

'Microplastics' may pose previously unrecognized pollution threat

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Submicroscopic particles of PVC (shown via electron microscope) and other plastics may pose a previously unrecognized pollution threat. Credit: Courtesy of Emma Teuten, University of Plymouth, UK

Microscopic particles of plastic debris that litter marine environments may pose a previously unrecognized threat to marine animals by attracting, holding, and transporting water pollutants, a new study by British researchers is reporting. It is scheduled for the Nov. 15 issue of ACS' *Environmental Science & Technology*.

Emma L. Teuten and colleagues note long-standing awareness that large pieces of plastic waste, including cargo wrapping sheet plastic and six-pack rings, can sicken and kill fish, birds, turtles and other animals. Seawater eventually breaks down these large pieces into microplastics, which can adsorb high levels of PCBs and other toxins.

Microplastics also enter the environment directly from use as "scrubbers" in household and industrial cleaning products. However, little research has been done on the environmental impact of these tiny, pollution-packed pellets.

In the new study, researchers exposed several different types and sizes of microplastics to phenanthrene, a major marine pollutant, and used a model to predict their effects on a group of sediment-dwelling marine worms (lugworms).

The scientists found that addition of just a few millionths of a gram of contaminated microplastics to the sediments caused an 80% increase in phenanthrene accumulation in the tissues of the worms.

Since lugworms are at the base of the food chain, phenanthrene from microplastics would be passed on and biomagnified in other marine animals. The finding suggests that microplastics are an important agent in the transport of pollutants in marine organisms and throughout the global environment, the researchers say.

Source: ACS

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