

RESPONSEABLE

Key stories



Microplastics and cosmetics

OVERVIEW

Despite them being ubiquitous in our society, we are not always aware of how much plastic there is in the products we consume every day. Consumption patterns, the availability of cheap plastics as well as the durability and flexibility of plastic, has made the material incorporated into many products that we see as integral to our modern lifestyle. This is also true for the personal care and cosmetic products industry, where plastics have been in use for about 50 years¹. Tiny plastic pieces, referred to as microplastic (any plastic particles with size <5mm, thus including nanoplastics etc.), are used in a number of personal care and cosmetic products like toothpaste, skin creams, baby products, sunscreen and shaving cream. Since most of these products are used in the bathroom, they go down the drain as part of household wastewater streams. When proper wastewater treatment systems are absent these particles flow directly into rivers and ultimately, the ocean. But even in the cases where wastewater treatment facilities exist, a considerable amount of the microplastic is still likely to find its way in to the marine environment. Once the plastic reaches the ocean, it represents potential threats to the marine environment. Plastic can absorb and release pollutants, and can therefore act as vector for bacteria and viruses which can be harmful for marine and coastal organisms. For example, studies have found a relationship between the amount of plastic ingested and negative changes in growth or feeding behaviour. While the research on the impact of microplastic is in its early stages, there are some early warning signs about the effects for the environment and for human welfare.

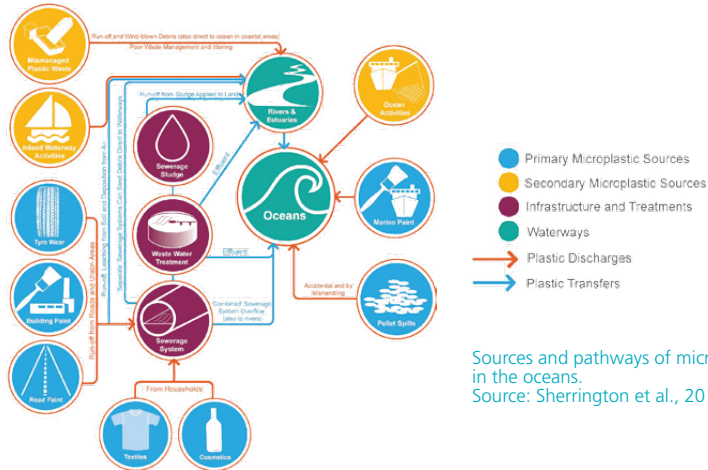
Why is this a key story?

Consumer and citizens

Europeans use personal care and cosmetic products on a daily basis and often several times a day - for our hair, face and body. The use of these products contribute to our social and professional life, be it by making us feel and look good or keeping us healthy. For example, washing our hands with soap reduces the risk of diseases such as diarrhoea, and proper use of sunscreen reduces the chance of melanoma. But our consumption choices not only affect ourselves, they also have a potential impact on the environment. Tiny plastic particles are used in a number of personal care and cosmetic products - in everything from toothpaste to eye-shadow and sunscreen. In some cases, the plastic pellets only represent a fraction of a percent, whereas in others, it can represent more than 90% of the product². There are many reasons for using microplastic as additives in personal care and cosmetic products. They are used in body-scrubs as abrasive agents, to prolong shelf life of a product, and to decrease or increase viscosity of a liquid product³, to name just three examples. Given how widely they are used, it can be hard for the consumer to understand which products contain which ingredients and it is not always obvious what the best options are.

Since many personal care and cosmetic products are bathroom products, their microplastic components end up down the drain. When proper wastewater treatment systems are absent, the microplastic travels with the wastewater stream. However, because these particles are so small, a considerable amount of microplastic is likely to go through the filters and enter the marine environment even where wastewater treatment facilities are in place. The sludge can also be used in agriculture as a fertilizer leading to a wide spread of microplastics on the land.

SEA PRECIS

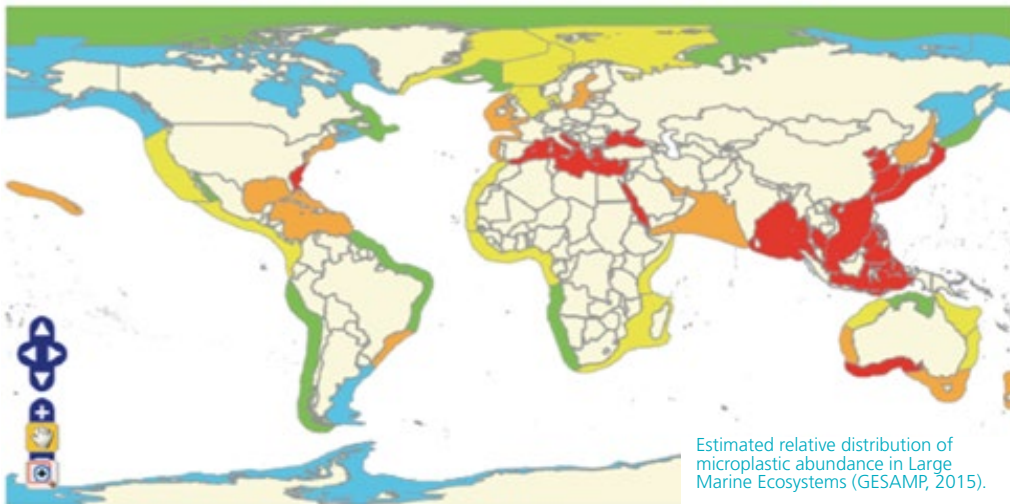


Sources and pathways of microplastics in the oceans. Source: Sherrington et al., 2016.

