

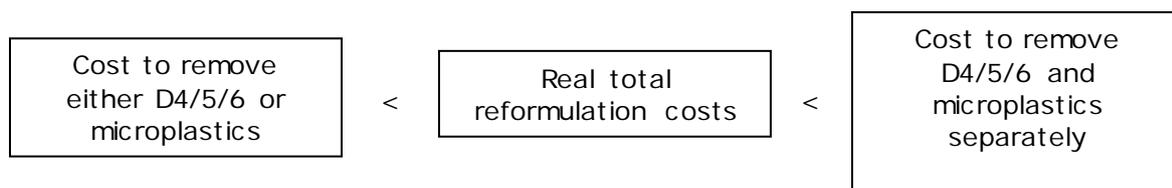
## Potential overlap between proposed restrictions on D4, D5, D6 and microplastics

### 1. Summary of the issue:

In January 2018, ECHA (the Dossier Submitter) submitted two restriction proposals on intentionally added microplastics, and on D4, D5 and D6 in a variety of consumer and professional products. Both restriction proposals would have an impact on cosmetic products. Products containing those substances would have to be reformulated to remain on the EU market in the event the restrictions enter into force as proposed. The restriction development teams of both dossiers have employed a common methodology and underpinning assumptions to calculate the resulting costs to industry in order to present a consistent approach in particular in relation to the estimation of reformulation costs. The key assumptions that have been applied in both proposals are presented in Annex 1. Where warranted, a similar approach was taken as in the SEAC-evaluated UK dossier on D4/D5 in wash-off products. This note should be viewed together with the socio-economic analysis presented in the microplastics and D4, D5 and D6 dossiers, where the approach and assumptions are presented in detail. The note concerns the overlap of products potentially affected by both restrictions and its potential impact on reformulation costs. Other issues, e.g., the manageability of implementing both restrictions at the same time, are not addressed in this document.

Amongst the cosmetic products affected, there are some that simultaneously contain microplastics and D4, D5, or D6. The Dossier Submitter in each dossier estimated the impacts of the proposed restriction without considering the consequences of the other possible restriction, as under baseline assumptions, only planned and agreed regulatory measures can be taken into account. However, in the event both proposed restrictions enter into force around the same time (with broadly consistent transitional periods), reformulation efforts to meet the requirements of both restrictions would likely take place simultaneously. It is likely that this would lead to fewer total reformulations (i.e., less than the total number of reformulations estimated for D4, D5, D6 plus the total number estimated for microplastics), but it may also lead to increased complexity of individual reformulations possibly leading to a higher cost per one such reformulation.

It is unknown what the cost of a reformulation to remove D4, D5, D6 and microplastics simultaneously would be. At the moment, reformulations for these cosmetics have been costed separately in each dossier. However, it is considered likely that this creates some element of double counting, in the event both restrictions are implemented. In summary, it is likely that for a product which contains both D4/D5/D6 and microplastics:



The potential for overlap is greater for leave-on cosmetics than for rinse-off, due to the already declining use of D4 and D5<sup>1</sup> as well as microplastics in rinse-off cosmetics (i.e., microbeads with exfoliating or cleansing functions). The next section presents data to illustrate the potential extent of this issue.

## 2. Estimated overlap of the two restriction proposals

The Dossier Submitter has analysed data from the CosmEthics database to identify what proportion of products would be affected by both restrictions: i.e. they contain D4, D5 and/or D6, and microplastics. With respect to the latter, the results are presented for the Low and High scenario used in the dossier.<sup>2</sup>

It is estimated that between 3% and 6% of all cosmetics products are affected by both restrictions. However, when considering only those products that would be affected by one of the restriction proposals and seeing how many of them would also be affected by the other, the overlap is greater:

- For products affected by the D4, D5, D6 restriction, between 25 and 60% of them would also be affected by the microplastics restriction.
- For products that would be affected by the microplastics restriction, about 15% of them would also be affected by the D4, D5, D6 restriction. This proportion is roughly the same under both Low and High scenarios.

