



# What are microplastics?

KS3

KS4

Ages 11-16 ⌚ 4 min read

In 2022, scientists found microplastics in human blood for the first time. In 2024, they found them in human brain tissue. They've been found in breast milk, in the placenta, in Arctic snow, in the deepest ocean trenches, in the air above remote mountain ranges. Microplastics are everywhere — and we're only just beginning to understand what that means.

## What are they?

Microplastics are plastic fragments smaller than five millimetres — some are visible to the naked eye; many are microscopic. They come from two sources. **Primary microplastics** are manufactured at that size: the microbeads once used in face scrubs and toothpaste (now banned in the UK), the plastic pellets used as raw material in manufacturing (called nurdles), and microfibres shed by synthetic clothing when washed. **Secondary microplastics** form when larger plastic items break down in the environment — bottles, bags, and packaging fragmented by UV light, waves, and physical abrasion into progressively smaller pieces.

🍪 Imagine a biscuit left on a beach. Wind, rain, and waves gradually break it into crumbs. Seagulls eat the crumbs, fish eat the smaller fragments, and eventually even bacteria might consume the tiniest pieces. Plastic does the same thing — but unlike a biscuit, it doesn't biodegrade. The crumbs just get smaller and smaller, persisting in the environment for hundreds of years, entering food chains at every level.

## How do they get into us?

Through food and water, primarily. Fish and shellfish ingest microplastics and we eat the fish. Tap water and bottled water both contain microplastic particles. They've been found in beer, honey, table salt, and fruit and vegetables. We also inhale them — microplastics have been found in indoor and outdoor air. A 2019 study estimated people could be consuming up to 5 grams of microplastic per week — roughly the weight of a credit card.

## Are they harmful?

This is where the science is still developing. Lab studies have shown that microplastics can cause inflammation, disrupt hormones, and carry toxic chemical compounds. A 2024 study found that heart patients with microplastics in their arterial plaques had significantly higher rates of heart attack and stroke than those without. But establishing clear causation in humans — as opposed to correlation — remains difficult. What scientists are fairly confident about is that the answer is not "definitely fine." The precautionary principle, given what we know, suggests reducing exposure where possible is sensible.

## **Can we do anything?**

Individually: reducing single-use plastic, using a washing bag that captures synthetic fibres, and filtering tap water all help marginally. At scale, the problem requires reducing plastic production and improving waste management globally. Some plastic-eating bacteria and fungi are being studied. But given the scale of contamination already in the environment, microplastics are likely to be a feature of life on Earth for centuries to come.