastic."

Microfibers Are Also a Potential Food Contaminant

Microfibers, which are more prevalent than microbeads (found in face scrubs and similar items), are particularly detrimental as the fibers are easily consumed by fish and other wildlife, accumulating in the gut and concentrating in the bodies of other animals higher up the food chain.

In one study, microfibers raised mortality among water fleas.¹¹ In another, the presence of fibers were found to reduce overall food intake of **crabs**, worms and langoustines (aka Norway lobster),^{12,13} thereby threatening their growth and survival rates.

Making matters worse, these microscopic plastic fibers actually soak up toxins like a sponge, concentrating polychlorinated biphenyls (PCBs), pesticides and oil in ever higher amounts as you move up the food chain.

Factors That Worsen Microfiber Release

Tests show each washing of a synthetic fleece jacket releases an average of 1.7 grams of microfiber, and may release as much as 2.7 grams.^{14,15,16} For comparison, a paperclip weighs about 1.5 grams.

The older the jacket, the more microfibers are released,¹⁷ and lower quality generic brand fleece was also found to shed 170% more over its lifespan than higher quality fleece.

Separate research^{18,19} published in Marine Pollution Bulletin found that the type of fabric also makes a difference in the rate of microfiber shed. In a comparison of acrylic, polyester and a polyester-cotton blend, acrylic was the worst, shedding microfibers up to four times faster than the polyester-cotton blend.

Different types of washing machines may also release different amounts of fibers (and chemicals) from your clothes. Tests show top loading machines release about 7 times more microfibers than front loading models.²⁰

Other factors that can influence the amount of shedding include water temperature, length and agitation strength of the wash cycle and the type of detergent used.²¹ Up to 40% of these microfibers leave the wastewater treatment plant and end up in the surrounding lakes, rivers and oceans.²²

Potential Solutions

To address these problems, scientists are calling for appliance companies to investigate the effectiveness of adding filters to catch the microfibers.²³ Wexco is currently the exclusive distributor of the Filtrol filter,²⁴ designed to capture nonbiodegradable fibers from your washing machine discharge.

The problem with this solution is what becomes of the microfibers when they're disposed of in landfills (the same issue that is raised if wastewater treatment plants install filters to keep the tiny fibers out of waterways). The fibers may simply end up entering the environment via another route.

Another novel potential solution — a waterless washing machine — was developed by Tersus Solutions in Colorado, with funding from Patagonia. It washes clothing using pressurized carbon dioxide instead of water.²⁵

An even simpler strategy would be to wash your fleece and microfiber clothing less often. Patagonia is also looking for mitigating solutions, including product redesign to prevent the shedding of microfibers.

Polyester Downfalls Beyond Microfiber Pollution

Beyond microfiber pollution, polyester and other man-made materials have many other environmental drawbacks. As previously noted by Environmental Health Perspectives:²⁶

"[P]olyester, the most widely used manufactured fiber, is made from petroleum. With the rise in production in the fashion industry, demand for man-made fibers, especially polyester, has nearly doubled in the last 15 years, according to figures from the Technical Textile Markets.

The manufacture of polyester and other synthetic fabrics is an energy-intensive process requiring large amounts of crude oil and releasing emissions including volatile organic compounds, particulate matter and acid gases such as hydrogen chloride, all of which can cause or aggravate respiratory disease.

Volatile monomers, solvents and other by-products of polyester production are emitted in the wastewater from polyester manufacturing plants.

The EPA [Environmental Protection Agency], under the Resource Conservation and Recovery Act [RCRA], considers many textile manufacturing facilities to be hazardous waste generators."

Even seemingly innocuous garments like jeans are often produced using a laundry list of toxic chemicals, including perfluorochemicals, phthalates and azo dyes. It's not only man-made materials that are the problem, however. Even conventionally grown genetically engineered (GE) cotton is problematic due to the cotton industry's heavy use of hazardous herbicides and insecticides, including some of the most hazardous insecticides on the market.

