

Defra consultation: Proposals to ban the use of plastic microbeads in cosmetics and personal care products in the UK and call for evidence on other sources of microplastics entering the marine environment

A response by the Zoological Society of London and the Thames Estuary Partnership, as representatives of the #OneLess campaign

February 2017

The [#OneLess](#)¹ campaign, led by partners in the **Marine CoLABoration**,² is working to reduce ocean plastic pollution by freeing London-on-Sea from single-use plastic water bottles. The #OneLess vision is a city where using a refillable water vessel – rather than single-use plastic water bottles - is the social norm and where there are the systems in place to support this behaviour. The Marine CoLABoration is a group of nine NGOs with wide-ranging interests and areas of expertise working together to increase the impact of solutions to ocean degradation by making a broader range of values - not just short-term economic gain - count in decision-making. We welcome the opportunity provided by this consultation to express our views on the extent of the other sources of microplastics, to inform future UK actions to protect the marine environment.

Introduction

This response is specific to *Part 3: Gathering evidence to inform future UK action on marine microplastic pollution*. Regarding *Part 2: Proposals for a ban on microbeads in cosmetics and personal care products*, we fully support the detailed responses submitted by Fauna and Flora International (FFI) and the Marine Conservation Society (MCS).

As noted in the [consultation document](#), marine plastic pollution is a growing threat to ocean health. It is a burgeoning global issue driven by the exponential increase in demand and subsequent production of plastics. In 2014, single-use plastic represented the largest share of the European plastic market, at 40%, and 7% of this packaging was for PET, typically used for drink bottles.³

Plastic bottles are one of the most discernible items of marine litter. They fragment in the environment as a consequence of prolonged exposure to UV light and physical abrasion, which is particularly evident on shorelines.⁴

¹ The #OneLess campaign (<https://www.zsl.org/one-less>) is supported by the [Calouste Gulbenkian Foundation](#) and the [Oak Foundation](#), and is being implemented by the Zoological Society of London (ZSL) and the Thames Estuary Partnership (TEP) as part of a coalition of organisations, known as the Marine CoLABoration.

² Members of the [Marine CoLABoration](#) include: [Thames Estuary Partnership](#), [Comms Inc](#), [Forum for the Future](#), [NEF](#), [Fauna and Flora International](#), [ClientEarth](#), [Institute for European Environmental Policy](#), [Zoological Society of London](#) and [Marine Conservation Society](#).

³ Plastics Europe (2016) Plastics – The Facts 2016. p21 <http://www.plasticseurope.org/Document/plastics---the-facts-2016-15787.aspx?Page=DOCUMENT&FoID=2>

⁴ Barnes et al., 2009. Accumulation and fragmentation of plastic debris in global environments. *Phil. Trans. R. Soc. B* 364, 1985-1998.

Eunomia estimates that the amount of plastic on beaches globally, where there is a flux of litter between beaches and the ocean, is five times greater than found floating in the sea or on the sea floor.⁵ We agree with Eunomia in that prevention is preferable to cure, and steps are needed to reduce plastic litter on land.⁶ [Defra's Waste Hierarchy Guidance](#) ranks waste management options according to what is best for the environment.⁷ It gives top priority to preventing waste in the first place. Prevention significantly reduces environmental impacts by avoiding the use of raw materials and energy in manufacturing new plastics, in addition to reducing the amount of plastic entering the system, and potentially contributing to marine plastic pollution.

There is an opportunity in the UK to reduce volumes of single-use plastic by tackling the use of single-use plastic water bottles. Recent OnePoll research carried out on behalf of BRITA and MCS found that UK adults used nearly 7.7 billion single-use plastic water bottles in 2016.⁸ In the UK alone, it is estimated that we currently use over 13 billion plastic drink bottles a year – more than 200 per person.⁹ The consumption of bottled water in the UK is rising, with volumes having almost doubled over the past 15 years.¹⁰ Currently just over 55% of plastic drink bottles in UK household waste streams are collected for recycling; the rest go to landfill, incinerators, or end up as litter.¹¹ UK tap water is extremely good quality, and is subject to continuous monitoring and stringent tests.¹² Through the #OneLess campaign, we are encouraging a London-wide switch from single-use plastic water bottles to a refillable culture, with the drinking water infrastructure in place to support this.

Part 3: Gathering evidence to inform future UK action on marine microplastic pollution

Consultation questions on further sources of potential marine microplastic pollution including larger marine plastic debris that breaks down into microplastics, such as plastic bottles and other packaging.

