EEB comments to the draft opinion of the Committee of Socio-economic Analysis (SEAC) on the restriction of microplastics

1st September 2020

Introduction

The EEB supports the restriction on intentionally added microplastics and agrees with SEAC draft opinion that it is the most appropriate Union wide measure to address their risks whilst remaining a proportionate measure. As "all emitted microplastics pose a risk to the environment" we ask SEAC to consider the elements below in its advice in order to ensure the effectiveness of the restriction.

Below we provide recent scientific evidence showing that the restriction report may underestimate the impacts of microplastics on the environment and health, that an immediate ban on the use of microplastics is needed and that transition periods must be approached with consideration for urgency. We provide comments on the impact on the effectiveness of the restriction of the long delays proposed by the DS for the restriction to enter into force. We also comment on how the exemptions proposed for biodegradable and for soluble particles hinders the effectiveness of the restriction. Given the high uncertainties related to the tests to prove biodegradability of microplastics as recognised by RAC, this exemption may enable regrettable substitution towards polymers and plastics that, in fact, will not degrade in real life environmental conditions. We also comment on the DS's proposal to change the definition of microplastics by excluding nano-sized particles below 100 nm, an exemption which deeply compromises the effectiveness of the restriction and pushes innovation in the wrong direction.

New evidence on environmental impacts of the restriction supporting the need to immediately stop the use of microplastics

In 2020 numerous scientific articles have been published showing that the presence of microplastics in the environment is much more widespread than previously estimated and that the impacts on biota, in particular of nano-sized particles, has also been underestimated.

This evidence stresses the urgency to tackle microplastics and the need to adopt effective restrictive measures without delay:

> Microplastic pollution in oceans is vastly underestimated: Are we underestimating microplastic abundance in the marine environment? A comparison of microplastic capture with nets of different mesh-size[1]
>
> Microplastics are accumulating in seafloor hotspots: Seafloor microplastic hotspots controlled by deep-sea circulation[2]

1 Penelope K.Lindeque, Matthew Cole, Rachel L.Coppock, Are we underestimating microplastic abundance in the marine environment? A comparison of microplastic capture with nets of different mesh-size, https://doi.org/10.1016/j.envpol.2020.114721

2 Ian A. Kane, Michael A. Clare, Elda Miramontes, Roy Wogelius, James J. Rothwell, Pierre Garreau, Florian Pohl, Seafloor microplastic hotspots controlled by deep-sea circulation, Science 05 Jun 2020: Vol. 368, Issue 6495, pp. 1140-1145, DOI: 10.1126/science.aba5899

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Email: eeb@eeb.org

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Microplastics are being transported by air and rain to remote areas: Plastic rain in protected areas of the United States[3]

Microplastics have been found in glaciers for the first time: First evidence of microplastic contamination in the supraglacial debris of an Alpine glacier[4]

Microplastics found *inside* apples, pears, broccoli, lettuce, carrots: Micro- and nano-plastics in edible fruit and vegetables. The first diet risks assessment for the general population[5]

Plastic pellets can be found in 9 out of 10 inspected beaches across all 7 continents as the results from the world nurdle hunt 2020[6]

Nano-plastics can accumulate in plants: Differentially charged nanoplastics demonstrate distinct accumulation in *Arabidopsis thaliana*. *Nat. Nanotechnol.* (2020)[7]

Impacts on biota of nano-sized particles: Rapid fragmentation of microplastics by the freshwater amphipod Gammarus duebeni (Lillj.)[8]

Impacts on the effectiveness of the restriction of the delays for entering into force proposed by the Dossier Submitter

The compilation of recent studies showing that microplastics' concentration estimates were underestimated by ECHA, confirms, once again, the urgency to tackle microplastics emissions. It also re-centres the balance between socio-economic impacts of the restriction and the referential for a "timely" reduction of emissions, which should happen sooner than initially evaluated.

According to EEB estimations (included in Table 1), if the delays for transitional periods proposed were to be adopted, at the date of entering into force, only 0.2% of the estimated emissions will be reduced and the restriction will only begin to be effective in reducing releases (by 50%) after year 2028 and only reduce most releases only after 2030.