This is one reason why I strongly encourage you to choose organic cotton, organic hemp and/or wool items, ideally colored with nontoxic, natural dyes whenever possible. Organic fabrics will not be genetically engineered and subject to this onslaught of toxic exposures. And, while this will not solve all of the environmental problems related to the garment industry, it's a step in the right direction.

Change Starts at Home

Benign by Design,²⁷ a program created by ecologist Mark Browne, Ph.D., in 2013, aims to show clothing companies "exactly how textile wear leads to fiber pollution and ways to control their emissions."

According to the website, the program — which is supported by the Environmental Protection Agency (EPA) — "developed a trade-off analysis system that rigorously and scientifically selects the most cost-effective material with the smallest impact; fabrics that emit fewer fibers and less toxic fibers."

But while some companies are actively investigating ways to produce clothing that is more environmentally friendly, each and every one of us can contribute to the solution by buying less and becoming more conscious consumers when it comes to clothing.

As described in my articles on "fast fashion," the entire life cycle of a piece of clothing would ideally be taken into account before buying, as most of your **discarded clothes** actually end up in landfills, or are resold to third world countries where local clothing industries then suffer instead.

Westerners have a tendency to think we're being generous by donating our cast-offs, allowing those with few means to get clothes they might not be able to afford otherwise. The reality is, the second-hand industry is struggling with an overwhelming amount of clothes. They cannot even house it all — which is why charities will only keep donated items in their thrift shops for a month before shipping them off for bulk liquidation.

There's simply no shortage of second-hand clothing, so you're not really doing the world any favors by routinely adding to the donation piles. If you really want to make a dent in

the problem, give more thought to what you buy in the first place and curb your consumption.

Most Americans have enough clothes to outfit entire villages in some other countries. There's little doubt that many would do well to absorb some of the life-affirming suggestions offered by the [minimalism movement](#). As the director of environmental strategy for Patagonia told CBS in 2015:²⁸

"People need to learn how to buy less and companies need to learn how to be profitable in selling less ... Something has to fundamentally shift in the consumption world that reduces the pressure on the raw materials, which reduces pressure on the planet ..."

Sources and References

- ^{1, 17} [GulfNews July 13, 2016](#)
- ^{2, 15} [NPR February 6, 2017](#)
- ³ [Environmental Science and Technology 2011; 45\(21\): 9175–9179](#)
- ^{4, 23} [Outside June 20, 2016](#)
- ^{5, 10, 13, 16} [Washington Post October 30, 2016](#)
- ⁶ [Environmental Science and Technology 2015; 49\(22\): 13622-13627](#)
- ⁷ [Scientific Reports 2015; 5, article number: 14340](#)
- ⁸ [EcoWatch September 30, 2015 \(Archived\)](#)
- ⁹ [Marine Pollution Bulletin November 15, 2014: 88\(1-2\): 325-333](#)
- ¹¹ [Environmental Pollution December 2016; 219: 201-209](#)
- ¹² [Environmental Science and Technology 2015; 49\(24\): 14597-14604](#)
- ¹⁴ [Microfiber Pollution and the Apparel Industry, Project Findings](#)
- ¹⁸ [Marine Pollution Bulletin November 15, 2016; 112\(1-2\): 39-45](#)
- ¹⁹ [Gizmodo September 28, 2016](#)
- ^{20, 22} [Environ. Sci. Technol. 2016; 50\(21\): 11532–11538](#)
- ²¹ [Environmental Science and Pollution Research, Volume 30, pages 43932–43949, \(2023\)](#)
- ²⁴ [Wexco, The Filtrol](#)
- ²⁵ [The Guardian June 20, 2016](#)
- ²⁶ [Environmental Health Perspectives September 2007; 115\(9\): A449-A454](#)
- ²⁷ [Benign by Design](#)
- ²⁸ [CBS News November 27, 2015](#)