Microplastics: are they as bad as we feared?

By Oscar Bentley, Editor (2018)
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Image: DOLOVIS

Microplastics make the news regularly – just last week they made headlines when it was discovered that they are in 90 per cent of table salt, and made the front page of last Tuesday's (23 October) Daily Mail when a study discovered that they had recently been found for the first time in human faeces. Most news stories, and the prevailing ideology around microplastics decries them as harmful, entering and destroying the food chain and the marine environment. While polluting nature with a man-made material is never ideal, a new study by the University of York has concluded that there is no evidence that microplastics are harmful, and that microplastics most commonly come from products you might not expect.

Let's start at the beginning. Microplastics are small pieces of plastic, less than five millimetres in length. The majority of microplastics are secondary, where a larger piece of plastic has degraded in the environment into much smaller (micro) pieces. Most of the research into microplastics so far however has centred on primary microplastics, or pieces of plastic which were designed to be that big in the first place, most predominantly found in cosmetics.

The study, co-written by Alistair Boxall, Professor of Environmental Science at the University's Department of Environment and Geography, was a major literature review of 320 research papers into microplactics and their effects.

Sitting down with *Nouse*, Professor Boxall explained that from reviewing all these papers, it was overwhelmingly clear that the impact of microplastics on the environment is, well, unclear. However, while there is no conclusive evidence that microplastics cause harm to either the environment or to humans, there's also no counter evidence that they don't cause harm – it

could always be discovered that they do in a future study. So, as a compromise, Professor Boxall suggested removing microplastics from everyday products and that consumers avoid products that contain microplastics, but not to the extent where a focus is directed away from other, much more environmentally threatening pollutants.

As aforementioned, most of the research into microplastics so far has centred on primary microplastics, such as microbeads found in cosmetics, but microbeads only account for three per cent of the microplastics found in the environment. There's also been a high focus on polystyrene, however it is also only responsible for five per cent of the microplastics in the evironment. Microfibers are responsible for the majority of microplastics found in the environment; a study in Denmark included in this review showed 0.9 per cent of microplastic emission to the aquatic environment coming from primary microplastics, while 60 per cent of the total was expected to come from microfibres from tyre dust.

Lab experiments have also so far focused on extreme conditions, such as those found in Waste Water Treatment Plants (WWTPs), which are a major contributor of microplastics to the environment, rather than the more mild conditions typically found in the environment, and have also focused on larger pieces of microplastic, instead of typical pieces which are many gradations smaller.

So, what needs to happen? Well, more research needs doing. The research needs to focus on those microplastics found in the environment – secondary microplastics; microfibers – to find out whether they do pose any form of threat. Knowledge gaps need plugging, and while Professor Boxall doesn't see a problem in legislating against microbeads, as was done in January when the government banned the manufacture of cosmetics with microbeads, he's worried about the precedent set by legislating on what he describes as "bad science"

He's also worried that negative press against microplastics may do harm in the long run. Products such as acrylic clothing provide a societal good, and can be more durable and in cases environmentally friendly than alternatives. There's a cost/benefit analysis that may need to be considered, and, bar redesigning every washing machine in the world, there's little that can be done to prevent the emission of these microfibres, and boycotting them would have little affect on the concentration of microplastics in the environment.

Would environmentalist efforts be better focused on reducing other pollutants scientifically proven to genuinely have an adverse impact on the environment, such as toxic chemicals from pharmaceuticals, or agricultural fertilisers, which cause eutrophication of the water systems– rather than focusing on the "red herring" of microplastics?

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