

The impact of microplastics on the environment unclear, study suggests

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Scientists say there is not yet enough evidence to conclude that microplastics do or do not cause harm to the environment, following a review of more than 300 global studies.

The research team say that future research into the [impact](#) of microplastics needs to be much more targeted, after the study revealed a large "mismatch" in the types of microplastics measured in the [environment](#) to those tested for effects in the laboratory.

There is increasing scientific and public concern over the presence of microplastics in the environment, with microscopic plastic beads, fragments and fibres found in waterways around the globe—from rural streams to major oceans.

A review of 320 studies by the University of York revealed that monitoring tends to focus on only a fraction of the [microplastic](#) size range—leading to "major knowledge gaps" around our understanding of the impact they are having on the environment.

Microplastics have been defined as [plastic particles](#) less than five millimetres in size. They can come from a number of sources, including cosmetics, tyres and clothing such as fleeces.

The review concludes that the concentrations of particles detected in the natural environment are orders of magnitude lower than those reported to affect feeding, reproduction, growth, tissue inflammation and mortality in organisms.

However, the review found that environmental monitoring studies typically look at larger particles, down to 100th of a millimetre, while the effects studies often look at much smaller particles, down to 10000th of a millimetre.

Polystyrene is the material that has been most analysed in laboratory effects studies whereas in the real environment these particles make up only 5% of the materials monitored. This makes it problematic to conclude what the real impacts are.

The authors of the report say there is an urgent need for more studies to plug the gaps in our scientific knowledge.

The study revealed that fragments and fibres dominate, with beads accounting for only 3% of the detected Microplastic types.

Professor Alistair Boxall from the University of York's Environment and Geography Department, said: "Based on our analysis there is currently limited evidence to suggest microplastics are causing significant adverse impacts.

"However, at the moment we are trying to compare apples to pears when it comes to comparing monitoring data with effects data.

"There is an urgent need for better quality and more holistic monitoring studies alongside more environmentally realistic effects studies on the particle sizes and material types that are actually in the environment.

"We believe regulations and controls may be focusing on activities that are having limited impact and ignoring the most polluting activities such as releases of small [particles](#) from tyres on our cars."

The study was funded by the Personal Care Products Council and published in the journal *Environmental Toxicology and Chemistry*.

More information: *Environmental Toxicology and Chemistry* (2018).
[dx.doi.org/10.1002/etc.4268](https://doi.org/10.1002/etc.4268)

Provided by University of York

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