

SCIENCE & TECH SPOTLIGHT:

**MICROPLASTICS IN THE
BODY AND ENVIRONMENT**

GAO-26-109098, July 2026

**WHY THIS MATTERS**

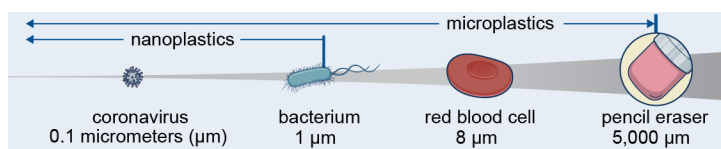
Across the globe, over 24 million tons of plastic (as much weight as 12 million cars) enter the environment each year. Larger plastics gradually break down into smaller microplastics, which can move into the organs, blood, and cells of humans and other animals.

KEY TAKEAWAYS

- » Major sources of microplastics include vehicle tires, synthetic fabrics, plastic bottles, and paint.
- » Exposure to microplastics is associated with health problems in humans and other organisms, but scientists have not determined the extent to which microplastics cause such problems.
- » Federal agencies have announced actions to measure and remove microplastics in the human body, consider potential regulation of microplastics in drinking water, and reduce microplastic exposure from synthetic fabrics.

THE SCIENCE

What is it? Microplastics are plastic particles smaller than 5,000 micrometers (i.e., 5 millimeters). The smallest microplastics, called “nanoplastics,” are smaller than 1 micrometer (see fig. 1).

Figure 1. Relative Sizes of Microplastics

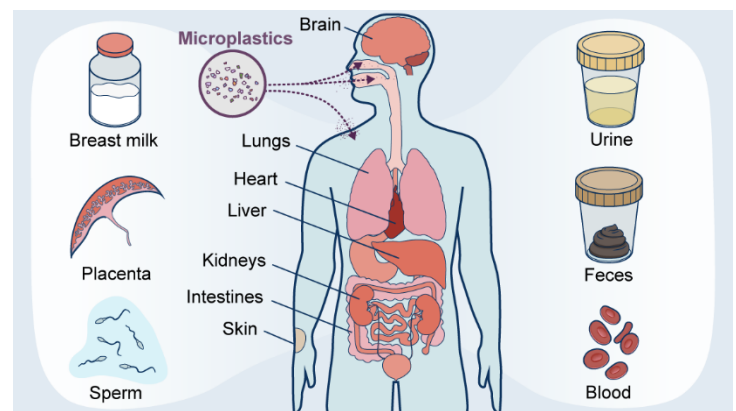
Source: GAO. | GAO-26-109098

Some microplastics are intentionally produced. For example, exfoliating products and toothpastes containing plastic microbeads were common until the Microbead-Free Waters Act

of 2015 prohibited their production in the U.S. However, most microplastics result from the gradual breakdown of larger plastics, and these particles may never fully decompose. Major sources include vehicle tires, synthetic fabrics, plastic bottles, and paint.

What is known? Microplastics are found in air, land, and water, and can carry toxic substances (e.g., phthalates, PFAS, heavy metals). When animals ingest them, it may lead to malnutrition and other cumulative effects higher on the food chain.

Larger microplastics can pass through the human body without interacting with tissues. In contrast, smaller microplastics—including nanoplastics—can cross the body’s natural barriers. Once inhaled, ingested, or absorbed through the skin, they can enter organs, blood, and cells (see fig. 2).

Figure 2. Microplastics in the Human Body

Source: GAO. | GAO-26-109098

Some estimates place humans’ weekly microplastics intake in the microgram range. However, intake varies based on lifestyle. For example, some studies suggest reliance on bottled water may result in a higher intake.

Some studies have associated microplastics with a greater risk of certain health problems. For example, in a study of patients with plaque buildup in their arteries, patients whose plaques contained microplastics had a higher risk of heart attack, stroke, or death. However, the extent and level at which microplastics

cause health problems are unclear. Through laboratory studies in mice, scientists have found that unusually high levels of exposure to microplastics can cause cognitive impairment, decreased testosterone levels, and other health problems.

What are the knowledge gaps? Most technologies to measure microplastics in the environment rely on significant sample preparation, preventing on-site testing. Also, highly effective removal technologies, like reverse osmosis, may be difficult to scale for use in public water supplies.

To help address knowledge gaps, in 2026, the Environmental Protection Agency (EPA) added microplastics to the Contaminant Candidate List—a list of contaminants that may require future regulation under the Safe Drinking Water Act. Also, the Department of Health and Human Services (HHS) announced STOMP: Systematic Targeting Of MicroPlastics—a program to measure and remove microplastics in the human body. Further, the Department of Agriculture (USDA) announced an initiative to strengthen domestic cotton production to reduce microplastic exposure from synthetic fabrics.

OPPORTUNITIES

The following scientific advances and lifestyle changes could present opportunities to reduce exposure to microplastics:

- **Measurement technologies.** Development of portable technologies could help scientists take real-time measurements of microplastics in the environment.
- **Removal technologies.** Development of scalable technologies to remove the smallest microplastics from drinking water could help reduce community exposure.
- **Exposure reduction.** Reducing use of plastic products, such as disposable water bottles, or substituting alternatives can reduce exposure, as can frequent indoor cleaning to remove plastic dust.

CHALLENGES

- **Cost and convenience.** Plastic products are often inexpensive and convenient. Some major sources of microplastics, such as vehicle tires, are essential.
- **Geographic spread.** Since winds and ocean currents have spread microplastics to remote places, including Antarctica, it may be impossible to stop further spread.
- **Data interpretation.** Certain findings have caused public concern, but, without standardized methodologies, it can be difficult to interpret study data on potential health effects.

POLICY CONTEXT AND QUESTIONS

- How much and what type of evidence could enable policymakers to assess the risks of microplastics against economic and other benefits of plastic products?
- What, if any, government incentives or educational programs could increase production and use of non-plastic products, while avoiding unintended consequences?

SELECTED GAO WORK

Textile Waste: Federal Entities Should Collaborate on Reduction and Recycling Efforts, [GAO-25-107165](#).

SELECTED REFERENCES

Marfella, Raffaele, Francesco Prattichizzo, Celestino Sardu, Gianluca Fulgenzi, Laura Graciotti, Tatiana Spadoni, Nunzia D'Onofrio, et al. "Microplastics and Nanoplastics in Atherosclerosis and Cardiovascular Events." *New England Journal of Medicine*, vol. 390, no. 10 (2024): 900-910.

Zolotova, Natalia, Anna Kosyreva, Dzhuliia Dzhililova, Nikolai Fokichev, and Olga Makarova. "Harmful Effects of the Microplastic Pollution on Animal Health: A Literature Review." *PeerJ*, vol. 10 (2022): e13503.

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Staff Acknowledgments: R. Scott Fletcher and Rebecca Parkhurst (Assistant Directors), Nicole Catanzarite (Analyst-in-Charge), Kate Allen, Ryan Han, Ben Shouse, and Kristen Watts.

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