

Analysis of intentionally-added microplastics' emissions to the environment up to 2030

23 November 2021

Due to the [announcement](#) of the delay of the microplastics proposal, the EEB and ClientEarth updated their data on the number of intentionally-added microplastics emitted into the environment per year, based on ECHA numbers.

Our analysis aims to provide an overview of the past, current and future emissions of microplastics into the environment, since the European Commission [requested](#) the European Chemicals Agency to prepare a restriction proposal in 2017. This assessment takes into account the derogations and transition periods proposed by ECHA, as well as the current delays in the decision-making process.

Despite the initial ambition of the Commission,¹ the data shows that the levels of emissions into the environment due to intentionally added microplastics will continue to increase in the coming years, contributing to irreversible pollution.

The EEB and ClientEarth stress that the restriction must no longer be delayed.

Delays and derogations in the restriction proposal lead to further emissions

What the data is and where it comes from

Annex I compiles values estimating emissions of intentionally-added microplastics into the environment per year and use, starting from the expected date of entry into force of the restriction – in 2022. These values were calculated on the basis of estimates provided by the Dossier Submitter (ECHA) in its restriction proposal.² In 2020, the EEB published an analysis³ to demonstrate the impact of transition periods on the effectiveness of the restriction. This data has been updated and further detailed with the latest numbers from the ECHA proposal.

The visuals included in this document are derived from the data in Annex I.

¹ The Commission announced that resource efficiency and the reduction of persistent environmental pollution were high priorities in the Plastics Strategy, the Circular Economy Action Plan, the Chemicals Strategy for Sustainability and the Zero-Pollution Strategy.

² ECHA Proposal, Table 8 Use and releases of intentionally-added microplastics in EU/EEA, p.70 <https://echa.europa.eu/documents/10162/a513b793-dd84-d83a-9c06-e7a11580f366>

³ See EEB analysis at: https://eeb.org/wp-admin/admin-ajax.php?juwpfisadmin=false&action=wpfd&task=file.download&wpfd_category_id=81&wpfd_file_id=102161&token=5b0bcce81e4e60646c7068a47725aeca&preview=1

Interpretation of the data

ECHA's proposal to restrict intentionally added microplastics sets a crucial precedent: it has been qualified as the "world's broadest" restriction.⁴ The ambition is very high: to reduce emissions to approximately 500,000 tonnes of microplastics over the 20-year period following the entry into force of the restriction,⁵ this would represent a reduction of 70% of overall emissions of microplastics (over that period of 20 years).

In its restriction proposal, ECHA initially estimated that the quantity of microplastics that were released into the environment was close to 36,000 tonnes per year (under reasonably foreseeable conditions of use). ECHA compared this initial estimation to:

"an amount of 'bulk' waste plastic in the environment corresponding to approximately six times the present size of the 'Great Pacific Garbage Patch' or the releases of microplastics that could occur per year from about 10 billion plastic bottles" ([Annex XV dossier](#), p. 10).

These numbers have since then been updated by ECHA, only to grow to almost 42,400 tonnes per year.⁶

Since 2017, when the Commission signalled its intention to restrict microplastics intentionally added to products, approximately 170,000 tonnes of microplastics are estimated to have been released to the environment. **Emissions will surge if the transition periods and derogations proposed by ECHA for some sectors are warranted, and if the Commission's proposal gets further delayed.** (Cell P27)

It should be noted that data for some sectors is missing e.g. in the construction sector, food additives, or medical devices. This is because emissions for several uses were not available to ECHA during the preparation of the Annex XV dossier, partly because of a reluctance from industries to share information. For these uses, it is therefore unclear how many emissions will result from a continued use of microplastics – which is worrisome. (Rows 13, 23, 26)

For example, **it is uncertain how many emissions to the environment result from the addition of microplastics to medical devices**, and yet, a 6-year transition period has been proposed for this broad group of uses. This means that an even greater, albeit uncertain, number of microplastics will continue to be released into the environment during this 6-year period. (Row 13)