The EEB considers that these transitional periods create unnecessary delays in emission reduction, not aligned with the urgency required to tackle microplastics emissions in the environment. Certain sectors might benefit from excessively long transitional periods: up to 6 years for leave-on cosmetic products, 8 years for Capsule suspension PPPs (CSPs), when the entry into force of the restriction is not foreseen before 2022.

3 Brahney, J., Margaret Hallerud, Eric Heim, Maura Hahnenberger, Suja Sukumaran, Plastic rain in protected areas of the United States, Science 12 Jun 2020: Vol. 368, Issue 6496, pp. 1257-1260, https://doi.org/10.1126/science.aaz5819

4 Ambrosini, R., Sergio Azzoni, R., Francesca Pittino, Guglielmina Diolaiuti, Andrea Franzetti, Marco Parolini, First evidence of microplastic contamination in the supraglacial debris of an alpine glacier, Environmental Pollution, Volume 253, 2019, Pages 297-301, ISSN 0269-7491, https://doi.org/10.1016/j.envpol.2019.07.005

5 Micro- and nano-plastics in edible fruit and vegetables. The first diet risks assessment for the general population, Environmental Research, 187 (2020), Article 109677, https://doi.org/10.1016/j.envres.2020.109677

6 https://www.nurdlehunt.org.uk/media/attachments/2020/06/30/fidra_greatglobalnurdlehunt_report_20_web.pdf

7 Sun, X., Yuan, X., Jia, Y. *et al.* Differentially charged nanoplastics demonstrate distinct accumulation in *Arabidopsis thaliana*. *Nat. Nanotechnol.* (2020). https://doi.org/10.1038/s41565-020-0707-4

8 Mateos-Cárdenas, A., O'Halloran, J., van Pelt, F.N.A.M. *et al.* Rapid fragmentation of microplastics by the freshwater amphipod *Gammarus duebeni* (Lillj.). *Sci Rep* 10, 12799 (2020). https://doi.org/10.1038/s41598-020-69635-2

International law has set the frame for the characterisation of a chemical use as essential or non-essential to society in Montreal Protocol Decision IV/25: Essential uses. A substance should qualify as "essential" only if:

1. it is necessary for the health, safety or is critical for the functioning of society (encompassing cultural and intellectual aspects); and
2. there are no available technically and economically feasible alternatives or substitutes that are acceptable from the standpoint of environment and health;

The decision to determine whether a use is essential to health, safety or the functioning of today's society is very much a political issue. EEB considers that microplastics in cosmetics or fragrances are not essential as they are not necessary for the health safety nor are they critical for the functioning of society. The second set of criteria to determine an essential use is also not fulfilled as it requires the demonstration of the absence of "available technically and economically feasible alternatives". As some brands have already phased out microplastics from their products or pledged to do so, alternatives are already available:

- Henkel pledged to not use microplastics for fragrance encapsulation in fabric softeners and detergents by 2022, developments of alternative fragrance delivery technologies are well under way and waxes, surfactants, natural ingredients are used instead of microplastics. Fragrance is not necessarily a consumer need.
- BASF developed wax-based opacifiers,
- More than 54 companies, including SMEs, partners to the Beat the Microbead Campaign pledge to be "plastic-free"; these also include brands providing leave-on cosmetics. Sunscreens, body lotions and butters,

The EEB also highlights the potential marketing added-value of placing on the market products marketed as "microplastics-free" (similar to products advertising that they are parabens-free, alcohol free, etc.), which has not been considered in the positive socio-economic impacts.

With every release in the environment considered as a risk, the transition periods proposed for these non-essential uses are not proportionate. Indeed the proportionality principle requires that the least onerous measure be chosen to achieve a given objective. But this means, in the first place, that the different options considered must all be able to achieve the goal pursued (see T-93/10 para. 114). Such long transitional periods prevent the restriction from achieving the goal to curb microplastic pollution and are therefore unacceptable.

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Table 1: EEB estimations, based on figures on emissions per source and year as estimated by the Dossier Submitter in the restriction report.

