

## Interview

## 'Microbes colonise on Plastic'

### An interview with Ms. Jenna Jambeck

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'Beat Plastic Pollution' was the theme for 2018 World Environment Day. Jenna Jambeck, an environmental engineer teaching at University of Georgia (USA), researched the quantum of plastics that ends up in the ocean. She's now extending her research with a National Geographic grant.

**Q. What is the proportion of plastic in solid waste and how does it find its way into oceans?**

A. Plastic in solid waste is about 10-13% globally. We estimated how much is mismanaged globally, by which we mean inadequate waste management systems and litter. So that estimate for 2010 in terms of what was actually entering the ocean was 8 million tonnes of plastic. That's the big picture.

Some of it floats and some of it sinks. Marine life interacts with it in various ways. Sometimes it is ingested. There are microbes that colonise on plastic to make it smell like food to seabirds. These animals are potentially in our food web. We don't really know the impact. We are not sure of the human health impact at this point in time.

**Q. How many centuries does it take to degrade plastic that's settled in the ocean bed?**

A. We don't know because none of us has been around long enough. We know at the bottom of the ocean there's not a lot of microbial activity. For me, it's forever.

**Q. Plastic as material is essential to our way of living. Are there ways to make it more recyclable or replaceable?**

A. Partly why we see the leakage that we see is because it doesn't really have value at end of life. You could redesign products so that they are more valuable. The material can play a role too. Looking at alternative materials and product design is definitely one of the ways to change something. That alone is not the solution because we only have 9% recycling and 80% is ending up in the landfill or environment. And if you just switched over to recycling from the landfill but didn't reduce leakage, you wouldn't really have solved this problem. However, the reason we talk about recycling is because value of the material being recycled can increase, which tends to reduce leakage.

**Q. Why does India recycle a far higher portion of plastic as compared to the world average?**

A. This is just a hypothesis: There is a very large informal waste management sector here and that is something to be aware of when you are thinking of this issue. A lot of the waste gets picked informally. And there are higher recycle rates because it has value to someone.

**Q. As a society, we generate a lot of religious waste. How difficult do you think it will be to change this habit?**

A. It is very much about how people behave. If there is something about your culture that is important to everybody and you need to preserve it you'd want to think of a different material. Before the early 1900s we did not have plastic and culture has been around much longer.

**Q. Is microplastic the new fear as it is most likely to get into the human food web?**

A. Yes, because of its shape and size. Most microplastic is coming from a larger plastic item that is breaking down into fragments. But microbeads are in the cosmetic products—face wash, body wash, even toothpaste. So, if you see polyethylene on the back of the container then it contains microbeads. Not every country in the world has banned it. So, that would be something good for citizens to be aware of, otherwise there will be a whole bunch of spherical microplastics ending up in the drain being washed off.

**Q. Have corporations begun to change the way plastic is being used to keep it within the cycle?**

A. The circular economy is certainly a concept that people are talking a lot about. Some corporations have really started to come forward to say we're going to make these commitments for recycled products, making sure it gets captured for recycling—sort of sharing the responsibility of managing the waste from their products which they hadn't been active in previously. This extended producer responsibility is a concept that people are taking up around the world.

**Q. What materials can replace plastic?**

A. We already have paper. There are polymers that are truly biodegradable. Right now in the market there are polymers that are compostable—which is different than totally biodegradable. Unfortunately, we have had some mislabelling of biodegradable plastic around the world. It is not in the market quite yet, but it is under development and very close to being on the market.