- a. Key sources of microplastics are set out in Part 3: Background. Are any missing or inappropriate? Please provide evidence to support your response.**

Though the key sources of microplastics as stated in *Part 3: Background* cover the majority of the known sources, the list does not reflect the significance of each source in the contribution to the volume of plastics in the marine environment. The consultation document notes that microplastics may be released into the marine environment by the degradation of

⁵ Eunomia *Plastics in the Marine Environment*, June 2016 available here: <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

⁶ Eunomia *Plastics in the Marine Environment*, June 2016 available here: <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

⁷ Defra (June 2011) Guidance on applying the waste hierarchy https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

⁸ The Belfast Telegraph, 16 June 2016, available here: <http://www.belfasttelegraph.co.uk/news/northern-ireland/consumers-challenged-to-give-up-bottled-water-for-a-month-in-bid-to-highlight-pollution-risks-34805373.html>.

⁹ RECOUP UK household plastic collection survey, 2015, available here: <http://www.recoup.org/p/229/2015-uk-household-plastics-collection-survey>

¹⁰ <http://www.foodbev.com/news/uk-consumption-of-bottled-water-rises-8-2-to-reach-3-3bn-litres/>

¹¹ RECOUP UK household plastic collection survey, 2015, available here: <http://www.recoup.org/p/229/2015-uk-household-plastics-collection-survey>

¹² <http://www.legislation.gov.uk/ukxi/2016/614/contents/made>

large items of plastic debris, such as plastic bottles, that fragment and degrade into smaller pieces. A recent report from Eunomia states that over 80% of the annual inputs of marine plastics are from land-based sources, with the main contributor being larger plastic litter and everyday items such as drink bottles.¹³ Despite the durability of plastics, fragmentation is occurring as a consequence of prolonged exposure to UV light and physical abrasion. This is particularly evident on shorelines where photodegradation and abrasion through wave action make plastic items brittle, increasing their fragmentation.^{14,15}

Plastic bottles are one of the most discernible items of marine litter, as illustrated by the following evidence:

1. Plastic bottles were the second most common item collected on the Ocean Conservancy's 2015 International Coastal Clean-up¹⁶
2. During the Great British Beach Clean 2016, plastic drinks bottles were in the top 10 items that were found¹⁷
3. The amount of plastic on beaches globally, where there is a flux of litter between beaches and the ocean, is five times greater than found floating in the sea or on the sea floor¹⁸
4. Thames21 has identified plastic drinks bottles as one of the top three items collected during their litter picks on the River Thames¹⁹
5. Monitoring work carried by #OneLess and Thames21 has shown that 10% of Thames shoreline litter collected is plastic drink bottles, and half of those are water bottles (preliminary data, in preparation)
6. 25% of litter collected in passive debris collectors on the River Thames is plastic drink bottles²⁰
7. Litter in the River Thames flows to the ocean as is evidenced by recent research from The Grantham Institute at Imperial College London²¹

Given the ubiquity of plastic bottles in the marine environment and their fragmentation as they lay in flux on the shoreline, this secondary source of microplastic pollution should not be underestimated.

b. Which sources of microplastic pose the greatest risks to the marine environment? Please provide evidence to support your response.

While it is only a rudimentary assessment of risk based on the relative magnitude of different sources of microplastic to the marine environment, land based large plastic litter is the main

¹³ Eunomia *Plastics in the Marine Environment*, June 2016 available here: <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

¹⁴ Barnes et al., 2009. Accumulation and fragmentation of plastic debris in global environments. *Phil. Trans. R. Soc. B* 364, 1985-1998.

¹⁵ GESAMP, 2015. Sources, fate and effects of microplastics in the marine environment: a global assessment (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p.

¹⁶ The Ocean Conservancy, 2016 *Ocean Trash Index*, available here: <http://www.oceanconservancy.org/our-work/international-coastal-cleanup/2016-ocean-trash-index.html>

¹⁷ http://www.mcsuk.org/what_we_do/Clean+seas+and+beaches/Beachwatch/Great+British+Beach+Clean+results+2016

¹⁸ Eunomia *Plastics in the Marine Environment*, June 2016 available here: <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

¹⁹ <http://www.thames21.org.uk/thames-river-watch-litter/>

²⁰ Unpublished data from PLA

²¹ Van Sebille, et al. 2016. *The ocean plastic pollution challenge: towards solutions in the UK* Grantham Institute, Briefing paper No 19

contributor to marine plastic pollution²². GESAMP²³ has stated that even if it was possible to stop the discharge of large plastic litter into the ocean today, on-going degradation of the larger litter items already in the ocean and on beaches would likely result in a sustained increase in secondary microplastics for many years to come. Research by Barnes et al., 2009²⁴ bears this out by noting that global trends in mega- and macro-plastic accumulation are no longer increasing uniformly. As well they note that the average size of plastic particles seems to be decreasing and the abundance and global distribution of microplastic fragments have increased.

c. How should sources be prioritised for action? Please explain your response.