			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	After year 9
				2022	2023	2024	2025	2026	2027	2028	2029	2030
Emissions (tonnes)	cosmetics	microbeads	55	0	0	0	0	0	0	0	0	0
		Rinse-off 4y	3100	3100	3100	3100	3100	0	0	0	0	0
		Leave-on 6y	600	600	600	600	600	600	600	0	0	0
	detergents	microbeads	50	0	0	0	0	0	0	0	0	0
		Fragrances (8y)	200	200	200	200	200	200	200	200	200	0
		other uses 5y	8285	8285	8285	8285	8285	8285	0	0	0	0
	medical devices 6y		1100	1100	1100	1100	1100	1100	1100	0	0	0
	fertilisers 5y		5000	5000	5000	5000	5000	5000	0	0	0	0
	Pesticides (8y)		500	500	500	500	500	500	500	500	500	0
	Other agriculture uses 5y		4500	4500	4500	4500	4500	4500	0	0	0	0
	Infill sport pitches (if ban with 6y delay)		16000	16000	16000	16000	16000	16000	16000	0	0	0
	Derogated uses		3010	3010	3010	3010	3010	3010	3010	3010	3010	3010
	Total including derogated		42400	42295	42295	42295	42295	39195	21410	3710	3710	3010
Releases reduced (tonnes)				**105**	**105**	**105**	**105**	**3205**	**20990**	**38690**	**38690**	**39390**

Impacts on the effectiveness of the restriction of the exemptions to biodegradable and soluble microplastics

Biodegradable microplastics

The Dossier Submitter has proposed an exemption for “biodegradable” microplastics, considering they should degrade in the environment. However, the specific test methods, pass criteria and guidance on appropriate test materials for assessing the biodegradability of polymers initially proposed by the Dossier Submitter did not consider all environmental compartments and did not require testing in real life environmental conditions as highlighted by RAC in its opinion. RAC has proposed alternative criteria and testing methods that ensure that biodegradability has to be tested in all environmental compartments. However, as RAC recognises, several uncertainties remain on the capacity of the new proposed criteria to address the questions related to the environmental relevance and practical implementation of several of the tests.

The EEB considers that the SEAC opinion should acknowledge that the high uncertainties on the real capacity of alleged biodegradable microplastics to degrade in the environment (as noted by RAC) may have a high impact on the effectiveness of the restriction and enable regrettable substitution.

Soluble microplastics

In response to demands from industry sector associations, the Dossier Submitter changed its restriction proposal to include an exemption to soluble microplastics. However, recent scientific evidence highlights the environmental impacts of this type of microplastics. Several soluble polymers (including PAMs, polycarboxylates) as well as their breakdown products are persistent and/or toxic, they can also act like flocculants and detergents in recipient waters and as conditioners of soils and sediments with long lasting ecological effects. A recent study by Greenpeace Italy "Plastica liquida: l'ultimo trucco per avvelenare il mare" (in English "Liquid plastic: the latest trick to poison the sea") shows the wide presence of liquid, semi solid and soluble microplastics in consumer products. 426 of the 1819 products surveyed (23% of the total), contained at least one polymer or plastic copolymer. The use of liquid/semi-solid and/or soluble plastic ingredients was confirmed also by companies. Two companies (COOP and Unilever) informed Greenpeace that they intended to stop using these ingredients within the end of 2020 for products sold on the Italian market, therefore, demonstrating that alternatives are available.

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The SEAC opinion should acknowledge the impacts of an exemption for liquid and soluble polymers on the effectiveness of the restriction, the availability of alternatives and advise against this exemption.

Impacts on the effectiveness of the restriction of the Dossier Submitter proposal to exempt nano-particles

The Dossier Submitter has changed its original restriction proposal to exempt nano-sized particles from the restriction by proposing a lower size limit of the microplastic definition thus excluding from the scope of the ban particles below 100nm.

The DS and the SEAC draft opinion recognize that nano-particles pose a higher risk than micro-particles as highlighted by RAC and that nano-particles are used in different applications by several sectors. However, the SEAC draft opinion, due to practicality issues raised by industrial stakeholders and mirrored by the DS, supports this exemption on a temporary basis. RAC is of the opinion that nanoplastics should be included under the scope and that the definition should not include a lower size limit.

