



# Microplastic waste: This massive (tiny) threat to sea life is now in every ocean

Researchers warn that only drastic action to eliminate it at source will protect marine wildlife for future generations

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Sunday, 13 July 2014

1 Pollution of the oceans by tiny pieces of plastic debris is now so widespread that only radical action to eliminate the waste at source can limit further damage to marine wildlife, according to scientists.

2 Microplastics, which can range in size from being invisible to the naked eye to just a few millimetres in diameter, are now turning up in all the world's major oceans including the Arctic and Antarctic, and it is no longer feasible to think it may be possible to simply "clear up the mess", researchers add.

3 Most people are aware of the visible plastic pollution such as discarded bottles and other waste items washed up on beaches, but it is the invisible plastics that are likely to pose the bigger risks to animals and plants, say marine scientists Karen Lavender Law and Richard Thompson. And they warn that the problems will only get worse unless drastic action is taken to curb the sale of disposable plastic products worldwide and dispel the idea that plastic waste can be just thrown away.

4 "Microplastics are likely the most numerically abundant items of plastic debris in the ocean today, and quantities will inevitably increase, in part because large, single plastic items ultimately degrade into millions of microplastic pieces," according to Lavender and Thompson's report in the journal Science.

5 "Given concerns over microplastics, the temptation may be to 'clean up the mess', but substantial removal of microplastic debris from the environment is not feasible. Identification and elimination of some of the major inputs of plastic waste is a more promising route, as is reduced consumption and the recognition of plastic waste as a [reusable] resource," the report says.

6 Microplastics are easily ingested by fish, mussels and other sea animals, and there is growing scientific evidence linking them to the passage of deadly, persistent chemicals through the environment, such as the pesticide DDT and toxic PCBs, making them more concentrated when they come into contact with marine life, the report warns.

7 Professor Thompson, a marine biologist at Plymouth University, first coined the term "microplastics" in 2004. It includes larger plastic items that have been degraded down in size as well as tiny plastic "micro-beads" used to exfoliate skin in soaps, creams and other products, which are deliberately designed to be washed down the drain.

8 "We know that a range of organisms will eat these microplastics and the prevalence in populations of some species may reach 80 per cent," he said. "Microplastic beads may also lead to the transfer of chemical contaminants into the animals that ingest the plastic. This is in addition to the physical damage done by the plastic itself."

9 Professor Law, a marine biologist at the Sea Education Association in Woods Hole, Massachusetts, was one of the first to describe the widespread plastic contamination in the North Atlantic Ocean from data gathered over more than 25 years. She said: "Our scientific understanding of this environmental problem is accelerating rapidly, with many new research efforts that go well beyond simply documenting the presence of plastic in the ocean."

10 The problem is not insurmountable, Professor Thompson said, as long as people are aware of how important it is to limit the amount of plastic waste that is needlessly thrown away. "We all use plastics every day, so whether it's a plastic bag we choose not to take home from the supermarket or a bottle that we recycle, ultimately it will be the collective actions of the many that will make the difference," he added.

11 The Marine Conservation Society said recent figures show the amount of plastic waste on British beaches – from plastic bottles and carrier bags to condoms and nappies – is now higher than at any time over the past 20 years. The charity hopes to recruit 10,000 volunteers this summer to help clear the waste in a mass-participation "Great British Beach Clean".

12 A survey by the society last year found an average of 2,309 pieces of litter for every kilometre of coastline – a 10-year record, it said.