

# Preventing 'oceans of plastic soup'

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Garbage

Approximately 8 million metric tons of plastic waste washes off land into the ocean each year. Bottle caps, toothbrushes, tiny plastic fragments, filaments, pellets, film and resin float about in the water columns.

The swirling soup of [plastic](#) debris forms 'islands' at the surface and all but clogs the Pacific's north eastern gyre. Resesarchers call it the Great Pacific Garbage Patch.

Captain Charles Moore discovered it in 1997. After two years, he founded Algalita, a pioneer in the study of [plastic pollution](#) and its impacts on marine life and ecosystems.

Katie Allen, Education Director of the non-profit organisation, advocates prevention and treatment measures. "Redesigning [plastic products](#) to be valuable and sustainable is our biggest leap toward prevention. When designed in cradle-to-cradle systems, plastic products have a much better chance of being recovered and recycled. Also, better product design may ease many of the challenges plastic recyclers face."

Developing bio-sourced materials for biodegradable food packaging has been the aim of the research project EcoBioCap. The project team used by-products of the food industry such as olive mill waste waters and cheese whey.

The bacterial fermentation of these liquids resulted in microbial polyesters called polyhydroxyalkanoates (PHA). PHA is, however, expensive to produce, so the researchers used it only for the outside layers of the packaging.

In between these layers they used available fibre-based fractions from solid byproducts like wheat straw, brewing grains and olive pomace. The composite materials were then thermo-moulded into a package shell that can be used for fresh vegetables, fruit and cheese.

"The combination of PHA and the filling agents not only reduces the cost of the resulting bio-composite by 30 percent," says Prof. Nathalie Gontard, from the Institut National de la Recherche Agronomique (INRA) in France, "It also adds the desired gas and water permeability this kind of packaging solution for fresh foods requires, without the need for extra micro or macro perforations."

However, just because a product is bio-sourced and biodegradable doesn't necessarily mean it is better for the environment.

Bruno De Wilde, lab manager at OWS (Ghent, Belgium), which does biodegradability analyses in its climate chambers, gave us some insight into the matter. He explains that not all biopolymers are biodegradable.

For example, Green PET, made from sugar cane, is chemically identical to classic PET, the most common plastic used for beverage containers.

On the other hand there are also petrol derived polymers that are biodegradable, such as PBAT, used for plastic bags, wraps and antibacterial film.

Another category is the so-called oxo-degradable plastics, used for checkout bags, flexible packaging and plastic sheets to protect crops and to inhibit weeds.

Oxo-degradable plastics contain inorganic additives — metal salts — that are triggered by oxygen and U-V light and cause the plastic to degrade. The plastic breaks down into minuscule particles but there seems to be no proof that this continues to levels which result in complete biodegradation. Consequently, they are not exactly a solution of choice, according to De Wilde.

Finally, the expert warns about micro-plastics used in shampoos and in cosmetics for exfoliation—peeling, facial scrub e.g.—that are not biodegradable. As tiny as they may be, they endure and find their way into the soil, rivers and oceans where they become part of the "plastic soup."

"Sheer madness," says De Wilde. "Why is there no regulation to prevent this from happening? Those plastics could be replaced by

biodegradables."

Recently the U.S. president Barack Obama signed a law to ban the use of these plastic microbeads in rinse-off cosmetics from 2017.

Provided by Youris.com

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