Nano-particles are of higher concern than microparticles as their capacity to be absorbed by biota increases with decreasing size and higher toxicity.

The practicality issues that have been raised relate to the capacity of authorities to enforce the restriction due to technical barriers of existing analytical methods. The SEAC opinion mentions three sources of information on this issue to base its opinion:

- Comments submitted through the public consultation by industry sectoral associations with company members using nanoplastics.
- The Enforcement Forum (FORUM) advise on the issue
- RAC's opinion

FORUM: In its advice of July 2019, the FORUM considered that several analytical methods may be used for checking compliance although the analysis has to be undertaken in a specialised laboratory due to the complexity of some methods and of the equipment which could be employed. They note that the availability of the required testing services in the different Member States is not known. They also recommend specifying the methodologies recommended for specific applications to help enforcement authorities. The majority of members of the FORUM working group who looked at the different options considered that the best option for enforcement was RAC's proposal **not** to set a lower size limit in the definition.

RAC considers that a lower size limit will lead to regrettable substitution, that a lower size limit is not needed for enforcement and it will compromise the effectiveness of the restriction.:

> "RAC considers that increasing the lower size limit to 100nm may lead to regrettable substitution to particles with smaller size, potentially compromising the effectiveness of the proposed restriction. The toxicity of particles is expected to increase with the reduction of its size linked to an increase in the surface/volume ratio." (RAC opinion page 15).
>
> "The omission of polymer nanoparticles <100 nm from the scope of the restriction could potentially allow the continued use of nano-scale polymer particles consistent with the microplastic concern, or promote innovation to smaller particle sizes to circumvent the restriction. Taking into account hazard and analytical practical issues RAC considers that the lower limit established for the purposes of a restriction should be the smallest size which can be measured today and, assuming analytical progress, the future. In this case, a lower limit is not appropriate

and RAC has concluded that no lower limit should be set for particles and fibres in the microplastics definition (more details on RAC analysis can be found in the opinion document). " (response to comments from the public consultation, p13).

Technical analytical issues are recognized by all sources. EEB agrees with RAC and the FORUM that this issue should not be solved by exempting nano-size particles from the scope of the restriction.

SEAC's draft opinion takes into account RAC's view that no lower size limit should be set from a risk assessment point of view considering the current state of the art in analytical methods. However, the SEAC draft opinion does not conclude that no lower size limit should be included but that certain practical considerations could be used to set a **temporary lower size limit**.

EEB is concerned that a temporary lower size limit still amounts to an exemption for nano-size particles which will encourage innovation on the wrong path of nanoplastic. What could be envisaged instead, in order to reflect the need to reassess this issue after further research on analytical methods is done, is to note the need to review the restriction in five years or more, and **meanwhile not include a lower size limit.** This will stimulate the development of the analytical methods and ensure that industry does not interpret the restriction as an invitation to develop or use more nano-particles as alternatives.

In any event, if a temporary lower-size limit approach was followed in the end, the time-limit should be made clear in the text and this transitional measure should be included under paragraph 6 of the proposed restriction (transitional periods) and not under paragraph 2 (definition) for the sake of clarity. This time should be as short as possible as the " definition/categorization framework should not be tied to current methodological and analytical capabilities as these evolve constantly"[9] and "might be available in two years"[10]. Together with the additional time still needed until this restriction is approved and enters into force should allow authorities to clarify the pending enforcement issues and give industry stakeholders a clear signal that substitution towards nano-plastic is **not** an option.

9 Nanna B. Hartmann, Thorsten Hüffer, Richard C. Thompson, Martin Hassellöv, Anja Verschoor, Anders E. Daugaard, Sinja Rist, Therese Karlsson, Nicole Brennholt, Matthew Cole, Maria P. Herrling, Maren C. Hess, Natalia P. Ivleva, Amy L. Lusher, and Martin Wagner, Environmental Science & Technology 2019 *53* (3), Are We Speaking the Same Language? Recommendations for a Definition and Categorization Framework for Plastic Debris, 1039-1047, DOI: 10.1021/acs.est.8b05297

10 https://www.lemonde.fr/planete/article/2020/09/01/microplastiques-lobbying-aux-frontieres-du-minuscule_6050522_3244.html