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## NEWS

# This biodegradable plastic bag will self-destruct... whenever you want

**Nicholas Hellen**

Plastic cups, cartons, bottles and wrappers that litter the countryside and choke the oceans are to be manufactured to biodegrade into harmless sludge within less than a year, with a new technology developed by a British company.

The sportswear group Puma will be the first to incorporate a new additive in the production of 160 million plastic bags it uses each year. They will be on sale in southeast Asia in September and in Britain next year.

Biodegradable ice-cream wrappers, bread bags and fast-food cups, straws and lids for household name brands are undergoing testing in Grangemouth, Scotland, according to Polymateria, a British firm spun out of Imperial College London, and chaired by Marc Bolland, the former Marks & Spencer boss. The firm is also working with a global brand to

make biodegradable PPE masks.

In a breakthrough that holds out hope of mitigating the ecological disaster scientists predict will be triggered by a vast and growing mountain of plastic waste, the company has shown that a rigid plastic container made with the additive takes 336 days to biodegrade into carbon dioxide, water and biomass; plastic film takes 226 days.

Marcus Gover, the chief executive of Waste and Resources Action Programme (Wrap), an independent group that works with government and industry to reduce plastic waste, said: "I'm excited by it. I'm keen to see how we can use it the best way we can."

There has been a 20% surge in the volume of plastic waste produced by UK households during lockdown, according to Veolia, the waste management giant. The pandemic has derailed the

war on single-use plastic, because using it has become unavoidable to maintain good hygiene.

The invention promises to tackle the blight of plastic dumped in the open. Keep Britain Tidy said small plastic bottles accounted for a quarter of all litter. Niall Dunne, chief executive of Polymateria, said a third of all plastic ended up in nature.



**A third of plastic is dumped**

Last week an academic study funded by the US-based Pew Charitable Trusts found that 1.3 billion tonnes of plastic were destined to be dumped into the environment by 2040 on current trends.

Of polyethylene and polypropylene made with the new additive, Dunne said: "The packaging has a 'recycle by' date by which it will start the process of returning to nature."

Puma's shopping bags will be programmed to last for 18 months, he said, but an ice-cream wrapper will have a very short life. "You're not going to reuse it. It's going to be disposed of responsibly or littered. At that point it starts to feel waxy. That date may be as precise as May 2021 and stamped on the packaging," said Dunne. The life of the product will be extended in countries with a better record for reusing plastic.

There is a risk that litter louts will behave even worse if they know that plastic will

turn into a harmless natural product. Dunne said that even for bread bags, which are often thrown out, the "recycle by" date will be a year to encourage people to do the right thing.

Dunne said there was no risk of forgotten packages decaying in the home because biodegradation was only triggered outdoors by a combination of UV light, moisture and microbes.

The additive can be used in existing production lines, so it could rapidly change the way the disposable plastic we use is made.

Frederic de Mevius, of the AB Inbev brewing dynasty, and a director and investor in Polymateria, said: "Within two to five years we will be supplying the 20 to 50 largest brands that are responsible for plastic pollution. So it can actually go very fast." Puma did not respond to a request for comment.

*Additional reporting:  
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