It is important to note that the overlap is not evenly distributed across product categories. The CosmEthics database provides enough detail to obtain figures for each subcategory (of which there are 93). A table and graphs providing detailed data of the overlap for each subcategory are included in the table [Cosmetic products by subcategory in Annex II of this note](#). The potential impact, however, is clearer if one zooms in on the data for the more aggregated product groups used in the restriction dossiers themselves to report results.

### a) D4, D5 and D6 dossier

Table 1 shows the proportion of the total reformulation cost (€605 million NPV) for each broad product group, followed by an estimate of what proportion of products containing D4, D5 and D6 also contain microplastics (with different figures depending on the microplastics scenario).

Products containing D4, D5, D6 within the 'Make-up and lipsticks + skin care' product category are particularly likely to also contain microplastics: a third of them do, in the Low scenario, and over 70% in the High scenario. Given that these products make up

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<sup>1</sup> Wash-off cosmetic products containing D4 and D5, in concentrations greater than 0.1% w/w of each substance, cannot be placed on the market after 31 January 2020. (Commission Regulation (EU) 2018/35 amending REACH Annex XVII). By wash-off it is meant "personal care products that are washed off in normal use conditions". These products are a subset of rinse-off products.

<sup>2</sup> Further information on the scenarios is requested during the public consultation and the analysis will be refined based on the information received.

over 90% of all reformulation costs, the D4, D5 and D6 dossier cost estimates could contain a significant degree of overestimation.

**Table 1: Proportion of products containing D4, D5, D6 that also contain microplastics**

	Proportion of total reformulation costs (€ million)	Of products containing D4, D5, D6, what % also contain Microplastics (Low scenario)?	Of products containing D4, D5, D6, what % also contain Microplastics (High scenario)?
Deodorants and antiperspirants	3%	6%	8%
Hair styling ("LEAVE-ON") and other	1%	3%	50%
Make-up and lipsticks + skin care	93%	33%	71%
Rinse-off	2%	5%	32%
Sun/self-tanning	1%	18%	62%
Total	100%	26%	60%

Source: Estimates based on CosmEthics database

#### b) Microplastics dossier

Table 2 shows the proportion of the total reformulation cost for each broad product group<sup>3</sup>, followed by an estimate of what proportion of products containing microplastics also contain D4, D5, D6 (with different figures depending on the microplastics scenario).

Reformulation costs for other rinse-off (i.e., rinse-off cosmetics, excluding those containing microbeads with exfoliating and cleansing functions) and leave-on cosmetics are estimated at respectively € 1 billion (€36 million – €2 billion) €7.4 billion (€1.6-€13.3 billion) in NPV over 20 year temporal scope.

Leave-on products containing microplastics seem to be significantly more likely than 'Other rinse-off' and 'Rinse-off with exfoliating/cleansing functions' to also contain D4, D5, D6, and it is in this category that double-counting is more likely to occur.

<sup>3</sup> The product groups used were different for the D4, D5 and D6 dossier and for that on microplastics. This is because: a) data provided by industry on tonnage used was grouped using different categories for D4, D5, D6 and for microplastics. This determined the product groups that were used to calculate releases estimates and cost-effectiveness measures; and b) products were differently categorised (e.g. whether a product was considered an 'exfoliant' was not considered relevant in the D4, D5, D6 dossier, while this was an important product functionality in the microplastics dossier).

**Table 2: Proportion of products containing microplastics that also contain D4, D5 and D6**

	Proportion of total reformulation costs (€ million)	Of products containing Microplastics (Low scenario), what % also contain D4, D5, D6?	Of products containing Microplastics (High scenario), what % also contain D4, D5, D6
Rinse-off with exfoliating/cleansing function	Likely negligible	3%	4%
Leave-on	88%	17%	17%
Trash disposal	60%	17%	19%
Down the drain	40%	19%	16%
Other rinse-off	12%	1%	3%
Total	100%	15%	14%

*Notes: Trash disposal leave-on cosmetics include: make-up and lipsticks, nail varnish/remover. These cosmetics are primarily removed with cotton pad/tissue and disposed of in household solid waste. Down the drain leave-on cosmetics include: skin care, sun/self-tanning products, deodorants/antiperspirants, hair styling & other. These are primarily washed off with water.*

