

How Clothes and Personal Care Products Destroy the Environment

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STORY AT-A-GLANCE

- › Plastics can be found in virtually every area of your household: in containers of all kinds, bags, baby items, electronics and even clothing and personal care products, in the form of microfibers and microbeads
- › Microbeads, tiny plastic pellets found in body washes, facial scrubs and toothpaste travel right through wastewater treatment plants, clogging waterways and filling the bellies of sea animals with plastic that acts as a sponge for toxins
- › Plastic microfibers from clothing also pose a serious threat to marine life and migrate into fields and onto our plates, inside of fish and other seafood

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While most of our grandparents used natural products packaged in reusable, recyclable or degradable containers made from glass, metals and paper, the current generation has grown up surrounded by nonbiodegradable plastics made with toxic chemicals.

Saying that plastics are "everywhere" is hardly an exaggeration anymore. You can find them in virtually every area of your household: in containers of all kinds, bags, baby items, electronics and even clothing and personal care products, in the form of microfibers and microbeads.

Discarded plastic — both large and microscopic — circles the globe, choking our oceans and polluting our food supply, ultimately finding their way into your body where they can

accumulate over time.

And, the potential for catastrophic environmental and biological consequences grows with every discarded bottle and bag, with every shower and every load of wash.

Plastic – A Most Harmful Convenience

Many of the chemicals used in the manufacture of plastics, like bisphenol-A (BPA) and bisphenol-S (BPS), disrupt embryonic development and have been linked to obesity, heart disease and cancer.

Phthalates dysregulate gene expression and hormones, causing anomalies that may be passed down to future generations. DEHP (di(2-ethylhexyl)phthalate), found in PVC pipes, may lead to multiple organ damage.

According to Our World in Data, the world produces about 353 million tonnes of plastics annually, and 1.7 million tonnes of it ends up in our oceans each year.¹ (Note that a tonne is much heavier than a ton.)² The UN's Environmental Program claims there are at least 46,000 pieces of plastic in every square mile of ocean.³

Polycarbonate, polystyrene and polyethylene terephthalate (PETE) damage the ocean floor, and plastic that floats, such as low-density polyethylene (LDPE), high-density polyethylene (HDPE), polypropylene and foamed plastics accumulate into massive floating islands of trash.⁴

Microfibers⁵ from clothing pose a serious threat to marine life and migrate into fields and onto our plates, and sinking microplastics disrupt the food chain base.⁶

And microbeads, the tiny plastic pellets found in body washes, facial scrubs and toothpaste travel right through wastewater treatment plants, clogging waterways and filling the bellies of sea animals with plastic that acts as a sponge for other toxins.

Whether you look at environmental or biological effects, our careless use of plastics really needs immediate attention and revision.

Microbeads Pose Severe Environmental Hazards

According to a previous National Geographic report,⁷ an estimated 4,360 tons of microbeads were used in personal care products sold in the European Union (EU) in 2012, all of which get flushed down the drain.

According to one 2015 study,⁸ there may be as much as 8 trillion microbeads polluting our aquatic habitats daily. As noted by CNN:

"There are more than eight trillion microbeads entering aquatic habitats every day in the United States alone, according to a new study published in [Environmental Science & Technology](#). It's enough microbeads to cover 300 tennis courts daily.

A microbead is any plastic that is smaller than 1 mm, about the size of a pinhead. They are designed to wash down drains, but have added to the increased microplastic debris littering the Earth's oceans and many freshwater lakes, the study states. Due to their size, plastic microbeads are difficult to clean up on a large scale."

US and Canada Ban Microbeads While EU Dawdles

In response to the Environmental Science & Technology study mentioned above, then-President Obama signed a bill in December 2015, banning the use of plastic microbeads in personal care products to protect U.S. waterways.⁹ The ban takes effect as of July this year.

Beginning in July 2018, microbeads was no longer permitted in cosmetics, and as of July 2019, they had to be eliminated from over-the-counter drugs sold in the U.S. as well.¹⁰ As of July 2018, a ban on microbeads in personal care products also took effect in Canada,¹¹ while the EU had taken no action on the matter.

According to an article in the British paper Independent,¹² the U.K.'s decision to follow suit in banning microbeads from cosmetics "could be in breach of EU free trade law," and

if it's determined that banning microbeads would "restrict free movement of trade," the U.K.'s ban would likely be significantly delayed and ultimately unenforceable. The U.K. alone contributes up to 86 tons of microbeads into waterways each year.¹³

Microfibers From Clothing Add to the Plastic Pollution

Microfibers are another common water contaminant, and acrylic fibers release the most microparticles.¹⁴ Testing reveals each washing of a synthetic fleece jacket releases 1.7 grams of microfiber, and the older the jacket, the more microfibers are released.¹⁵

Different types of machines also release different amounts of fibers and chemicals from your clothes. Researchers found that top loading machines released about 530% more microfibers than front loading models.¹⁶

Up to 40% of these microfibers leave the wastewater treatment plant and end up in the surrounding lakes, rivers and oceans. To address the problem, scientists are now calling for appliance companies to consider the addition of filters to catch the microfibers.¹⁷

Wexco is a distributor of the Filtrol filter,¹⁸ designed to capture nonbiodegradable fibers from your washing machine discharge. However, it doesn't actually solve the problem in the long-term, since the fibers will simply end up in landfills instead.