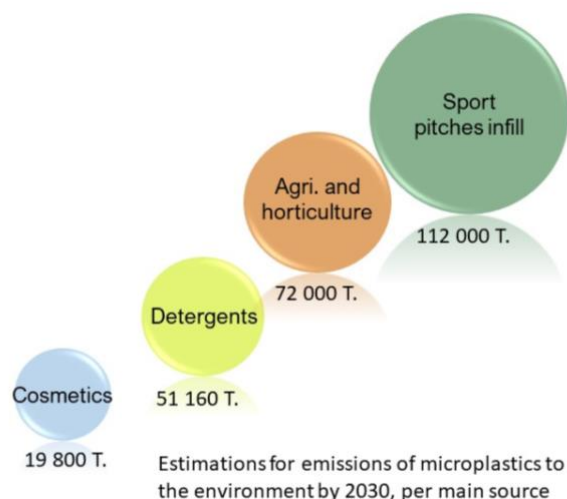
Detailed estimations are provided below:

- **By 2030, the total release of intentionally added microplastics is estimated at approximately 550,000 tonnes.** With a one-year delay, this number goes up to almost 590,000 tonnes of microplastics. (Cells N,O 27)

⁴ ECHA, September 2020, *Working on the world's broadest restriction of intentional uses of microplastics*, accessible at <https://echa.europa.eu/-/working-on-the-world-s-broadest-restriction-of-intentional-uses-of-microplastics?cldee=a2F0cmluLm1leWVyQGRuci5kZQ%3D%3D&recipientid=lead-e5dcc7eaae59e81180fe005056952b31-65be31319355488f9c1b23986b1a89e2&esid=fd2e1945-06ed-ea11-8122-005056b9310e>

⁵ *Ibid.*

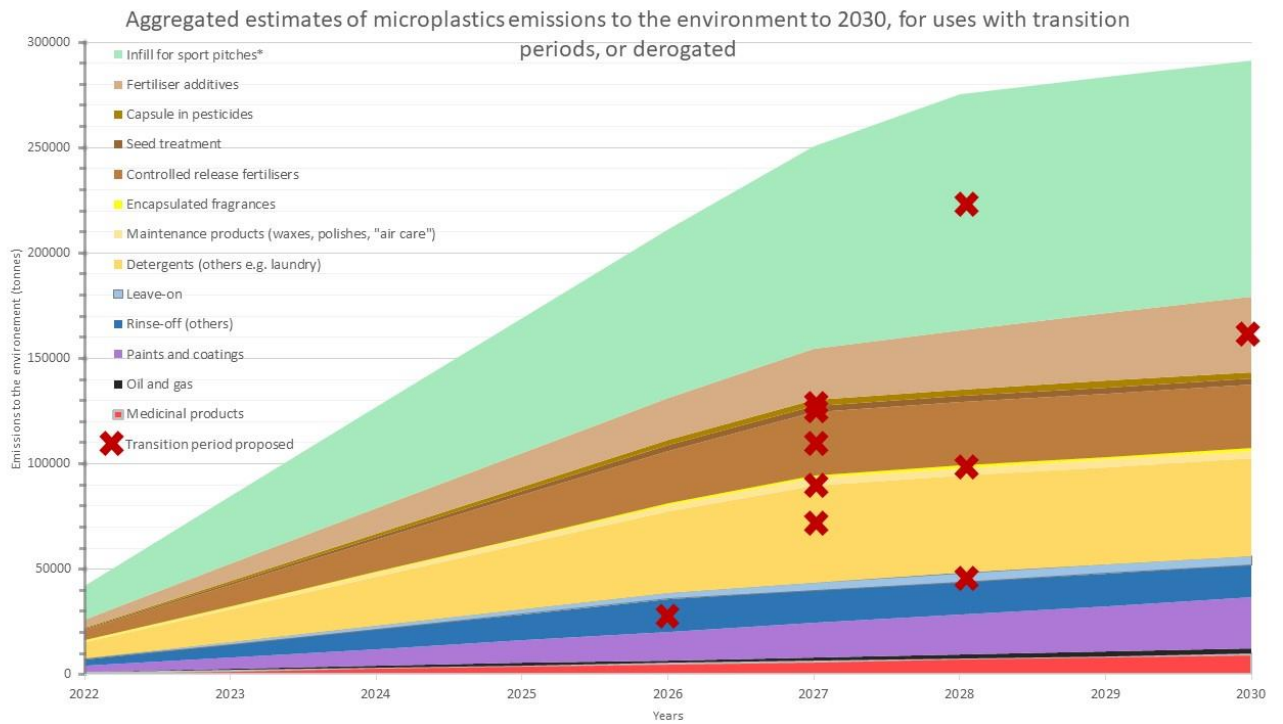
⁶ The final estimations by ECHA are reflected in the ECHA Proposal, Table 8 Use and releases of intentionally added microplastics in EU/EEA, p.70 <https://echa.europa.eu/documents/10162/a513b793-dd84-d83a-9c06-e7a11580f366>



