

# Most People Consume Plastic on a Daily Basis

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

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## STORY AT-A-GLANCE

- › The world produces about 360 million tons of plastics annually, and up to 12 million tons of it ends up in our oceans each year
- › Estimates suggest that by 2050, our oceans will contain more plastic than fish by weight. Already, in some ocean waters' plastic exceeds plankton by a factor of 6-to-1
- › Research suggests the average person swallows up to 68,415 plastic fibers each year just from the plastic dust particles landing on their plates during meals
- › The average person also ingests about 100 plastic particles each year from shell fish – remnants of microplastic water pollution
- › Tests have revealed bottled water contains on average 325 pieces of microplastic particles per liter – contamination thought to originate from the manufacturing process of the bottles and caps

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Discarded plastic – both large and microscopic – circles the globe, choking our oceans and harming wildlife, ultimately finding its way onto your plate and into your body, where it can accumulate over time. A number of studies have now revealed we are both eating and drinking microplastic particles.

For example, one-third of the fish caught in the English Channel contain microbeads, as do 83% of scampi sold in the U.K.<sup>1</sup> Except for Himalayan, most sea salt also contains plastic fragments.<sup>2</sup>

What the consequences might be are still largely unknown, but it's unlikely to be entirely harmless, considering plastic may not be thoroughly eliminated from your body and cannot degrade inside your system. Many of the chemicals used in the manufacture of plastics are also known to disrupt embryonic development, dysregulate hormones and gene expression, cause organ damage, and have been linked to obesity, heart disease and cancer.

## **Plastic – A Most Harmful Convenience**

The world produces about 360 million tons of plastics annually, and up to 12 million tons of it ends up in our oceans each year.<sup>3</sup> Polycarbonate, polystyrene and polyethylene terephthalate damage the ocean floor, and plastic that floats, such as low-density polyethylene, high-density polyethylene, polypropylene and foamed plastics accumulate into massive floating islands of trash, known as “garbage patches.”<sup>4</sup>

Microfibers<sup>5</sup> from clothing pose a serious threat to marine life and migrate into fields and onto our plates. These plastic fibers are released most readily during washing, to the tune of 1 million tons a year, and the irregular shape of these plastic particles renders them more difficult for marine life to excrete than other microplastics.

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

According to a Cosmetics Europe report,<sup>6</sup> an estimated 4,360 tons of microbeads were used in personal care products sold in the European Union in 2012, all of which were flushed down the drain.

One 2015 study<sup>7</sup> estimated there may be as much as 236,000 tons of microbeads filling the water columns of our oceans. Whether you look at environmental or biological effects, our careless use of plastics really needs immediate attention and revision. After that study came out, the U.S. Congress enacted the Microbead-Free Waters Act of 2015, banning products with microbeads as of July 1, 2019.<sup>8</sup>

A report by the U.K. Government Office for Science warns plastic debris littering the world's oceans – 70% of which does not biodegrade – is likely to triple by 2025 unless radical steps are taken to curb pollution.<sup>9</sup> At the rate we're going, estimates suggest that by 2050, our oceans will contain more plastic than fish by weight.<sup>10</sup> Already, in some ocean waters plastic exceeds plankton by a factor of 6-to-1.<sup>11</sup>

Other research<sup>12,13</sup> suggests the Great Pacific Garbage Patch – a 1.6 million square kilometers (nearly 618,000 square miles) area of ocean between Hawaii and California – may actually contain anywhere from four to 16 times more plastic than estimated by earlier studies.

In all, this single garbage patch alone is thought to contain over 78,082 tons (79,000 metric tons) of plastic trash, and possibly as much as 142,198 tons (129,000 metric tons) – about 8% of which is thought to be microplastics.