Many sources of microplastic The scientific community distinguishes between primary and secondary microplastics. Primary refers to the manufacturing of microplastic which is used in several products – such as i) textiles and clothing, ii) terrestrial transportation, iii) plastic producers and fabricators, iv) and ship maintenance and ship dismantling⁴. Secondary microplastics result from the degradation of larger plastic items through the natural process of fragmentation. There are several sources of macroplastic, such as equipment for fisheries, aquaculture and recreational users.

Challenges

Plastics in the ocean Plastic debris, in different sizes and shapes, is found almost everywhere on our planet, from remote geographic regions to densely populated cities. While we can see some of it with our own eyes, it is the nearly invisible quantities of microparticles that are raising alarm bells. Research shows that the amounts of the particles are increasing in all the world's oceans.



Estimated relative distribution of microplastic abundance in Large Marine Ecosystems (GESAMP, 2015).

The environmental and human welfare risks This accumulation presents several risks. Microplastics can act as vectors for pathogenic microorganisms, including bacteria and viruses. The additives from microplastic can leak and become additional pollutants in the natural system. For example, by the additional pollutants becoming associated with plastic particles (i.e. POPs and heavy metals), and specific environmental toxins can latch onto microplastics creating larger, more toxic particles which can be ingested by marine organisms⁵.

Eating microplastics is thought to threaten marine and coastal organisms. While research on the impact of this ingestion is in its early stages, it is possible to see clear warning signs of its effects. For example, scientific studies show the biological effects of microplastic exposure in marine organisms, such as a negative impact on growth or feeding behaviour. This can also affect species that humans use for our seafood consumption, and reports have already found microplastics in seafood such as mussels, shellfish or shrimps. So far, the current knowledge shows no impact on human health but given the impacts on marine fauna, we should assess the situation with precaution.

Responses

There is a growing awareness of the threat marine plastic debris poses to the environment, biodiversity and humans. While there is uncertainty on how much personal care and cosmetic products contribute to the plastic pollution in the marine environment, it is an issue where tangible action is possible.

National bans Regulatory responses to microplastic in personal care and cosmetic products are now occurring both in Europe and outside of Europe. For example, both the United States⁶ and Canada⁷ have issued bans on microbeads in personal care and cosmetics products. In the autumn of 2016, the UK also announced that the UK government is launching a ban on microbeads in cosmetics and personal care products⁸.

Public education There are also increasing examples of social responses in terms of new and cutting edge science, awareness-raising campaigns and public education. Information to consumers on what type of products that includes microplastics, is one example of such public education efforts.

Voluntarily market measures In addition, action is being taken by the cosmetic industry itself. In 2015 the European cosmetic market was the largest in the world (72 bn€) far ahead of the United-States (37,8 bn€⁹). In October 2015 the industry association, Cosmetics Europe, recommended that its members discontinue the use of microbeads in “wash off cosmetic and personal care products for exfoliation and cleansing purposes” as of 2020. There are several examples of top cosmetic producers announcing their decision to phase out plastic microbeads¹⁰ and shift to alternative ingredients.

Opportunities

The Key Story of Microplastics and Cosmetics is an important example of how people unknowingly have contributed to the plastic problem in the oceans through their behaviour as consumers. Plastic has become ubiquitous in our society, and with a globalised economy and value chain processes, it can be hard for the consumer to have the information necessary to take responsible choices.

Equally, the Key Story on Microplastics and cosmetics is important because it highlights several areas where there are gaps in the scientific knowledge, or research is currently being executed. There are important lessons to be drawn from this Key Story as the question remains on how to deal with the precautionary approach and issues like this in similar domains, such as microplastic fibres in clothes and the clothing industry.

The Key Story on Microplastic and Cosmetics also highlights the plastic already in the oceans, and ocean literacy can play a part in the discussions on how to respond to this challenge. ResponSEable offers an assessment of the information available, the economic actors at play and the public perception on this issue, and will lead to « real time » communication of scientific research approaches and insights.

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- 9 Cosmetics Europe (2015) Annual Report
- 10 For examples companies such as L'oréal, Unilever, and Johnson & Johnson.



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This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation (H2020-BG-2014-1) under grant agreement No. 652643. This publication/multimedia product/presentation reflects the views of the author, and the European Union cannot be held responsible for any use which might be made of the information contained therein. The note builds on the ideas and contributions from different partners of the project and is a living document as the project progresses.