Visual 1: Representation of estimations for emissions of microplastics to the environment by 2030, per main source, EEB and ClientEarth, 2021

- The [use of granules](#) in sports pitches is expected to contribute to the release of 112,000 tonnes of microplastics by 2030. With a one-year delay in the submission of the proposal by the Commission, this number would grow to 128,000 tonnes. This estimate is based on the scenario⁷ where a 6-year transition period will be followed by a ban of this use. **Under this restriction, the use of granules in sport pitches is by far the biggest source of microplastic pollution.**
- Microplastics added to agriculture and horticulture products will contribute to the release of 72,000 tonnes of microplastics in the environment by 2030. With a one-year delay, this number is estimated to grow to 82,000 tonnes. (Cells N,O 18)
- The use of microplastics in cosmetics is likely to contribute to the release of approximately 20,000 tonnes of microplastics by 2030. With a one-year delay, this number is estimated to grow to 23,500 tonnes. (Cells N,O 19)
- Microplastics in detergents would amount to release an estimated 51,200 tonnes of microplastics by 2030. With a one-year delay, this number is estimated to grow to almost 60,000 tonnes. (Cell O12)

⁷ The scenario is an "open proposal" from the ECHA opinion, which is open for a political decision from the European Commission. For infill for sport pitches, two proposals for transition period are included in the ECHA opinion: a ban on the use of infill, after a transition period of 6 years ([which NGOs support](#), we hence developed these estimations based on this option) . The second proposal is not a ban, but the adoption of risk management measures (which [NGOs do not support](#)).



Visual 2: Representation of the main aggregated estimations of microplastics emissions to the environment by 2030, for uses with transition periods, or derogated, EEB and ClientEarth, 2021

The sooner a ban enters into force, the less microplastics will end up in our environment. Unfortunately, **as our calculations show**, with the current proposal, **the emission of intentionally added microplastics into the environment would only start to significantly reduce as of 2030.** (Visual 2)⁸

⁸ Note that in Visual 2, the quantity of emissions to the environment does not correspond to the overall emissions indicated in Annex I of this document. This is because Visual 2 contains aggregated data of uses with transition periods or derogated, which emissions were sufficiently important to represent visually