## **There Is New Hope to Clean Plastic From the Oceans**

It's easy to get discouraged, thinking that as a singular person, there's not much you can do. If this mindset has you in its grasp, listen to this podcast, in which Joe Rogan interviews Boyan Slat, a young Dutch entrepreneur who invented an ingenious way to clean plastic debris from our oceans. Slat founded The Ocean Cleanup project<sup>14</sup> and deployed a prototype of the trash-collecting barge in 2016 (see video below).

The barge works like an artificial coastline – long floating arms that catch plastic waste swept into its folds by currents. According to Slat, full-scale deployment of his systems may be able to get rid of half of the plastic currently in the Great Pacific Garbage Patch

in as little as five years, and by removing larger debris, it will prevent the plastic from breaking down into far more dangerous microparticles.

The collection barge relies entirely on ocean currents for energy, and does not need an external energy source. Electronics on board are powered by solar panels. We're in dire need of solutions, big and small, and we need everyone to be more mindful of the trash they generate and discard.

Using reusable shopping totes is one simple way to eliminate half a dozen shopping bags or more for each trip to the store. Properly recycling plastics, and better yet, opting for items that are not sold in plastic containers, refusing straws and bottled water, and using refillable bottles and coffee mugs are other simple ways to reduce plastic litter.

## **Research Suggests You're Eating Plastic Daily**

With this much plastic debris polluting our ecosystem – and our homes – is it any wonder researchers are now finding humans are ingesting plastic particles on a regular basis? By placing Petri dishes with sticky dust traps next to the plates at dinner time, a team of researchers from Heriot-Watt University were able to capture up to 14 pieces of plastic at the end of each meal. The source? Household dust.

According to this study, the average person swallows an estimated 68,415 plastic fibers each year just from the dust landing on their plates during meals. The same team also concluded the average person ingests about 100 plastic particles each year from shell fish – remnants of microplastic water pollution.

Senior author Ted Henry, professor of environmental toxicology at Heriot-Watt University, commented on the findings,<sup>15</sup> “These results may be surprising to some people who may expect the plastic fibers in seafood to be higher than those in household dust. We do not know where these fibers come from, but it is likely to be inside the home and the wider environment.”

According to Julian Kirby, lead campaigner against plastics at Friends of the Earth in England, Wales and Northern Ireland:<sup>16</sup>

*“Plastic microfibers found in the dust in our homes and the air we breathe can come from car tires, carpets and soft furnishings, as well as clothes such as fleece jackets. These are regularly shedding tiny bits of plastic into the environment as they are worn away.”*

## **Bottled Water Contaminated With Microscopic Plastic**

Recent tests have also revealed most bottled water contains microplastic pollution<sup>17</sup> — contamination thought to originate from the manufacturing process of the bottles and caps. Researchers at the State University of New York tested 259 bottles of 11 popular bottled water brands — including Aquafina, Nestle Pure Life, Evian, Dasani and San Pellegrino — finding, on average, 325 pieces of microplastic per liter.

Only 17 of the bottles tested were free of microplastic particles. None of the brands tested consistently free of plastic contaminants. The worst offender was Nestlé Pure Life, the most contaminated sample of which contained 10,390 particles per liter, while the least contaminated brand, San Pellegrino, contained a high-end density of 74 particles per liter.

In response to these findings, the World Health Organization has vowed to launch a safety review to assess the potential short- and long-term health risks of consuming microplastic in water.<sup>18</sup> As noted in a report by Orb Media, the nonprofit journalism organization that instigated the water testing:<sup>19</sup>

*“[A] person who drinks a liter of bottled water a day might be consuming tens of thousands of microplastic particles each year ... According to existing scientific research, the plastic particles you consume in food or drinks might interact with your body in a number of different ways ... Some particles might lodge in the intestinal wall. Others might be taken up by intestinal tissue to travel through the body’s lymphatic system.*

*Particles around 110 microns in size (0.11 millimeters) can be taken into the body’s hepatic portal vein, which carries blood from the intestines, gallbladder,*

