CTPA Position on a REACH Restriction on Microplastics in Cosmetic Products

CTPA is the UK trade association representing all types of companies making, supplying and selling cosmetic and personal care products. The Association's role is to advise member companies about the strict legal framework for cosmetics, to represent industry views to UK Government and external stakeholders and provide the science behind cosmetic products and their safety to the media.

1. Summary

- **A restriction on cosmetic products, especially leave-on products, is neither cost-effective nor proportionate.**
- **During the development of the Annex XV REACH restriction dossier, ECHA has not been able to characterise an environmental risk associated with microplastics. The justification for the restriction is based on persistence only.**
- **ECHA estimates that leave-on cosmetic products contribute 2% to the microplastic emissions addressed by the restriction, yet bear 80% of the costs.**
- **The cost-effectiveness ratio for leave-on cosmetic products is calculated in the cosmetics industry SEA to be €7790/kg.**
- **The EU REACH restriction on microplastics will have a very significant impact on the choice and performance of cosmetics available to society; alternative ingredients are not available in 85.5% of cases.**
- **It has been shown that consumers value product performance highly.**
- **The cosmetics industry has already removed plastic microbeads from cosmetic products where they are likely to reach the aquatic environment through voluntary action and UK legislation.**
- **A microplastics restriction will be challenging and expensive to enforce.**

Developing a microplastics restriction in the UK will incur significant costs to regulators, society and the cosmetics industry, whilst providing negligible benefit to the environment.

The Cosmetic Toiletry and Perfumery Association Limited

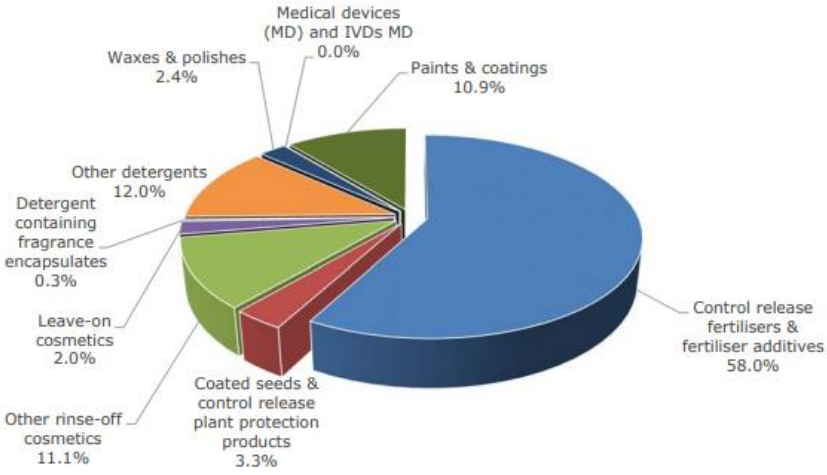
Sackville House, 40 Piccadilly, London, W1J 0DR | tel: 44 (0) 20 7491 8891 | info@ctpa.org.uk | www.ctpa.org.uk | www.thefactsabout.co.uk
Director-General: Dr Emma Meredith | Registered in London No. 398046 | Registered office: as above

2. UK Plastic Microbeads Ban and Voluntary Action

The UK cosmetics industry acted voluntarily to remove plastic microbeads from products where they had the potential to reach the aquatic environment. This activity formed part of a Europe-wide initiative launched in October 2015. As a result, the vast majority of UK cosmetics manufacturers were already well on the way to removing plastic microbeads completely from products before legislation came into force in the UK in 2018. **CTPA worked closely with Defra during the development of the UK legislation banning plastic microbeads in rinse-off cosmetic products, and welcomed the introduction of proportionate, science-based legislation.**

3. Contribution from Cosmetics to Microplastic Emissions

ECHA's Annex XV dossier (ECHA, 2019) estimates the contribution to microplastic emissions from each sector impacted by the proposed Restriction. ECHA's definition of a microplastic refers to a solid, synthetic polymer.



ECHA's Annex XV dossier estimates that the contribution from cosmetics to the microplastic emissions targeted by the restriction is less than 15%.

However, all microplastics in scope of the restriction correspond to approximately 0.2% of the total plastic waste that is disposed without proper control in the EU (ECHA, 2019).