Annex I

Legend

- The baseline to derive these numbers comes from the [ECHA proposal](#), (p.70).
- The asterisks (*) mark "open proposals" from the ECHA opinion, i.e. provisions which are still open for a political decision from the European Commission.
 - * **For infill for sport pitches**, two proposals are included in the ECHA opinion:
 - a ban on the use of infill, after a transition period of 6 years ([which NGOs support](#), we hence developed these estimations based on this option); or
 - no ban, only risk management measures ([which NGOs do not support](#)).
 - * **For encapsulated fragrances in detergents**, ECHA proposed two options for transition period:
 - a 6-year transition period (which RAC and SEAC supported, we hence considered this option the most likely to be supported and based our estimations on it); or
 - an 8-year transition period (which SEAC did not find sufficiently substantiated).
- Cells in **yellow highlight** are emissions by overall categories of uses subject to the restriction.
- Cells where "?" is indicated and **in light pink highlight** represent data lacking from the restriction process, as indicated in the ECHA's Opinion (Table 8).
- Derogated uses are represented in **light green highlight**: these uses will not be subject to a ban under the restriction.
- **In red highlight**, overall numbers are stressed. They include emissions of derogated uses.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Delays and derogations in ECHA Restriction proposal: emissions estimations for the ban of microplastics (based on the Dossier Submitter proposal)															
2	Categories of uses	Transition period proposed	Year 0, Entry into force (based on the initial Commission's commitment)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Overall emissions per categories, in 2030, 9 years after entry into force	Emissions by 2030, if the restriction enters into force in 2023 = 1 year delay	Releases since 2017 (EC notification of intention to restrict)		
3			2022	2023	2024	2025	2026	2027	2028	2029	2030					

4	Emission	Cosmetics	Microbeads in rinse-off/exfoliators, cleansers	None	55	x	x	x	x	x	x	x	x		
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5		Rinse-off	4 years	3100	3100	3100	3100	3100	x	x	x	x		
6		Leave on	6 years	600	600	600	600	600	600	600	x	x		
7		Overall emissions		3755	3700	3700	3700	3700	600	600	0	0	19755	23510
8	Detergents	Microbeads in detergents	None	50	x	x	x	x	x	x	x	x		
9		Microbeads in other detergents such as laundry detergents or dishwashing liquids	5 years	7700	7700	7700	7700	7700	7700	x	x	x		
10		Detergents, waxes, polishes, "air care" products	5 years	585	585	585	585	585	585	x	x	x		
11		Encapsulated fragrance*	6 years*	200	200	200	200	200	200	200	x	x		
12		Overall emissions		8535	8485	8485	8485	8485	8485	200	0	0	51160	59695
13	Medical devices	Overall category	6 years	Negligible or no information available (depending on their categories)	?	?	?	?	?	?	x	x	?	?
14	Agriculture and horticulture	Controlled release fertilisers	5 years	5000	5000	5000	5000	5000	5000	x	x	x		
15		Seed treatment	5 years	500	500	500	500	500	500	x	x	x		
16		Capsule suspension in plant protection products	5 years	500	500	500	500	500	500	x	x	x		

Intent to restrict dating back to 2017, equivalent to 4 years releases without restriction. Emissions baseline are that of E27, with no restrictions on the placing on the market.

17		Fertiliser additives	8 years	4000	4000	4000	4000	4000	4000	4000	4000	4000			
18		Overall emissions		10000	10000	10000	10000	10000	10000	4000	4000	4000	72000	82000	
19	Infill for sport pitches	Overall category	6 years*	16000	16000	16000	16000	16000	16000	16000	x	x	112000	128000	
20	Overall derogated uses														
21	Derogated uses	Oil and gas	Uses not subject to the ban included in the Restriction. Which will likely continue to emit	270	270	270	270	270	270	270	270	270	2430	not applicable (uses derogated)	
22		Paints and coatings		2700	2700	2700	2700	2700	2700	2700	2700	2700	2700		24300
23		Construction products		?	?	?	?	?	?	?	?	?	?		?
24		In vitro diagnostic devices		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		2
25		Medicinal products		1100	1100	1100	1100	1100	1100	1100	1100	1100	1100		9900
26		Food additives		?	?	?	?	?	?	?	?	?	?	?	
27	Total emissions, including derogated uses (oil and gas, paints and coatings in green highlight)		x	42360	42255	42255	42255	42255	39155	24870	8270	8270	547262	589623	169441