

The Single Use Plastics Directive: Is it in Jeopardy?

The following organisations and companies endorse this position paper:



In June 2019, the European Union (EU) adopted the Single Use Plastics Directive, a groundbreaking legislative measure regulating a range of single use plastic (SUP) products most commonly found as litter on European beaches. The Directive has been widely acclaimed as an example of global leadership by the EU on a matter of world-wide significance and has heavily influenced the policies of governments on every continent.

The pollution of nature by single use products made from environmentally persistent materials has become a major focus of public and political attention in recent years. There are particular concerns about plastic pollution in the oceanic environment, where clean-up is incredibly challenging and the impacts on marine life and ecosystems can be catastrophic. However, the Directive's focus on 'plastic' has revealed a problem that may render it powerless to deliver on its objectives.

Loopholes

The Directive includes seven categories of measures to be applied to different types of SUP products, ranging from outright bans to mandatory separate collection targets and broad extended producer responsibility (EPR) requirements. Unfortunately though, it seems that the Directive's definition of 'plastic' may have a fatal flaw, as it includes a 'get out' for "natural polymers that have not been chemically modified". Depending on how this is interpreted, material substitution loopholes could be opened in every product category regulated under the Directive.

For example:

- Plastic cotton bud sticks, forks, knives, spoons and chopsticks, plates, straws, beverage stirrers, balloon sticks and some types of takeaway containers including cups (all subject to EU-wide bans from 2021) can all be made from PHAs, a novel group of polymers produced by microorganisms;
- Beverage containers that will be subject to minimum recycled content requirements, cap tethering and a 90% separate collection target can also be made from PHAs;
- Wet wipes and cigarette filters that will be subject to EPR (including litter clean-up) and consumer behaviour change requirements can be manufactured from man-made cellulosic fibres such as viscose and lyocell.

Reliable evidence does not exist that these alternative materials offer materially better outcomes compared to traditional plastics when released into the environment. Although biodegradable in certain circumstances, they are not environmentally benign and may well persist for considerable periods in some situations, giving rise to the same environmental impacts that the Directive seeks to address. Therefore, until it can be demonstrated that switching to alternative polymers would lead to significantly better outcomes if released into the environment, they should remain in the Directive's scope and regulated alongside synthetic plastics.

The Size of the Problem

At a very practical level, the lack of clarity on the Directive's scope could lead to inconsistent and chaotic implementation by Member States and complete confusion for consumers. Single use products made from some materials could be banned or subject to EPR in some EU countries, but freely available and unregulated in others. This would severely compromise the single market, with the trade of banned products being restricted between Member States and significant price and competition distortions as some countries impose full cost recovery EPR on their producers whilst others are allowed exemptions for perhaps a wide range of products. Recycling systems would have to sort through a considerably wider range of materials, some of which would not be recyclable or compostable using currently available technology, leading to even greater levels of contamination. Producers would be left to choose between engaging positively with environmental regulation and seeking competitive advantage through exploiting loopholes, with several of these substitutions being operationally straightforward and based on mature and commercially scalable technology.

More importantly, such exemptions could lead to the avoidable leakage of billions of persistent single use items into the environment. A wide range of products from wet wipes to bottles and disposable plates and cutlery could be labelled 'non-plastic', causing confusion for citizens and retailers and severely undermining the crucial behaviour change objectives of the Directive. Producers would be able to switch away from traditional materials and avoid regulation, while at

the same time making environmental claims that cannot currently be substantiated. EPR costs would only be shared between those producers still using non-exempt materials, further incentivising substitution as the concentration of these costs could render traditional materials fundamentally uncompetitive. In the end, the Directive would have no teeth and therefore no impact.

A Return to the Directive's Intent

The primary purpose of the Directive is: "...to prevent and reduce the impact of certain plastic products on the environment, in particular the aquatic environment, and on human health...". In line with this, until scientific evidence shows that alternative materials do not require regulation to prevent or reduce impact on the environment,

Member States should base any exemptions on the following guidelines, which are consistent with existing EU policy and ECHA guidance:

- **A restrictive, precautionary approach should be taken, with scientifically robust evidence of substantial benefit being required before an exemption is made;**
- **Natural polymers should be defined as polymers in which polymerisation has physically taken place in nature, not in an industrial setting, irrespective of whether polymerisation is as a result of the activity of naturally occurring microorganisms or enzymes; and**
- **Chemical modification is a binary process. It either has or has not occurred and whether the modification was or was not intended is an irrelevant distinction; and modification at any point in the production process should be considered to be a chemical modification.**

To assist Member States with clear and consistent implementation, practical guidelines should state that cotton and wood pulp products such as paper and cardboard are exempt from regulation under the Directive, but other polymers are assumed to be in scope.

