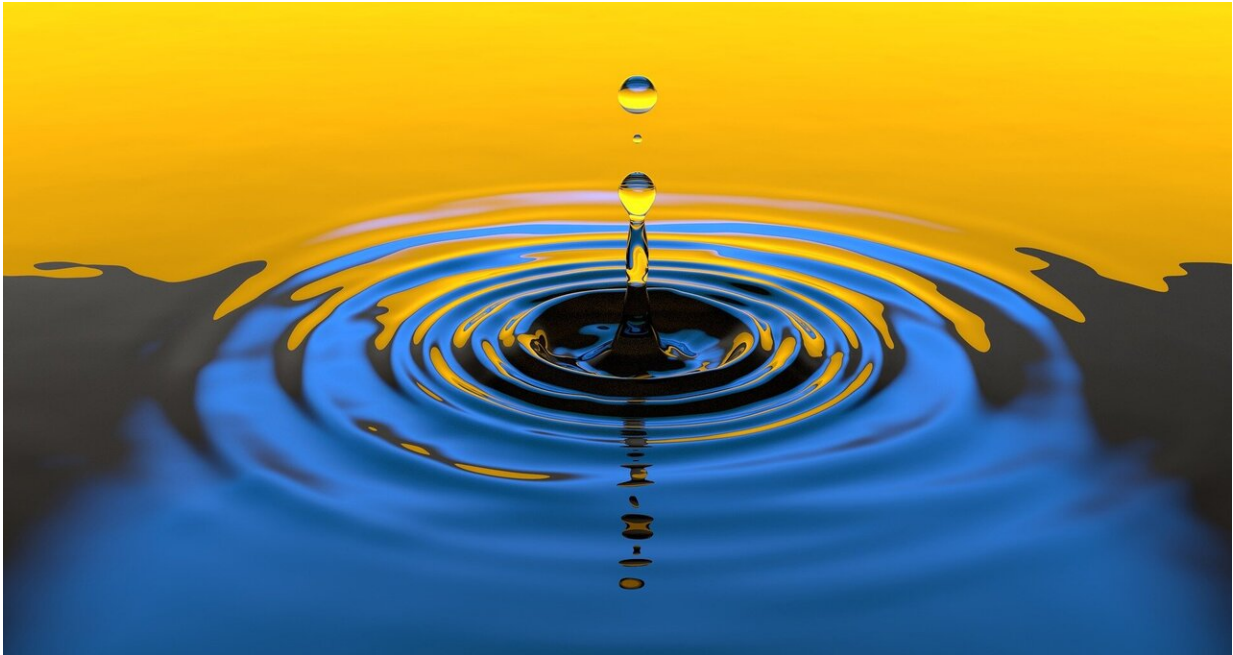


# Microplastics are everywhere, study finds

May 13 2020, by Birgitte Svennevig

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Microplastics are everywhere—including in our drinking water, table salt and in the air that we breathe. Having studied the scope of microplastics in a number of countries, researchers are worried.

"Given the lifetime inevitable exposure to microplastics, we urgently call for a better understanding of the potential hazards of microplastics to human health," says Dr. Elvis Genbo Xu, an Assistant Professor of environmental toxicology at the University of Southern Denmark.

There are many studies on microplastics, especially concerning the oceans, but in this study Elvis Genbo Xu and his colleagues, Professor Huanghong Shi from East China Normal University and Professor Eddy Zeng from Jinan University in China, chose to focus on microplastics in table salt, [drinking water](#) and air.

## **In honey, milk and beer**

"Microplastics have been found in many places, including in various foods such as honey, milk, beer and seafood, but these are foods that you can choose not to eat—unlike salt, water and air, which no one can avoid, and that's why we're focusing on these," he says.

The researchers have conducted a so-called meta-analysis. This means they have reviewed 46 existing scientific articles on the subject while looking for trends and patterns.

They conclude, among other things, that of the three sources of microplastic intake, the primary one is air; especially indoor air.

## **We inhale microplastics**

"When we inhale microplastics, the [tiny particles](#) can reach the lungs and digestive system. Nobody knows what this means for the human organism and our health, but as we are talking about a lifelong exposure, it's a cause for concern," says Genbo Xu.

There are no official guidelines for how much microplastic food may contain. Likewise, no studies have defined values for when certain sizes or amounts of microplastic particles can be hazardous for humans to ingest.

However, animal studies show that the ingestion of microplastics can disturb, for example, the metabolism and intestinal system.

## **Table salt:**

More than 100 different products from around the world have been examined for microplastics, and there is a huge difference between them.

Microplastics do not come from the salt itself, but are added during drying, production, packaging and transport.

"Our advice is that consumers should be aware of the way food is produced and processed, because it is probably not only in the production and packaging of table salt that microplastics enter the finished product that reaches the supermarket shelves," says Genbo Xu.

High concentrations of microplastics in table salt have been found in Croatia, Indonesia, Italy, USA and China. Conversely, concentrations are low in Australia, France, Iran, Japan, Malaysia, New Zealand, Portugal and Africa.

There are no studies of [table salt](#) in Denmark.

## **Drinking water:**

The occurrence of microplastics is greatest in water from recycled [plastic bottles](#). The microplastics may originate from one or more steps in the water supply chain, from the plastic bottle itself or from its screw cap.

The researchers were surprised to find microplastics in water sold in

glass bottles. One possible source is the plastic cap, which can release microparticles when screwed off and on the glass bottle.

"We believe that packaging is a major source of microplastics in bottled drinking water," says Genbo Xu.

Microplastics have also been found in tap water, which Danes drink a lot of. The microplastics stem from, for example, contaminated drinking water sources such as lakes, groundwater and rivers, but may also come from the water processing plants. There is a huge difference between where and how much microplastic has been found in different countries. In Denmark and Italy, the scope is low.

"Some of the plastics registered in tap water in different countries are quite large pieces, up to 5 mm. Such large pieces may be captured by a water purifier equipped with a membrane filter. Another way to reduce exposure to microplastics in drinking water is to avoid drinking bottled [water](#)," says Genbo Xu.

## **Air:**

In air, the sources are primarily synthetic textiles, rubber tyres and road dust. Other sources include furniture, building materials, waste incineration, landfills and industrial waste.

The weather has a major influence on where the [microplastic](#) particles can be found, but the concentration tends to be higher in [wet weather](#) than in dry weather.

The air can release particles in the form of dust, which especially young children may ingest when they put things in their mouths.

"I am more worried about indoor air than outdoor air. Indoors, we have

particles from all the household plastic products. You cannot avoid them all, but it is possible to minimise the exposure. Let in some fresh air and don't buy synthetic fabrics and other plastic products like toys, furniture and food containers," concludes Genbo Xu.

**More information:** Qun Zhang et al, A Review of Microplastics in Table Salt, Drinking Water, and Air: Direct Human Exposure, *Environmental Science & Technology* (2020). [DOI: 10.1021/acs.est.9b04535](https://doi.org/10.1021/acs.est.9b04535)

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