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HELMHOLTZ-ZENTRUM FÜR POLAR- UND MEERESFORSCHUNG

Marine Litter

"We need to make fundamental changes"

AWI experts discuss the EU ban on disposable plastics

[26. October 2018] **The EU wants to ban single-use, disposable products such as drinking straws and ear swabs, the goal being to reduce the amount of plastic litter in our oceans. We discussed this initiative with two experts from the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) – Dr Melanie Bergmann and Dr Lars Gutow.**



The oceans constitute the largest ecosystem on Earth, and are home to some of its most diverse and exotic habitats. But even on the seafloor of the Arctic Ocean, in sea ice, and on the beaches of remote islands, we find large quantities of litter. Accordingly, the fact that the EU is now taking action to reduce the amount of marine litter is a positive and important development. We should start with plastic, since it accounts for some three-fourths of all marine litter. And focusing on single-use products such as drinking straws, ear swabs and disposable plates seems sensible at first sight, as they make up a large percentage of the litter on beaches. Above all, however, polluting the oceans with these disposable products, many of which could easily be replaced, is completely unnecessary. As such, it is right to strictly regulate the mass production of items that cannot be reused.

Saying goodbye to disposable dishes and plastic straws is comparatively easy. But in order to make a truly meaningful contribution to reducing marine pollution, we have to ask ourselves if this step goes far enough. We now know that, in addition to single-use products, the excessive manufacture and use of packaging are a major part of the problem. We also know that a number of less obvious sources also contribute to this pollution; the rubber worn off of automotive tyres, and microfibres released from synthetic clothing during laundering are just two examples. There is also the dilemma of trying to keep a steadily growing population fed, while knowing that industrial fishing is not only decimating fish populations around the world, but that lost fishing gear also makes up a massive part of marine litter. And lastly, we have to bear in mind that, while 75 to 80 percent of that litter is made of plastic, the remainder – which consists of glass, metal and various other materials – now amounts to an estimated 50 million tonnes.

Through our behaviour and choices, we consumers can make an important contribution to reducing marine litter. Above all, however, it is up to the commercial and industrial sectors to introduce innovative approaches that pave the way for production that pursues the sustainable use of resources, not just maximum short-term revenues. This also includes optimising recycling

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technologies, so that raw materials can be reused as long as possible. With the pollution of the oceans, we human beings are confronted with an environmental problem that, just like climate change, has no simple solution. In order to effectively tackle this global problem, political decision-makers, the industry, and common citizens, as well as the scientific community, will have to tread new paths; and this will mean critically reassessing and in some cases abandoning familiar structures and behaviours. If we want to substantially reduce the amount of litter in our oceans, we need to make fundamental changes. Living without plastic straws is only the first step.

FAQ: 5 Questions, 5 Answers

How much litter ends up in the oceans every year?

That is not an easy question to answer. The current estimate is roughly 8 million tonnes of plastic litter per year from land – in other words, three-fourths of all the litter in the oceans. But we only know the land-based input; we don't know how much is dumped directly into the oceans – for instance, from ships or oil platforms. Our fieldwork on uninhabited stretches of shoreline on Spitsbergen in the Arctic indicates that, in some cases, the sea-based input from commercial fishing accounts for over 90 percent of the litter. And in the so-called North Pacific Garbage Patch, 46 percent of the garbage is plastic from fishing.

Were the right products chosen for the ban?

The draft plastic strategy is definitely a first step in the right direction, but many sources of pollution are not yet taken into account. For instance, a large portion of microplastic is produced on our streets, by normal wear and tear on tyres and shoe soles. Every time we wash clothing of synthetic materials, countless microscopic plastic fibres are released, which our water treatment plants cannot yet retain completely. To catch these fibres, we would need additional legal regulations on water treatment, like those issued in the context of the Urban Waste Water Treatment Directive back in the 1990s.

Another option would be to achieve a reduction in the amount of synthetic clothing using a combination of legal restrictions and incentives, which could also have a positive effect on human health, since we probably also inhale these tiny plastic fibres. In addition, the tremendous amount of disposable packaging – especially in the food and drink industry – still is not sufficiently reflected. The World Bank projects a rise in global waste production to 3.4 billion tonnes per year over the next 30 years – including 12 percent plastic – and the burning, transport and biological decomposition of waste contributes significantly to our greenhouse-gas emissions. Given these aspects, it quickly becomes clear that avoiding waste will also be essential to achieving our climate targets.

Why is commercial fishing part of the problem?

In many waters around the world, fishing equipment accounts for a very large percentage of the litter. Though this problem is also mentioned in the Plastics Strategy, we feel it doesn't offer enough solutions. That's unfortunate, because old fishing nets that are lost or disposed of in the ocean are ultimately fatal for many marine organisms. Moreover, the carcasses of the first fish to become trapped in the nets subsequently attract other animals; as a result, the gear effectively keep 'fishing'. Also, large quantities of plastic fibres from fishing nets, dolly rope, can be found on our beaches and in the stomachs of many marine organisms, like the Norwegian lobster, a favourite seafood here in Europe.

From a scientific standpoint, what would be the next important steps to take?

At the moment, global plastic production is growing by circa 4 percent per year. This trend can only be reversed if industry, for instance, reduces the use of

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packaging materials and consumers make a conscious choice to avoid plastic. One approach would be to use plastics that are truly biodegradable more intensively. Though we already have compostable plastic, it does not break down sufficiently. Further, biodegradable plastic doesn't always find its way to industrial composting facilities, and even when it does, microparticles or fibres are left behind.

In our view, we need to take a critical look at all packaging and products. What types of packaging can we do without? And how do transport chains need to be adapted so as to make that possible? What packaging and products could be replaced with sustainable alternatives, without producing new monocultures in the agricultural sector? In addition to recyclable bottles and deposit-refund systems, where else can we switch to alternative, environmentally friendly materials? In cases where plastics are truly the only feasible choice, then recyclable, that is, mono-material plastics should be used. This will all take a great deal of research and binding legal regulations, since the plastics industry is not going to take any action on its own; after all, it has a great deal to lose.

If we can get to the point where plastics can be optimally reused, while taking into account the complete energy cycle involved, then the tremendous amounts of plastic waste will mean that much less new plastic needs to be produced. It is also important that the litter produced on board ships does not end up in the oceans. Here, a "one-fee system" for all European harbours – essentially a flat rate for the litter they'll generate – could help, as it discourages dumping litter overboard.

What can each of us do to combat marine litter?

In this day and age, living without plastics is hard to imagine and virtually impossible to put into practice. Generally speaking, everyone should seek to limit their plastic consumption and, when purchasing new products, make sure that their service life is as long as possible, and that they come in as little packaging as possible. We also consider environmental education to be particularly important. It is particularly important that we teach children and adolescents about the risks of plastic waste, and about alternatives to plastic, so as to achieve a long-term change in consumer purchasing behaviour. In this regard, international litter clean-up campaigns are a promising option; while these campaigns on coastlines and rivers do not generally remove that much litter from the environment on a large scale, their educational value is exceptional.

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