Plastic Microparticles Threaten Ocean Life in Many Ways

Once in the water column, all this plastic micro-debris blocks sunlight, which plankton and algae require to sustain themselves, and the ramifications of this reverberates throughout the entire food chain. Astonishingly, in some ocean waters, plastic exceeds plankton by a factor of 6 to 1.¹⁹

Microfibers released during washing has also been shown to raise mortality among water fleas.²⁰ In another study, the presence of the plastic fibers reduced the overall food intake of **crabs**, worms and langoustines (aka Norway lobster), thereby threatening their growth and survival rates.^{21,22} Not surprisingly, researchers at the University of California

Santa Barbara (UCSB) have linked microplastics and microfibers to the pollution in fish.²³

The tiny beads cleverly mimic natural food sources, and the microfibers, which are even more prevalent than microbeads, are even easier to consume, both by fish and other seafood. Research shows these particles are not likely to leave, however. Once consumed, they tend to remain in the body and accumulate, becoming increasingly concentrated in the bodies of animals higher up the food chain.

When Abigail Barrows, chief investigator for Global Microplastics Initiative, sampled 2,000 marine and freshwater fish, 90% had microfiber debris in their bodies. Near identical results were reported by Amy Lusher, a microplastics researcher based in the U.K. who co-authored a 2014 study²⁴ on microplastic pollution in the Northeast Atlantic Ocean.

Microfibers have also been found in most water samples collected from the Hudson River,²⁵ and studies show concentrations of fibers tend to be particularly high in beach sediment near waste water treatment plants.²⁶ Making matters worse, these microscopic plastic fibers soak up toxins like a sponge, concentrating PCBs, flame retardant chemicals, pesticides and anything else found in the water.

And, since many of these toxins bind to fats, the fibers allow the toxins to bioaccumulate in the body much faster, reaching ever higher amounts as you move up the food chain. As noted in the featured video, these chemicals have been shown to cause liver damage, liver tumors and signs of endocrine disruption in fish and other seafood, including lowered fertility and immune function.

Seafood Is a Significant Source of Plastic in Human Food Chain

With all this plastic posing as food in the food chain, it's no wonder researchers are finding it in our dinners as well. Last year, citing a report²⁷ by the British Department for Environment Food and Rural Affairs (DEFRA), the Daily Mail wrote:²⁸

"Microplastics have been found in a wide variety of species including zooplankton, mussels, oysters, shrimp, marine worms, fish, seals and whales. Chemicals on microplastics ingested by an organism can dissociate from plastic particles and enter body tissues ... [DEFRA] said there is evidence from animal studies that small plastic particles can cross membranes into cells, causing damage and inflammation.

Looking at the implications for humans, [DEFRA] said: 'Several studies show that microplastics are present in seafood sold for human consumption, including mussels in North Sea mussel farms and oysters from the Atlantic. The presence of marine microplastics in seafood could pose a threat to food safety.'

According to the DEFRA report, eating six oysters could introduce about 50 plastic microbeads into your body. One-third of the fish caught in the English Channel also contain microbeads, as do 83% of scampi sold in the U.K.²⁹

How You Can Be Part of the Solution

Our "disposable culture" has left a trail of destruction, in terms of both environmental and human impact. Now, how can you contribute to the solution? In short, by becoming a more conscious consumer. Really give some thought to the manufacturing of the products you buy, how they may affect you during use, and what will happen to them once you dispose of them.

Few of us are capable of living a zero-waste lifestyle at this point in time, but every single one of us can take small but definitive steps toward the goal of reducing plastic trash in all of its forms. Here are a few suggestions to consider:

Reduce your use of all things plastic — Purchase products that are not made from or packaged in plastic. While the items involved are near-endless, here are a few ideas:

- Use reusable shopping bags for groceries

- Bring your own mug when indulging in a coffee drink, and skip the lid and the straw
 - Bring drinking water from home in glass water bottles, instead of buying bottled water
 - Store foods in glass containers or mason jars as opposed to plastic containers or bags
 - Take your own leftover container to restaurants
 - Request no plastic wrap on dry cleaning
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Avoid personal care items containing microbeads – Many products containing microbeads will advertise them on the label, although they may also be listed as "polyethylene" or "polypropylene" in the ingredients list

Avoid microfiber clothing such as fleece, and/or wash them as infrequently as possible

Recycle what you can – Take care to recycle and repurpose products whenever possible, and/or participate in "plastic drives" for local schools, where cash is paid by the pound

Support legislation – Support legislative efforts to manage waste in your community; take a leadership role with your company, school and neighborhood

Get creative – If you have a great idea, share it! People's capacity to come up with smarter designs and creative recycling and repurposing ideas are limitless, and creative innovations move us toward a more sustainable world

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