

Want fewer microplastics in your tap water? Try boiling it first

February 28 2024



Boiling tap water can trap nano- and microplastics inside limescale particles, which can be easily filtered out. Credit: Eddy Zeng

Nano- and microplastics are seemingly everywhere—water, soil and the air. While many creative strategies have been attempted to get rid of

these plastic bits, one unexpectedly effective solution for specifically cleaning up drinking water might be as simple as brewing a cup of tea or coffee.

As [reported](#) in *Environmental Science & Technology Letters*, boiling and filtering calcium-containing tap water could help remove nearly 90% of the nano- and microplastics present.

Contamination of water supplies with nano- and microplastics (NMPs), which can be as small as one-thousandth of a millimeter in diameter or as large as 5 millimeters, has become increasingly common. The effects of these particles on [human health](#) are still under investigation, though current studies suggest that ingesting them could affect the gut microbiome.

Some advanced [drinking water](#) filtration systems capture NMPs, but simple, inexpensive methods are needed to substantially help reduce human plastic consumption. So, Zhanjun Li, Eddy Zeng and colleagues wanted to see whether boiling could be an effective method to help remove NMPs from both hard and soft tap water.

The researchers collected samples of hard tap water from Guangzhou, China, and spiked them with different amounts of NMPs. Samples were boiled for five minutes and allowed to cool. Then, the team measured the free-floating plastic content. Boiling [hard water](#), which is rich in minerals, will naturally form a chalky substance known as limescale, or [calcium carbonate](#) (CaCO_3). Results from these experiments indicated that as the [water temperature](#) increased, CaCO_3 formed incrustants, or crystalline structures, which encapsulated the [plastic](#) particles.

Zeng says that over time, these incrustants would build up like typical limescale, at which point they could be scrubbed away to remove the NMPs. He suggests any remaining incrustants floating in the water could

be removed by pouring it through a simple filter such as a coffee filter.

In the tests, the encapsulation effect was more pronounced in harder water—in a sample containing 300 milligrams of CaCO_3 per liter of water, up to 90% of free-floating MNPs were removed after boiling. However, even in soft water samples (less than 60 milligrams CaCO_3 per liter), boiling still removed around 25% of NMPs. The researchers say that this work could provide a simple, yet effective, method to reduce NMP consumption.

More information: Drinking Boiled Tap Water Reduces Human Intake of Nanoplastics and Microplastics, *Environmental Science & Technology Letters* (2024). [DOI: 10.1021/acs.estlett.4c00081](https://doi.org/10.1021/acs.estlett.4c00081)

Provided by American Chemical Society

Citation: Want fewer microplastics in your tap water? Try boiling it first (2024, February 28) retrieved 27 April 2024 from <https://phys.org/news/2024-02-microplastics.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.