In addition, it is expected that many companies in the UK will be required to reformulate cosmetic products to comply with the EU Restriction, so the contribution to microplastic emissions from cosmetics will be even further reduced.

4. Environmental Hazard and Risk

By expanding the definition of 'plastic' to include any solid synthetic polymer, ECHA's REACH Restriction proposal encompasses a huge range of cosmetic ingredients which have not been shown to pose an environmental risk.

Regarding environmental effects, the primary concern relates to possible adverse effects affecting aquatic biota via non-nutritive contributions to biologically useful energy and physical effects such as an inflammatory response (OSPAR Commission, 2017; Scherer *et al*., 2018). **However, concentrations measured in the environment are several orders of magnitude lower than concentrations required in laboratory experiments to generate adverse effects** (Burns and Boxall 2018; Burton *et al*., 2017; Lenz *et al*., 2016; Scherer *et al*., 2018).

Questions have been raised in the literature regarding the role of microplastics in serving as vectors for exacerbating the uptake of POPs (persistent organic pollutants) by aquatic organisms. State-of-the-science literature that have investigated the relationships of lab-, field-measured and modelled concentrations in media and biota have clearly indicated that **it is highly doubtful that microplastics can serve as vectors** (Burns and Boxall, 2018; Koelmans *et al*., 2016; SAPEA, 2019).

Microplastics are found in the environment and are likely to satisfy persistence criteria. It is however clear that there is sufficient data regarding their lack of bioaccumulation, insufficiency to serve as vectors for PBTs/POPs and the agreement with a solids-based PNEC assessment - to cast doubt on the applicability of considering microplastics as PBTs. There is sufficient information to negate any B and T criteria. **Consequently, microplastics cannot be considered as substances of equivalent concern to PBTs or vPvBs.**

The ECHA justification for including all solid synthetic polymers *"is underpinned on the basis of the similarity of physical chemical properties, morphology and persistence in the environment."* The concept that the restriction proposal is based on persistence rather than risk is further confirmed in the RAC opinion (RAC, 2020) on the restriction proposal, in which RAC *"agrees that microplastics should be considered as non-threshold substances and pose environmental concerns similar to that associated with PBT and vPvB substances. Therefore releases to the environment are considered as a proxy for risk … the aim of the risk characterisation is therefore to demonstrate the magnitude to releases from different uses and determine whether releases have been minimised."*

The EU REACH Restriction proposal is based solely on persistence, rather than environmental risk. Any UK restriction proposal should be a proportionate measure based on the cost-benefit analysis and should include a robust characterisation of the environmental risk.

5. Importance of Solid Polymers

Solid synthetic polymers play an essential role in a huge variety of cosmetic products. Some examples, by no means an exhaustive list, are provided below:

- **Toothpaste** – solid polymers bind together the ingredients in the toothpaste and contribute to its optimal consistency for usability and oral health.

- **Suncare** – Polymers boost the effectiveness of certain UV filters, allowing a lower concentration of the filters to be used. This is beneficial in terms of the ease of application of the product, a less greasy or heavy skin feel, and less skin irritation potential. All of these factors encourage consumers to apply more product and therefore increase UV protection.

- **Deodorant** – solid polymers give the correct consistency to stick and roll-on deodorant formats, and help them to feel smooth and non-irritating on the skin.
    - Polymers bind together compacted ingredients to provide adhesive qualities when compressing products into their finished, compacted form.

- **Skincare** - Polymers offer a combination of benefits to skin care formulations that is not duplicated by any other ingredient or technology.
    - Soft, smooth texture of the product on the skin.
    - 'Dry' finished ideal for consumers with oily skin.
    - Optical benefits to blur skin imperfections.
    - Sebum absorption for shine-control benefits.
    - Product stability – effective at thickening oil-continuous formulations and stabilising oil based emulsions and suspensions. This allows products to be the correct thickness and texture to be used, and will prolong the shelf-life.

- **Make-up** – solid polymers are a vital part of the architecture of make-up, and a very significant number of products in this category will require reformulation. However, most make-up products are removed and disposed of in the bin rather than down the drain.
    - Polymers increase the spreadability of products such as foundation and other colour cosmetics, giving an even, long-wearing finish and a light, non-greasy texture.
    - Polymers help the product last longer by increasing its volume and helping it to be applied efficiently, without compromising on the finished visual result.

