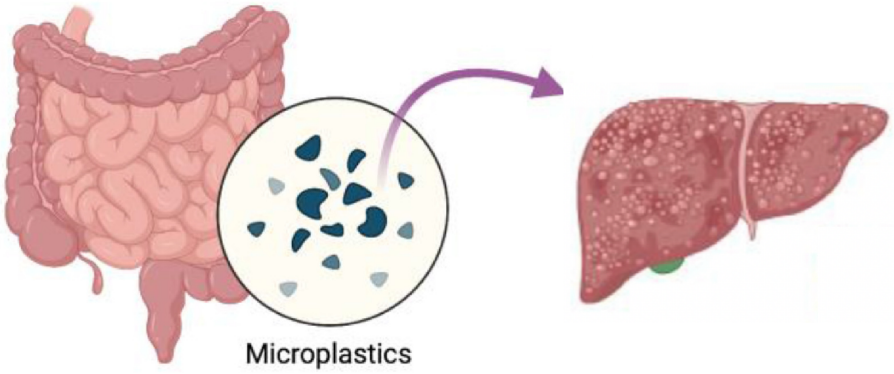
Leading the movement
to eliminate microplastic
from global food supply

NO CUT PACK

Toxicological Effects of Ingested Microplastics on Humans

Assumptions on the toxicological effects of ingested microplastics are that particles may leach chemicals into the bloodstream.



6 types of microplastic polymers were found in liver tissue of patients with cirrhosis.

Due to its presence in nearly all parts of the biosphere, the potential impact of plastic pollution is not easy to define.

Microplastics are becoming ubiquitous in our environment. They have been detected everywhere from the air and ocean to fresh water and food. MPs can accumulate in the bodies of the animals and humans that ingest them, and have been linked to serious health consequences, including cancer, birth defects and unwanted immune responses.

Respiratory and dietary exposure are thought to be the major exposure routes for mammals, with microplastics potentially causing abrasive lesions and inflammatory responses, releasing adsorbed chemicals, or harboring opportunistic pathogens. It has been suggested that only particles < 20 μm may be able to penetrate into the organs.

Researchers at Sichuan University, writing in the journal of Hazardous Materials said: 'Based on the results, we estimated that people may unconsciously ingest 37,613–89,294 microplastics a year due to the use of one plastic cup every 4–5 days.

Opening a plastic bottle can result in 63,400 to 1,225,500 high-density polyethylene (PTE) particles being released from the inner cap surface.

A plastic electric kettle releases 4–29 million microplastics per litre during use. Infant feeding bottles could release 1–16 million microplastics per litre of water in formula preparation, an average of 1.5 million microplastics ingested per infant, per day.

Polypropylene cups produced the highest numbers of particles, which is concerning, given how widely used this material is.

The 2019 report 'Microplastics in Drinking Water' from the World Health Organisation revealed that a single plastic-sealed teabag releases approximately 11.6 billion micro-plastics at brewing temperature.

Future research could shed light on how ubiquitous the transference of microplastic into our food is, and how it may impact human health, but anything that can be done to prevent plastic fragments from entering our food must be considered. As well as being damaging in themselves, plastics may pose a health threat by carrying harmful bacteria, or toxic chemicals.

We observed the ubiquity of MPs in a variety of shapes and sizes generated when opening plastic packages. The amount generated is dependent on conditions such as stiffness, thickness, anisotropy and the density of plastic packaging materials.

And while the big microplastics can be identified with the naked eye, smaller ones might be also there.

Our study establishes the transference of microplastics upon cutting which enters the food. If microplastics carried into the food are then cooked at high temperatures (350-400˚ F), it is yet undetermined what chemicals are then emitted and consumed, and what long-term effects will this have on the body.