*Source: Estimates based on CosmEthics database*

All the data presented above should be considered with caution, as many uncertainties remain. The analysis is based on historical data, and this data covers a period during which the restriction on D4/D5 in wash-off products has not yet taken effect (entry into effect in February 1, 2020). Another, minor, area of uncertainty related to historical data in the CosmEthics database relates to the presence of products containing microbeads with exfoliating and cleansing functions, although according to industry more than 97% of those uses were phased out by 2017. Therefore, any future overlap of reformulations would be more likely to affect leave-on cosmetics. The main area of uncertainty; however, remains the polymer uses that would be impacted by the proposed microplastics restriction.

It is also important to highlight that the Dossier Submitter has assumed that some products containing the relevant substances will not be reformulated but withdrawn from the market. There may be a relationship between whether both microplastics and D4, D5, D6 are present at the same time, and the likelihood that those products would be reformulated (e.g. it may be that removing both microplastics and D4, D5, D6 simultaneously makes a reformulation particularly difficult, so that it becomes more likely that the product is removed from the market).

### 3. Conclusions

Both proposed restrictions on D4, D5 and D6 and on microplastics are expected to impact on the cosmetic products sector, as they require reformulation of some products in order for them to stay on the market in the event the restrictions enter into force as proposed.

The proportion of cosmetics products that would be affected by both restrictions is small when compared to all cosmetic products on the EU market. However, when considering only the products within the scope of one of the restrictions, the proportion of those that would be affected by the other restriction is substantial. As some reformulations of cosmetics products containing microplastics and D4, D5 or D6 would likely be pursued at

the same time (if they have broadly consistent transitional periods), it is likely that the grand total of the estimated reformulations for both dossiers would be lower than the sum of the reformulations estimated for each of the dossiers. This is likely more applicable to leave-on cosmetics.

It should be noted that the results of this analysis are subject to change if new information is received during the public consultation and this leads to changes in the assumptions of the analysis of impacts in either of the restrictions.

## Annex 1: Consistency of assumptions in both dossiers

Cosmetic product reformulation costs have been analysed in both the Annex XV restriction report proposing a restriction on the 'intentional use of microplastics', and that proposing a restriction on 'D4, D5 and D6'. The Dossier Submitters for both dossiers agreed a consistent approach, with the same assumptions used across both dossiers in most cases. The assumptions/approach were only different when the data available was different and constrained efforts to ensure consistency. Where warranted, similar approach and/or assumptions are taken as in the SEAC-evaluated UK dossier on D4/D5.

Table 3 summarises the key shared assumptions.

**Table 3: Consistent assumptions used in both dossiers**

	D4, D5 and D6	Microplastics
<b>Assumptions</b>		
Total number of cosmetics formulations on the EU market	430 000 formulations <i>Section 2.5.1.1 A</i>	<i>Appendix - Section D.5.4.3 (rinse-off), Section D.5.5.3 (leave-on)</i>
Cost per re-formulation	-€365 000 per major reformulation by large companies -€42 000 per reformulation by SMEs -Cost of minor reformulations assumed to be 10% of major ones.	<i>Appendix - Section D.5.4.3 (rinse-off), Section D.5.5.3 (leave-on). 1.5 premium for difficulty to reformulate leave-on cosmetics</i>
Proportion of formulations containing D4, D5, D6/Microplastics that would actually be reformulated	- For subcategories where products containing D4, D5 or D6 or microplastics represent less than 30% of the market, the alternatives are expected to take over their market share and very few of these products are expected to be reformulated (assumed 5%). -For subcategories where products containing D4, D5 or D6 or microplastics represent between 30% and 70% of all products, it is assumed that half of these products would be reformulated. The remaining 50% of products are expected to be discontinued. -For subcategories where products containing D4, D5 or D6 or microplastics represent over 70% of all products, it would be assumed that 95% of those products would be reformulated. However, no subcategories in the data show such high prevalence of products containing D4, D5 or D6.	<i>Appendix - Section D.5.4.3 (rinse-off), Section D.5.5.3 (leave-on)</i>
Industry baseline for major reformulation	20 years <i>Section 2.5.1.1 E</i>	<i>Appendix - Section D.5.4.3 (rinse-off), Section D.5.5.3 (leave-on)</i>
Reformulation pace	Reformulations throughout the transitional period, in equal numbers each year <i>Section 2.5.1.1 E</i>	<i>Appendix - Section D.5.4.3 (rinse-off), Section D.5.5.3 (leave-on)</i>
Co-ordination with baseline reformulations	For products where the baseline major reformulation would have taken place... (i) ...during the transitional period (periods of 2 and 5 years analysed), they would be coordinated with removal of D4, D5 and D6 or microplastics; therefore there	

