



There are now 46,000 pieces of plastic in every square mile of ocean | Photo source [Sergei Tokmakov on Pixabay](#)

[Innovation](#) > [Science](#) > [Water-resistant and biodegradable plant-based plastic](#)

WATER-RESISTANT AND BIODEGRADABLE PLANT-BASED PLASTIC

● SCIENCE

A new plant-based plastic is water-resistant, stronger than other plastics and biodegrades in seawater

Spotted: The marine life in our oceans is choking on plastic. There are now said to be 46,000 pieces of plastic in every square mile of the ocean – and the total is increasing by around 8 million pieces of plastic every day. Although plastics that biodegrade in water are already in use, a group of researchers at Japan’s Osaka University have pointed out that these are expensive, poor quality and can only be manufactured in small amounts.

However, the researchers at Osaka have developed an alternative type of plastic which is not only biodegradable in seawater but is also water-resistant under normal use. The plastic is made from cellulose nanofibers and starch, both of which were extracted from plants.

The researchers have developed a process that can improve the water-resistance and strength of the composite so that it could be used in the same way as petroleum-based plastics. However, the plastic also breaks down after an extended period in seawater. By using low-cost, plant-based materials, the cost of the plastic is kept low. At the same time, fewer greenhouse gases are emitted, because no petroleum products are used.

Researcher Associate Professor Taka-Aki Asoh emphasised the expectation that the new plastic will help reduce marine pollution, [saying](#): “Since we were able to develop a marine biodegradable plastic sheet by combining familiar materials such as starch and cellulose, because these materials are cheap, and the manufacturing process is simple, we can expect that the developed material will be put to practical use soon.”

The new biodegradable plastic is a promising development. We have seen this echoed in the growth of other biodegradable materials, including a biodegradable [3D-printer resin](#) made from used oil, edible [coffee cups](#) and even compostable [sunglasses](#).

Explore more: [Science Innovations](#) | [Sustainability Innovations](#)

27th March 2020

Website: resou.osaka-u.ac.jp

Takeaway:

With an estimated 88 per cent of the ocean surface already polluted with plastic waste, it is vital to find efficient replacements for the material as soon as possible. The biodegradable plastic developed in Osaka is cheap to produce and can be manufactured in large amounts, possibly making an excellent option for replacing petroleum-based plastics. Not only could it contribute to a reduction in marine pollution, but the new plastic could also help lower greenhouse gas emissions – a double win for the planet.