# Concerns rise over microplastics in the human brain and their effects on cognitive health



Recent research has raised significant concerns regarding the presence of microplastics and nanoplastics in the human brain, with alarming implications for cognitive health, particularly in individuals diagnosed with dementia. A study featured in the journal *Brain Medicine* has concluded that the average human brain contains approximately a spoonful of these plastics, with concentrations notably higher in those suffering from dementia.

Conducted over several years, this research has found brain samples from dementia patients to have microplastic levels between three to five times greater than those of healthy individuals. The study highlighted that the microplastics present were predominantly polyethylene and that their size was less than 200 nanometres. This is in stark contrast to previous findings that indicated lower levels of microplastics in other organs, such as the liver and kidneys, suggesting a unique accumulation in brain tissue.

Prof Tamara Galloway, an expert in ecotoxicology at the University of Exeter, shared insights on the study’s implications, commenting on the ubiquitous nature of microplastics in contemporary life. "Microplastics are a ubiquitous consequence of modern life, present in air, water and food and it should come as no surprise to find that most people have microplastics present in their bodies. What we don't yet know is what the implications are for human health," she stated. She further noted the absence of a correlation between age and microplastic accumulation in the brain, which suggests that microplastics do not necessarily accumulate as individuals grow older. This observation was coupled with evidence showing a 50% increase in contamination levels over the past eight years, aligned with rising global plastic production and usage.

The implications of plastic consumption are vast, with microplastics not biodegrading but instead fragmenting into smaller pieces that permeate the food chain. This contamination is not limited to consumption through food and drink; it extends to inhalation and environmental exposure. Research published in *Environmental Science and Technology* identified bottled water as the second largest source of microplastics, following air, with seafood also contributing significantly to ingested microplastics.

To mitigate the risk of microplastic consumption, experts suggest practical measures. Transitioning from bottled to tap water could potentially reduce microplastic ingestion from around 90,000 particles annually to approximately 4,000 for those who rely exclusively on tap. Concerns have also been raised about tea bags, with studies highlighting that some contemporary tea bags, constructed from plastic, can release billions of microplastic particles when steeped. Brands such as Yorkshire Tea have taken steps to address these concerns by adopting plant-based materials for their packaging.

In addition, there are recommendations regarding food storage and preparation. The study indicated that reheating food in plastic containers can release significant quantities of microplastics, estimated at millions of particles in mere minutes. Researchers advised against using plastic for heating and suggested alternatives such as glass or stainless steel to limit exposure. The potential health impacts of bisphenol A (BPA), commonly found in plastics, remain a topic of ongoing research, particularly regarding its presence in processed foods, which were found to have considerably higher microplastic levels compared to unprocessed options.

Despite mounting evidence of microplastics' prevalence and potential health risks, it remains uncertain how effectively the human body can eliminate such contaminants. The complexity of microplastic exposure continues to be an area requiring further investigation, as scientists aim to unpack the health implications of this widespread environmental issue.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://pmc.ncbi.nlm.nih.gov/articles/PMC11100893/> - This study supports the claim that microplastics and nanoplastics accumulate in the human brain at higher concentrations than in other organs like the liver and kidneys. It also highlights the predominant presence of polyethylene and a significant increase in microplastic levels over time.
* <https://www.smithsonianmag.com/smart-news/the-human-brain-may-contain-as-much-as-a-spoons-worth-of-microplastics-new-research-suggests-180985995/> - This article discusses the alarming levels of microplastics in human brains, noting that concentrations have increased by about 50% over the past eight years. It also mentions higher levels in dementia patients compared to healthy individuals.
* <https://hscnews.unm.edu/news/hsc-newsroom-post-microplastics-human-brains> - This report from the University of New Mexico Health Sciences highlights the detection of microplastics in human brains at much higher concentrations than in other organs. It also notes the increase in microplastic accumulation over time and its potential implications for health.
* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10311201/> - Although not directly related to microplastics, this article on digital evidence highlights broader issues of environmental and health research, emphasizing the importance of rigorous scientific investigation into emerging health concerns.
* <https://www.sciencedirect.com/science/article/pii/S0043135421001015> - This study on microplastics in bottled water supports the claim that bottled water is a significant source of microplastic ingestion. It underscores the importance of transitioning to tap water to reduce exposure.