	<p>would be no additional costs as a result of the restriction.</p> <p>(ii) ...during the 5 years after the end of the transitional period, that reformulation would be coordinated with removal of D4, D5 and D6 or microplastics done earlier, during the transition period.</p> <p>(iii) ...six years or more after the end of the transitional period, no coordination would be possible, as it would be impossible to predict market demands that far in advance. For those products, there would be an additional major reformulation during the transition period (and the reformulations that would have taken 6+ years after the end of the transitional period would still take place).</p> <p>It is further assumed that any minor reformulations that would have occurred during the transition period will now not happen separately and be 'saved', as they will be incorporated into the major reformulations to remove D4, D5 and D6.</p>	
	<i>Section 2.5.1.1 E</i>	<i>Appendix - Section D.5.4.3 rinse-off), Section D.5.5.3 (leave-on)</i>
Cost of co-ordinated reformulations	The cost of the coordinated reformulations would not increase by incorporating the removal of D4, D5 and D6 or microplastics	
	<i>Section 2.5.1.1 E</i>	<i>Appendix - Section D.5.4.3 rinse-off), Section D.5.5.3 (leave-on)</i>
EiF of the restriction	2020, 2022 as the first full year of entry into force.	
	Section 2.5.1.4	Section 2.3
Period of analysis	20 years Costs and NPV presented in 2017 values	
	Section 2.5.1.4	Section 2.3
Discount rate	4%	
	Section 2.3	
Transition period	5 years	4 years (rinse-off) and 6 years (leave-on)
	Section 2.5.1.5	<i>Appendix - Section D.5.4.3 rinse-off), Section D.5.5.3 (leave-on)</i>

## Annex 2

Table 4: Proportions of cosmetics containing both 'D4, D5, D6' and 'microplastics'

Cosmetic products sub-category	Type	Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (Low scenario)	Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (High scenario)
After shave	Leave-on	1.3%	10.5%
After sun	Leave-on	0.7%	7.8%
After sun gel	Leave-on	0.0%	4.3%
After sun moisturiser	Leave-on	0.0%	12.8%
Anti cellulite	Leave-on	0.9%	11.2%
Anti-age cream	Leave-on	7.0%	16.0%
Antiseptic	Leave-on	0.0%	0.0%
Baby Oil	Leave-on	0.0%	0.0%
Baby wash	Rinse-off	0.0%	0.0%
Bath foam/oil/salt/ur	Rinse-off	0.0%	0.0%
Blush/Bronzer/Contour	Leave-on	3.3%	4.6%
Body butter	Leave-on	0.0%	5.9%
Body lotion	Leave-on	4.0%	8.0%
Body lotion/Balm/Cream/Gel	Leave-on	0.5%	9.0%
Body oil	Leave-on	0.1%	0.6%
Body wash	Rinse-off	0.0%	0.1%
Butter	Leave-on	0.0%	0.0%
Cleansers	Rinse-off	0.4%	1.8%
Cleansers/Scrubs	Rinse-off	0.6%	0.6%
<b>Concealer</b>	<b>Leave-on</b>	<b>18.0%</b>	<b>26.9%</b>
Conditioner	Rinse-off	0.0%	2.8%
Cream	Leave-on	0.0%	1.0%
Creams and lotions	Leave-on	0.4%	8.2%
Deodorant	Leave-on	1.5%	1.9%
Diaper Ointment	Leave-on	0.0%	0.0%
Dry shampoo	Leave-on	0.6%	0.6%
Eau de Parfum	Leave-on	0.0%	0.0%
Eau de Toilette	Leave-on	0.0%	0.0%
Exfoliators	Rinse-off	0.5%	1.1%
Exfoliators/Body scrub	Rinse-off	0.5%	1.3%
Eye gel	Leave-on	3.0%	8.4%
Eye moisturiser	Leave-on	4.3%	12.8%
Eye shadow	Leave-on	7.9%	8.5%
<b>Eyebrow pen/gel/powder</b>	<b>Leave-on</b>	<b>15.6%</b>	<b>27.9%</b>
<b>Eyeliner liquid/gel</b>	<b>Leave-on</b>	<b>14.0%</b>	<b>17.6%</b>
Eyeliner, pen	Leave-on	6.5%	10.1%