*pancreas and spleen to the liver.*

*Smaller debris, in the range of 20 microns (0.02 mm) has been shown to enter the bloodstream before it lodges in the kidneys and liver ... Ninety percent of the plastic particles we found ... were between 100 and 6.5 microns – small enough ... for some to cross the gut into your body.”*

## **Plastic Also Pollutes Farmland**

Plastic pollution is also accumulating on farmland. According to research<sup>20</sup> published in Science of the Total Environment, the annual release of plastics to land is estimated to be four to 23 times greater than that released to oceans. The use of sewage sludge (biosolids) as fertilizer may be particularly problematic. Data suggests between 125 and 850 tons of microplastics per million inhabitants may be added to European agricultural soils each year.

When factoring in the range of sludge application rates, and assuming data from certain other countries with similar plastics usage are comparable, the total annual input of microplastics to European and North American farmlands is thought to be 63,000 to 430,000, and 44,000 to 300,000 tons respectively.

According to the researchers, this is “an alarmingly high input,” exceeding the total accumulated burden of 93,000 to 236,000 tons microplastics present in ocean surface water around the globe.<sup>21</sup>

## **Only a Small Portion of Plastic Gets Recycled**

Plastic can, and should, be recycled, but a 2017 analysis<sup>22</sup> reveals a staggering 91% aren't. As reported by National Geographic:<sup>23</sup>

*“Mass production of plastics, which began just six decades ago, has accelerated so rapidly that it has created 8.3 billion metric tons – most of it in disposable products that end up as trash. If that seems like an*

*incomprehensible quantity, it is. Even the scientists who set out to conduct the world's first tally of how much plastic has been produced, discarded, burned or put in landfills, were horrified by the sheer size of the numbers ...*

*Of the 8.3 billion metric tons that has been produced, 6.3 billion metric tons has become plastic waste. Of that, only 9 percent has been recycled. The vast majority – 79 percent – is accumulating in landfills or sloughing off in the natural environment as litter. Meaning: at some point, much of it ends up in the oceans, the final sink.”*

## **Common Recycling Mistakes Put Plastics in the Landfill**

Even when you purposely recycle, many of those items may still end up as trash. According to a recent report by The Denver Post, about 9% of the plastic waste Denver residents place in municipal recycling bins end up in landfills.<sup>24</sup> Why is that? Many consistently recycle plastic, paper and glass at home. However, if you've ever placed your recyclables in a plastic bag, know that none of those items actually made it into recycling.

The reason for this is because municipal recycling facilities typically cannot recycle plastic bags. They simply get caught in the machines and cause damage. And, if you put your recyclables into closed trash bags, the recycling facility will NOT open them.<sup>25</sup> They simply do not have the time.

They also cannot tell whether the bag might contain hazardous materials that might contaminate other recyclables, such as soiled diapers or food scraps. Instead, the bag, with all of its recyclable content, will simply get transferred to a landfill.

So, to ensure your recyclables actually get recycled, make sure you place the items loose in your recycle bin. If you have to carry the items in a bag to your bin, dump them in and use the bag for your regular trash can. A simple strategy to avoid this is to keep a separate bin in your kitchen just for recyclables. When full, carry it to your recycle bin and dump the contents.

Another problem that limits recycling is contamination. Grease, liquids – even water – and food are considered contaminants. If a soiled item makes it down the sorting line, it can contaminate an entire load of recyclables, causing it to be thrown out. Additionally, not all plastic items can be recycled. This includes:

Anything smaller than a Post-it note, as it's too small to be sorted properly. This includes plastic bottle caps, unless you screw them onto the bottle. Just be sure to empty all liquid out first, or the bottle will be discarded	Plastic bags of all kinds (although many grocery stores have bins for plastic bags that will be taken for special processing)
Bubble-padded envelopes	Wax paper and wax paper liners (such as those in pizza boxes)
Diapers	Electronic gadgets
Paper cups with shiny coatings, such as hot-serve coffee cups	Paper food bowls with plastic lining