Those primary sources of microplastics that are easily identifiable and can be eliminated at the source through a change in manufacturing, such as a microbeads-ban, should be the first legislative step to addressing marine plastic pollution. However, as noted by Defra in Part 2 of this consultation, microbeads from personal care products are believed to make up a very small percentage of the total of microplastics entering the marine environment. Therefore, in addition to a ban of the use of microbeads, significant efforts need to be made to tackle the wide range of secondarily derived microplastics. This should include those microplastics derived from the fragmentation of larger land based sources of plastic whose relative magnitude is far greater.²⁵

Eliminating single-use plastic water bottles and improving the infrastructure for drinking water on-the-go, provides an opportunity for a simple solution which can change behaviours that lead to long term reductions in the flow of plastics to the marine environment. Such secondarily derived plastics, from sources that are less sustainably produced and can be improperly managed in the waste stream, are an easy target that should be given priority.

d. What possible interventions could be developed to reduce these risks and how might the cost of these interventions be minimised? What is the likely impact on industry of these interventions? Please explain your response.

As described above, plastic drink bottles are ubiquitous in the marine environment and are a potentially significant source of secondary microplastic pollution. The #OneLess campaign is working to reduce the number of plastic bottles that enter the marine environment from the City of London – a coastal city, linked to the ocean via the River Thames. The vision of the campaign is a city where Londoners are no longer reliant on using single-use plastic water bottles to hydrate and where using a refillable water vessel is the social norm. Key to the success of this approach will be a change at the planning and policy levels to improve drinking water infrastructure across London.

²² GESAMP, 2015. Sources, fate and effects of microplastics in the marine environment: a global assessment (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p.

²³GESAMP, 2015. Sources, fate and effects of microplastics in the marine environment: a global assessment (Kershaw, P. J., ed.). (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection). Rep. Stud. GESAMP No. 90, 96 p.

²⁴ Barnes et al., 2009. Accumulation and fragmentation of plastic debris in global environments. Phil. Trans. R. Soc. B 364, 1985-1998.

²⁵ Eunomia *Plastics in the Marine Environment*, June 2016 available here: <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

This approach has the potential to significantly reduce the number of single-use plastic water bottles that are escaping the waste management system and ending up as marine litter.

The consumption of bottled water in the UK is rising. Volumes have almost doubled over the past 15 years. Consumption rose 8.2% in 2015 alone to reach almost 3.3 billion litres, which equates to more than 51 litres per person per year – with a retail value of £2.5 billion. Plain water dominates: on average each person in the UK consumes 44 litres of plain water and 7.6 litres of ‘water plus’ (flavoured water) annually.²⁶ As stated above, recent research carried out on behalf of BRITA and the MCS found that UK adults used nearly 7.7 billion single-use plastic water bottles in 2016.²⁷

Forecasts are that by 2020, the total water drinks market will stand at volume sales of almost 4.8 billion litres.²⁸ There are a number of emerging product-service design solutions with innovative business models entering the market at present, which have the potential to positively disrupt the way water is delivered in London, to move reliance away from single-use plastic. The #OneLess team is currently working with some of these actors to counter some of the challenges (such as drinking water infrastructure and public perception of tap water) that prevent them creating impact at scale.

Tackling single-use plastic water bottles provides a clear opportunity to significantly reduce the amount of plastic that is contributing to marine plastic (including microplastic) pollution. We recommend that Defra adopts a ‘#OneLess’ policy to help move the UK away from the use of single-use plastic water bottles.

Furthermore, we support the wider and detailed recommendations regarding single-use plastic, outlined in the response to this consultation submitted by Wildlife and Countryside Link.

²⁶ Foodbev.com, UK Consumption of bottled water ‘rises 8.2% to 3.3bn’ in 2015, online article, available here: <http://www.foodbev.com/news/uk-consumption-of-bottled-water-rises-8-2-to-reach-3-3bn-litres/>

²⁷ The Belfast Telegraph, 16 June 2016, available here: <http://www.belfasttelegraph.co.uk/news/northern-ireland/consumers-challenged-to-give-up-bottled-water-for-a-month-in-bid-to-highlight-pollution-risks-34805373.html>.

²⁸ Foodbev.com, UK Consumption of bottled water ‘rises 8.2% to 3.3bn’ in 2015, online article, available here: <http://www.foodbev.com/news/uk-consumption-of-bottled-water-rises-8-2-to-reach-3-3bn-litres/>