

## PLASTICS, MARINE LITTER AND CIRCULAR ECONOMY – PRODUCT BRIEFINGS

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# POLYSTYRENE

Polystyrene is widely used in packaging but is also commonly found as marine litter on our coastlines and in the oceans. As well as being unsightly, once in the marine biosphere, polystyrene threatens biodiversity, and also brings about a number of negative socio-economic externalities. The characteristics of polystyrene result in it fragmenting rapidly but then enduring for a long time in the environment. This brief advocates for the application of circular economy tools within the Plastics Strategy to reduce the unsustainable use of polystyrene in everyday products, encourage take back, collection and recycling, and help to prevent this form of pollution.

## What is polystyrene and in which products can it be found?

- Polystyrene, also known by its most common brand name Styrofoam, is a petroleum-based, non-renewable plastic made from the styrene monomer, which can result in significant pollution if not properly managed.<sup>1</sup>
- Products made from this material include cups, cool boxes, fish boxes, buoys, floats, utensils, foamed meat trays and take-away food packaging.
- Lightweight plastics of this kind reach the ocean from both inland urban areas (litter and wind-blown waste from landfills) and in-ocean activities (fishing).<sup>2</sup>

***58.3% of the macro-plastic weight in all 5 sub-tropical gyres between 2007 and 2013 is from derelict fishing buoys.***<sup>3</sup>

## Why is polystyrene a problem?

- **Environmental impacts** – small components of polystyrene, found on the surface and throughout the water column<sup>4</sup>, are likely to be ingested by marine organisms and therefore represent a threat to marine life. If ingested, the pollutant can compromise the quality of catch.
- **Social impacts** – risk to public health from eating fish and shellfish that have ingested fragments of polystyrene.
- **Economic impacts** – chemical contamination risks to human health, even though unclear, can cause a drop in the demand for and/or in the value of fish, leading to losses to the fisheries and aquaculture sector. The presence of marine litter on beaches reduces tourism and recreation activities.<sup>5</sup>

***“The total cost of marine litter to the EU fishing fleet is USD 81.7 (EUR 61.7) million per year”.***<sup>6</sup>

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## European polystyrene production consumes around 36,500 barrels of crude oil per day.<sup>7</sup>

### What solutions are there to the problem?

#### ***Action on polystyrene – Key Examples!***

- 1991: The German Green Dot scheme includes polystyrene collection
- 2011: The Belgian Foundation for Sustainable Fishery Development proposed a “Fishing for Litter” campaign to encourage fishermen to deliver the litter found with their catch to the three Belgian fishing ports. 60% of fishermen participate in this voluntary cost-sharing programme.<sup>5</sup>
- 2011-2012: The Korean Ministry of Ocean and Fisheries provided financial support to local governments to install Styrofoam compactors, and to fishermen to replace old buoys with high-density, less degradable buoys.<sup>8</sup>
- 2014: Washington D.C. banned food service products made of expanded polystyrene.<sup>8</sup>
- 2016: Guyana banned the use and import of expanded polystyrene (EPS), which accounts for 2-5% of the country’s flow of waste.<sup>8</sup>
- 2016: The San Francisco Board of Supervisors voted in favour of a ban on commonly used Styrofoam products, including polystyrene food packaging, packing peanuts, take-away containers, coffee cups and pool toys. The ban will come into force in January 2017.<sup>9</sup>

### How does this link to the circular economy package?

Polystyrene is closely linked to the EU Circular Economy Action Plan because it contributes to marine litter and represents a threat to the environment and the economy. Polystyrene should be considered within the Commission’s forthcoming Plastics Strategy in line with its commitments to address issues such as recyclability and marine litter. Reuse enhances material productivity in a circular economy but the recycling rate of polystyrene products is currently very low. Although it is possible to recycle this material, the food contamination from its uses and its low-density make it uneconomical to do so.<sup>10</sup> Action aimed at reducing the unsustainable use of polystyrene can be directed towards the promotion of awareness over the issues concerning its recyclability, the economic losses associated with it, and research on more sustainable alternatives. Legislative instruments that aim to reduce waste and its impacts, and to encourage more sustainable consumption patterns can be implemented.

### Policy recommendations

- Prioritise action to reduce and substitute polystyrene products in the Commission’s forthcoming Plastics Strategy.
- Support research on alternatives to polystyrene, including less polluting materials for buoys, cooling boxes and food packaging.
- Introduce legislative bans and taxes on common polystyrene products (food packaging, cups, cooling boxes) to reduce unsustainable use.
- Incentivise recycling of packaging products made from polystyrene through EPR.
- Implement reward-based programs to incentivize clean-up activities and provide appropriate port reception facilities for fishermen.
- Promote awareness of the environmental, social and economic impacts of polystyrene and provide information on oil consumption associated with production.

#### References

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9. Relley K., 2016. Available online. (Accessed on October 6<sup>th</sup>, 2016): <http://time.com/4388034/san-francisco-polystyrene-ban-foam/>
10. Ellen McArthur Foundation, (2016), The New Plastics Economy: Rethinking the future of plastics.

#### USEFUL LINKS

Earth Resource Foundation Report:  
<http://www.earthresource.org/campaigns/capp/capp-styrofoam.html>

UNEP Marine Litter Vital Graphics:  
<http://staging.unep.org/docs/MarineLitter.pdf>

WEF New Plastics Economy Report:  
[http://www3.weforum.org/docs/WEF\\_The\\_New\\_Plastics\\_Economy.pdf](http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf)

UNEP Marine Plastic Debris and Micro-plastics Report:  
[http://www.unep.org/gpa/document/s/publications/Marine\\_Plastic\\_Debris\\_and\\_Microplastic.pdf](http://www.unep.org/gpa/document/s/publications/Marine_Plastic_Debris_and_Microplastic.pdf)

Challenge for Sustainability:  
<http://challengeforsustainability.org/toolkit/waste-reduction/eliminate-styrofoam/>

Eunomia Measures to combat a range of marine litter sources:  
<http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/MSFD%20Measures%20to%20Combat%20Marine%20Litter.pdf>

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