

Weathered microplastics found to be more easily absorbed by mouse cells than pristine microplastics

10 December 2020, by Bob Yirka



Credit: Unsplash/CC0 Public Domain

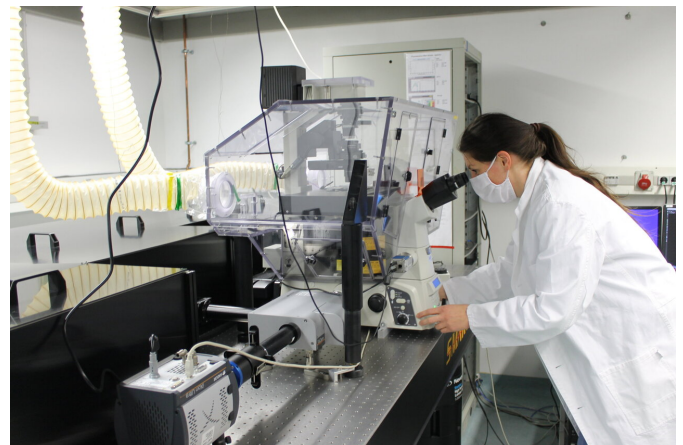
A team of researchers at the University of Bayreuth in Germany has found that microplastics exposed to several weeks of weather are more easily absorbed by mouse cells than fresh microplastics. In their paper published in the journal *Science Advances*, the group describes experiments they conducted with microplastics and mouse cells.

The researchers with this new effort noticed that most studies on the impact of microplastic ingestion by animals have involved the use of nearly pristine microplastic samples. They noted that this practice was likely producing inaccurate results because weathered microplastics are noticeably different from those that are still pristine. To find out if this was indeed the case, the researchers conducted experiments that involved exposing mouse cells to microplastics from different sources.

The work involved collecting water samples from a human-made pond, a saltwater aquarium and a

sterile source. They submerged microplastics into all of the [water samples](#) for two to four weeks. Next, they retrieved the microplastics and exposed them to [mouse cells](#) with fluorescently labeled actin, sections of the mouse cytoplasm network that play a role in internalization, for approximately three hours. The [labeling system](#) allowed the researchers to observe which of the cells were internalizing the microplastics and to what degree.

In looking at their results, the researchers found that the microplastics exposed to the real-world water sources were internalized 10 times more often than were those from the sterile water. A closer look showed that the weathered microplastics were covered with a crust made up of microorganisms and biomolecules—the crust then served as a sort of "Trojan horse" that led the mouse cell membranes to engulf them and bring them inside of the cell. The researchers further noted that after the microplastics made their way into the cells, they moved into the [circulatory system](#) and mouse tissue, which set off an inflammatory response. They suggest future [microplastic](#) impact studies involve the use of weathered microplastics.



Anja Ramsperger M. Sc. uses a fluorescence microscope to examine the cellular uptake of microplastic particles from fresh or seawater. Credit: UBT. / Chr. Wissler

More information: A. F. R. M. Ramsperger et al. Environmental exposure enhances the internalization of microplastic particles into cells, *Science Advances* (2020). [DOI: 10.1126/sciadv.abd1211](https://doi.org/10.1126/sciadv.abd1211)

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