While some cities can handle rigid plastics, others cannot, so check with your local recycling authority. For more do's and don'ts of recycling, see [this Lifehacker article](#) for more information about what you can and cannot recycle in general, over and beyond plastic.<sup>26</sup>

## **Most Paper Cups Are Never Recycled Due to Plastic Lining**

Plastic is also causing an incredible amount of paper to not be recycled. This includes the tens of millions of hot-serve coffee cups tossed each and every day. In most cities, these cups cannot be recycled due to the fact that the plastic lining is tightly bound to, and cannot be separated from, the outer paper.

There are exceptions. Some cities, including Seattle, San Francisco and New York have the necessary recycling infrastructure to recycle coffee cups. Many other cities do not, including Denver. In 2008, Starbucks vowed to use only fully recyclable cups, yet recent tracking tests reveal most of the cups aren't being recycled after all, even when customers place the cups in Starbucks' recycle bins. Denver Post reports:<sup>27</sup>

*"Forest activists campaigning to cut consumer waste dramatized the problem ... after launching a trash-tracking project in Denver. Using golf ball-sized beacons stuck into cups, they confirmed that paper containers tossed in recycling bins at Starbucks landed in the dump ... Stand.earth's team sprayed foam insulation into cups to hold their beacons – which cost about \$100 each – in place.*

*They tracked cups thrown into bins marked 'recycle' at several Starbucks around the city ... The trackers then used smartphones to monitor data received from six of their beacons, including one placed on a cup at a Starbucks on East 18th Avenue. It moved to a recycling center first, then to a landfill.*

*'Millions and millions of people every day try do the right thing by putting their cups in a bin to be recycled,' campaign coordinator Jim Ace said. 'These cups are made of high-quality fiber and they could be recycled' – if they didn't have the plastic lining.*

*'We are asking for innovation. Look, Starbucks, you have the most control over how your cups are made ... Demand that cupmakers come up with a material to line cups that is 100 percent recyclable. The more we recycle, the more fiber we are able to recover, and the fewer raw materials we need to cut down and harvest.'*

## **Food Waste – Another 'Recyclable' That Isn't**

Speaking of items that could be recycled but aren't, here's another major one: food waste. Each day, Americans throw away 150,000 tons of food.<sup>28</sup> This number equates to nearly 1 pound per person, and about one-quarter of the food available for consumption.

Interestingly, research suggests the worst offenders are people with healthy diets, meaning those eating lots of fresh fruit and vegetables.

These are the most frequently discarded foods, followed by dairy products and meats. As noted in The Guardian:<sup>29</sup>

*“This waste has an environmental toll, with the volume of discarded food equivalent to the yearly use of 30 [million] acres of land, 780 [million] pounds of pesticide and 4.2 [trillion] gallons of irrigated water. Rotting food also clogs up landfills and releases methane, a powerful greenhouse gas.”*

To tackle mounting food waste, the study recommends consumer education on how to properly store fruits and vegetables. Another recent report<sup>30</sup> highlights the failure of grocery stores to address food waste. This report, issued by the Center for Biological Diversity, found 60% of the largest grocery chains in the U.S. – 6 out of 10 – have not made any specific commitment to cut down on food waste.

Four of the 10 also have no measures in place to prevent food waste associated with cosmetic imperfections. Jordan Figueiredo with the “Ugly Fruit & Veg” campaign,<sup>31</sup> who collaborated on the report, is now calling for increased funding for food recovery and more widespread use of composting.<sup>32</sup> Indeed, composting kitchen waste is a great way to save money and contribute to environmental improvement.

If you’re interested in recycling food waste at home, you may be interested in looking at tumbling compost bins,<sup>33</sup> which make it easy to turn food scraps into wonderful soil for your garden. Even city dwellers can compost and use the resulting soil in a potted garden.

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