Solid synthetic polymers play a fundamental role in the architecture of many cosmetic products and cannot be simply replaced.

6. Reformulation and Alternatives

In the Annex XV report (ECHA, 2019), it is stated that suitable alternatives to microplastics used in all cosmetic products exist. **However, this conclusion is not supported by any evidence nor it is accompanied by a comparative assessment of the technical performance of alternatives.**

Suitable alternatives do not exist in 85.5% of cases and fundamental research and product redesign will be needed. This is not a simple one-to-one ingredient replacement, but recreation of a complex mixture using many alternative substances. **The total cost incurred for reformulation in the 85.5% of cases where no alternatives exist has been calculated as €14.2 billion** (Cosmetics Europe SEA, 2019)**.**

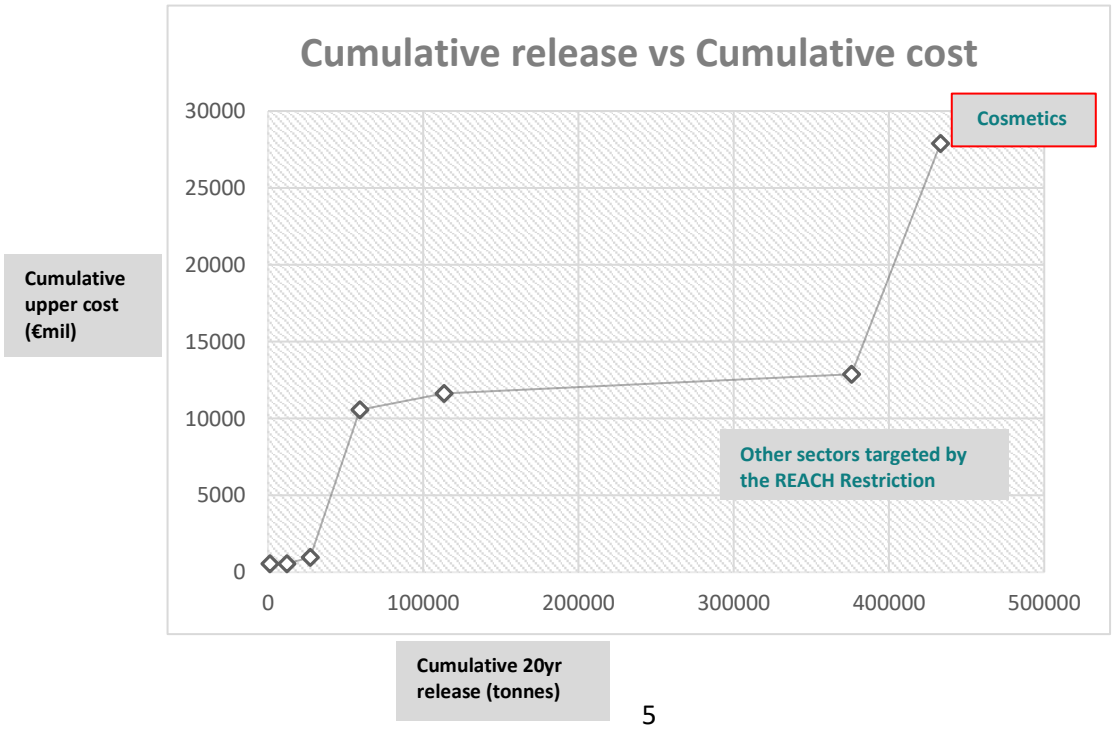
Reformulation will be the most significant cost associated with the EU REACH Restriction. A survey of the European cosmetics industry identified that the **average cost of reformulations is estimated at €820,000** per company where alternatives are available (Cosmetics Europe SEA, 2019), based on the multiple steps of the reformulation process. There is no reason why this would be any different for UK companies.

