

## Microplastics: Presence in Human Tissues and Analytical Detection Methods

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Microplastics (MPs) are a by-product of plastic use that can be ingested and inhaled by humans, with uncertain health consequences. MPs are particles smaller than 5mm; nanoplastics (NPs) are particles that can range from 25 to 500 nm. Global production of plastics has surpassed 450 million tons in 2019, rising from zero at the beginning of the 20th century, suggesting that both the production of microplastics and human exposure to them has risen by a similarly large amount. A literature review was conducted of studies published from 2020-2023 discussing the presence and potential impact of microplastics in various human fluids and tissues. MP and NP exposure has resulted in alterations in nutrient absorption, energy metabolism, cytotoxicity and behavior in numerous aquatic species. The severity of MP/NP exposure can vary by MP/NP composition. Details on MP exposure in humans are not fully understood. Given the prevalence of plastic pollution in the environment, studies detecting MP presence in various human tissues and fluids can provide insight to the severity of MP exposure for humans and identify gaps in understanding how MPs impact human health. Of particular concern is the possible influence of MP exposure on fetal development. Current spectroscopy-based methods for detecting microplastics are compared to potential future technologies for more sensitive detection of MPs.