In the future, where scientific evidence demonstrates that certain materials regulated under the Directive are sufficiently benign in the environment to cease to present a significant risk to natural habitats or human health, the scope can be amended accordingly.

PHAs



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Man-Made Cellulosic Fibres



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¹ Phade PHA straws <https://www.phadeproducts.com/>

² Nestlé & Danimer Scientific Water Bottle <https://www.plasticstoday.com/packaging/nestl-taps-danimer-scientific-pha-biodegradable-water-bottle-development/183546001060374>

³ Pepsico & Danimer Scientific PHA Potato Chip Bag <https://www.plasticstoday.com/packaging/compostable-snacks-packaging-snags-bioplastic-award-danimer-scientific-pepsico/83659095059493>

⁴ Mirel PHA single use cutlery, hot beverage lid and other rigid plastic products <http://www.mirelplastics.com/markets/>

⁵ Bluepha PHA cutlery <http://en.bluepha.com/pha-bioplastic>

⁶ Happy Planet Wipes <https://www.myhappyplanet.co.uk/>

⁷ Green-Butts cigarette filters <https://www.green-butts.com/and>
<https://patentimages.storage.googleapis.com/c8/ef/d6/15da496b6133eb/US20150374030A1.pdf>

Recommended Reading

- Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment. (2019) <https://eur-lex.europa.eu/eli/dir/2019/904/oj>
- Guidance for the implementation of REACH, Guidance for monomers and polymers. European Chemical Agency. Version 2.0. ECHA (2012) https://echa.europa.eu/documents/10162/23036412/polymers_en.pdf/9a74545f-05be-4e10-8555-4d7cf051bbed
- What is Plastic? A Summary Report Exploring the Potential for Certain Materials to be Exempted from the Single Use Plastics Directive (Eunomia Research & Consulting, 2020) <https://www.eunomia.co.uk/reports-tools/what-is-plastic-summary-report/>
- Biodegradable plastics & marine litter: misconceptions, concerns and impacts on marine environments. Kershaw, P. J. (United Nations Environment Programme, 2015) [https://wedocs.unep.org/bitstream/handle/20.500.11822/7468/-Biodegradable Plastics and Marine Litter Misconceptions, concerns and impacts on marine environments-2015BiodegradablePlasticsAndMarineLitter.pdf.pdf?sequence=3](https://wedocs.unep.org/bitstream/handle/20.500.11822/7468/-Biodegradable%20Plastics%20and%20Marine%20Litter%20Misconceptions,%20concerns%20and%20impacts%20on%20marine%20environments-2015BiodegradablePlasticsAndMarineLitter.pdf.pdf?sequence=3)
- It's complicated: A guide to biodegradable and compostable plastic products and packaging. wasteMINZ New Zealand. (2019). <https://www.wasteminz.org.nz/wp-content/uploads/2019/03/Its-complicated-guide-Final-2019.pdf>
- Disintegration behaviour of bio-based plastics in coastal zone marine environments: A field experiment under natural conditions. Science of The Total Environment 688, 208–223. Briassoulis et al. (2019). <https://www.sciencedirect.com/science/article/pii/S004896971932697X>
- Why biodegradables won't solve the plastic crisis. Oakes, K. (BBC, 2019) <https://www.bbc.com/future/article/20191030-why-biodegradables-wont-solve-the-plastic-crisis>
- Biodegradable plastics: testing can help inform most appropriate end-of-life options, but also reveals environmental concerns. Smith, C. (2019) https://ec.europa.eu/environment/integration/research/newsalert/pdf/biodegradable_plastics_appropriate_end_of_life_options_environmental_concerns_526na3_en.pdf
- When Microplastic Is Not Plastic: The Ingestion of Artificial Cellulose Fibers by Macrofauna Living in Seagrass Macrophytodebris, Environmental Science & Technology, Vol.49, No.18, pp.11158–11166. Remy et al. (2015) <https://pubs.acs.org/doi/10.1021/acs.est.5b02005>
- Assessment of measures to reduce marine litter from single use plastics: Final report and Annex, ICF Consulting and Eunomia Research & Consulting (2018) http://ec.europa.eu/environment/waste/pdf/Study_sups.pdf
- Microscopic anthropogenic litter in terrestrial birds from Shanghai, China: Not only plastics but also natural fibers, Science of The Total Environment, Vol.550, pp.1110–1115, Zhao et al. (2016) <https://www.ncbi.nlm.nih.gov/pubmed/26874248>