7. Proportionality and Costs

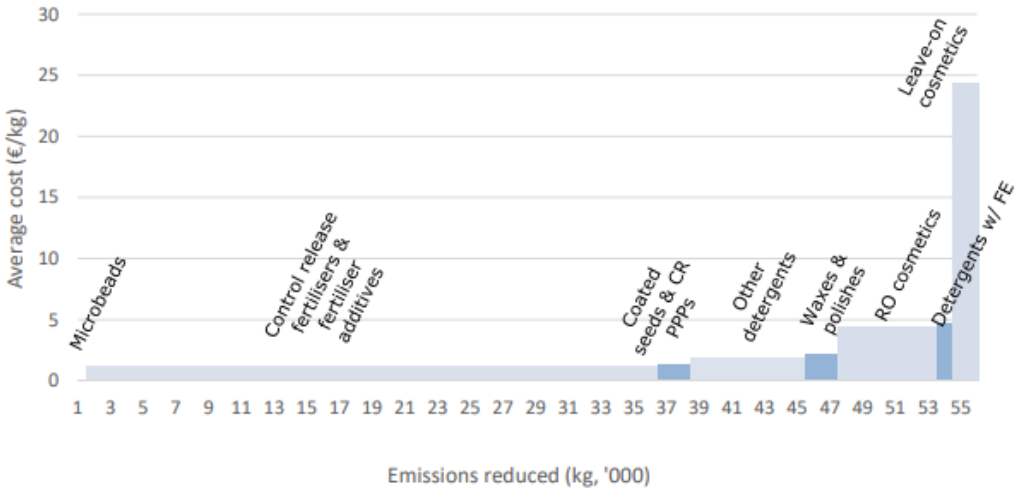
The calculations on costs all refer to the EU market. However, the same factors would be involved in a UK restriction, so the cost estimates provide a relevant insight.

An SEA conducted on behalf of Cosmetics Europe (Cosmetics Europe SEA, 2019) estimated that the cost to the EEA society of restricting all microplastics used in the cosmetics sector to avoid the release of 1kg of microplastics to wastewater is **€1,654 euro/kg.**

Cosmetic products, especially **leave-on cosmetic products, incur disproportionately high costs per quantity of emissions avoided yet contribute very little to the overall microplastics emissions which the EU REACH restriction intends to address**. This is shown by the below graph, based on data within the Annex XV report.



A similar graph is included within the Annex XV dossier itself, which highlights the disproportionate impact on cosmetic products, especially leave-on cosmetics.



Abbreviations: CR PP – controlled release plant protection products; RO cosmetics – other rinse-off cosmetics; Detergents w/ FE – detergents with fragrance encapsulates.

8. Socioeconomic Costs and Benefits

Cosmetic and personal care products provide essential societal benefits. A survey of European consumers conducted in 2017 (Cosmetics Europe, 2017) found that 80% of consumers identify them as important in building self- esteem, 71% as important in their daily lives and 72% feel the cosmetics and personal care products they use improve their quality of life.

Therefore, potential costs to society of a restriction must be fully investigated and taken into account.

A study conducted on behalf of the UK Environment Agency investigated consumers' Willingness to Pay (WTP) for several different options to address microplastics emissions (Environment Agency, 2020). A Contingent Valuation method elicited WTP for two scenarios; the public good benefits of research to resolve the uncertainty around human health and environmental effects of microplastics, and the public good benefits of enhanced filtering of microplastics at wastewater treatment plants. A Choice Experiment method was used to investigate how respondents were prepared to trade-off the removal of microplastics from products against the performance of cosmetic products, and the price attributes of these products.

The study found that respondents were willing to pay for both Contingent Valuation options; immediate abatement of microplastics at wastewater treatment plants and research to resolve the scientific uncertainty around microplastics. Respondents had a higher WTP for immediate abatement of microplastics at wastewater treatment plants than the research option.

In regard to the Choice Experiment, respondents valued product performance slightly more highly than removal of microplastics from products. In terms of directly comparing product performance and the microplastic content of products, it is not possible to assign a direct relationship between percentage reduction in emissions and percentage reduction in product performance. This is because each product will perform differently and there are no direct replacements for microplastics in cosmetic products.

The study's remit did not include the costs of the various options, which would be required in order to determine the net benefit of each option.

9. Enforceability

A cosmetic product's ingredient list gives no indication of the physical state of an ingredient. Polymers will exist in different forms in different formulations; for example, solid, liquid or semi-solid. Therefore, a substance with the same ingredient name could fall under the scope of the restriction in one formulation, but not in another. It will also not be possible for enforcement agencies to target specific higher-risk product categories, because solid synthetic polymers are used across all different cosmetic products. **Enforceability of the proposed EU Restriction will therefore be extremely difficult, and likely expensive in regard to product testing.**

10. References

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