

## CHAPTER 7

### MICROPLASTICS AND NANOPLASTICS IN FOOD



#### SMALL PARTICLES, MANY UNCERTAINTIES

Microplastics and nanoplastics are particles of polymeric materials that can vary considerably in size, composition and shape. Operational definitions also depend on the scientific context and method used. EFSA generally describes microplastics as ranging from one micrometre to five millimetres, with nanoplastics occupying smaller size ranges.

These particles are not a single chemical substance. Two particles of the same size may differ in polymer type, additives, surface weathering and biological behaviour. A measurement expressed solely as particle count does not fully characterise potential exposure.

#### FROM ENVIRONMENTAL SOURCES TO THE TABLE

Particles can arise from the fragmentation of materials released into the environment, wear and tear of manufactured items, industrial sources and certain processing and packaging operations. They can reach water, soil and organisms and occur in various food matrices.

Microplastics have been reported in products such as shellfish, salt, water and other foods. Results must be compared cautiously: studies often use different particle-size cut-offs, identification techniques and procedures for controlling laboratory contamination.

## **THE CHALLENGE OF ACCURATE MEASUREMENT**

Before treating a result as reliable, contamination introduced during sampling and preparation must be excluded. Fibres from clothing, laboratory air and consumables can produce false positives. Blank samples, recovery controls and transparent criteria for identifying polymers are essential.

Spectroscopic techniques, including FTIR and Raman, can help identify particles of sizes compatible with their respective methods. Difficulties increase considerably for nanoparticles; it is unrealistic to assume that a single method can quantify every particle in every matrix.

## **WHAT DO WE KNOW ABOUT HEALTH EFFECTS?**

The presence of particles in the diet does not automatically demonstrate that they cross biological barriers in significant amounts or cause a particular clinical effect. Size, composition and dose are fundamental variables. Research is also investigating the possible roles of chemical additives and adsorbed substances, without being able to generalise findings from individual experimental studies to humans.

In 2026, EFSA reports that a comprehensive assessment of food-related risks from microplastics and nanoplastics is still lacking and that a new scientific assessment is expected in 2027. It is scientifically incorrect either to claim that the health implications have already been definitively quantified or to claim that they have been shown to be irrelevant.

## **A RESEARCH PRIORITY, NOT A SIMPLE RANKING**

Reducing environmental releases and improving manufacturing processes and packaging are useful general aims. However, individual choices cannot be based on numerical rankings derived from incomparable methods.

Reliable information requires harmonised methods, reproducible exposure data, studies of the biological fate of particles and analyses distinguishing chemical from physical risks. Pending robust evidence, transparency about uncertainty is an essential part of scientific rigour.

## **SCIENTIFIC AND REGULATORY REFERENCES**

- EFSA (2026 update), Microplastics and nanoplastics in food [↗ Source](#)
- EFSA (2016), Microplastics and nanoplastics: an emerging issue [↗ Source](#)