

Microplastics in Brain Have Risen 50 Percent



By Lynn C. Allison

A new study warns that microplastics can cross the blood-brain barrier and levels of concentration are rising. The paper published Monday in *Nature Medicine* found that the amount of microplastics in human brains rose by approximately 50% from 2016 to 2024, according to [The Washington Post](#).

Microplastics are tiny plastic particles, less than 5 millimeters in length, that result from the breakdown of larger plastic debris. These particles can originate from a variety of sources, including the degradation of plastic waste in the environment, microbeads found in personal care products, and synthetic fibers shed from clothing.

Nanoplastics are even smaller, measuring less than 100 nanometers, and can result from the further breakdown of microplastics or be directly released from products that contain them. Both microplastics and nanoplastics have been detected in various environments, including oceans, freshwater systems, soil, and the atmosphere, raising concerns about their potential impact on human health and ecosystems. The authors of the new study said that most of the particles found in human brains during their research were nanoplastics.

Even more disturbing was the fact that the autopsied brains of deceased patients who were diagnosed with dementia had three to five times as much microplastic accumulation as normal brains. While the scientists didn't suggest a cause-and-effect relationship, they noted that the blood-brain barrier in dementia patients is weaker than normal.

Previous research discovered microplastics in the liver, placenta, blood, testicles and even in the heart's arteries, says the Post.

Matthew Campen, a professor of toxicology at the University of Mexico and one of the study's lead authors, said that his team analyzed brain specimens of people who were autopsied in 2016 and those autopsied in 2024. They found microplastics in every specimen, but far more were discovered in the specimens from 2024.

He cautions that with the amount of microplastics in the environment doubling every 10 to 15 years, human exposure is skyrocketing.

"To see it go up 50% in eight years in human organs...I think that's perfectly in line with what we're seeing in the environment," he said. The researchers found an average of seven grams of microplastics in human brains, about the size of a plastic teaspoon, but said this could be an overestimate as other particles may resemble microplastics.

While other researchers have also confirmed that microplastics can invade the brain, the new research shows that they tend to accumulate in the prefrontal cortex. Of all the organs studied, it appears that microplastics are seven to 30 times more prevalent in the brain compared with liver and kidney samples.

According to [Harvard Medicine](#), microplastics pose several health hazards. Studies in cell cultures, marine wildlife, and animal models indicate that microplastics can cause oxidative damage, DNA damage, and changes in gene activity, known risks for cancer development.

While research continues to develop, environmental experts urge that individuals can advocate for reduced plastic manufacturing and more recycling. Study author Campen warns that in studies involving microplastics, there are no control groups. “Everyone is exposed,” he says.

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