Cosmetic products sub-category	Type	Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (Low scenario)	Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (High scenario)
Facial care	Leave-on	0.0%	2.9%
Facial moisturizers	Leave-on	3.8%	11.9%
Foot cream	Leave-on	0.2%	3.1%
Foot lotion	Leave-on	1.6%	11.3%
Foot scrubs	Rinse-off	0.0%	1.3%
Foot wash/bath	Rinse-off	0.0%	0.0%
<b>Foundation/BB Cream</b>	<b>Leave-on</b>	<b>25.6%</b>	<b>34.2%</b>
Hair color	Rinse-off	0.5%	2.5%
Hair gel	Leave-on	0.0%	2.8%
Hair removal	Rinse-off	0.5%	0.5%
Hair spray	Leave-on	0.1%	4.9%
Hair styling	Leave-on	0.5%	2.4%
Hair wax	Leave-on	0.4%	2.5%
Hand sanitizer	Leave-on	0.0%	0.7%
Hand wash	Rinse-off	0.0%	0.0%
Hands and Nails	Leave-on	0.0%	0.0%
<b>Highlighter</b>	<b>Leave-on</b>	<b>8.7%</b>	<b>14.1%</b>
Holding or styling foam or mousse	Leave-on	0.3%	2.9%
Intimate care	Rinse-off	0.0%	1.0%
Lip balm	Leave-on	0.4%	0.6%
Lip gloss	Leave-on	2.0%	3.2%
Lip liner, pen	Leave-on	6.3%	27.0%
Lipstick	Leave-on	1.8%	5.5%
Loose powder	Leave-on	1.0%	1.0%
Lotion	Leave-on	0.0%	1.6%
Make up remover	Rinse-off	0.0%	1.2%
Mascara	Leave-on	2.4%	5.2%
Masks	Leave-on	0.1%	3.2%
Massage oil	Leave-on	0.0%	0.0%
Moisturisers/Face cream	Leave-on	3.6%	13.2%
Mouthwash	Rinse-off	0.0%	0.0%
Nail polish	Leave-on	0.1%	0.1%
Nail polish remover	Leave-on	0.0%	0.0%
Other baby products	Leave-on	0.0%	0.0%
Other nail or cuticle products	Leave-on	0.5%	1.8%
Perfume/Parfum/Eau de Parfum	Leave-on	0.1%	0.3%
Powder	Leave-on	1.7%	1.7%
Pressed powder	Leave-on	2.4%	2.6%
Scalp Care	Leave-on	0.8%	0.8%

<b>Cosmetic products sub-category</b>	<b>Type</b>	<b>Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (Low scenario)</b>	<b>Proportion of products containing both 'D4,D5,D6' AND 'microplastics' (High scenario)</b>
<b>Self tanner face</b>	Leave-on	5.1%	2.0%
<b>Self-tanner</b>	Leave-on	0.0%	6.4%
<b>Serum/oil</b>	Leave-on	0.0%	4.4%
<b>Serums and treatments</b>	Leave-on	4.6%	12.3%
<b>Shampoo</b>	Rinse-off	0.2%	0.9%
<b>Shaving foam</b>	Rinse-off	0.0%	0.0%
<b>Shaving gel</b>	Rinse-off	0.0%	0.0%
<b>Shower gel</b>	Rinse-off	0.0%	0.0%
<b>Soap</b>	Rinse-off	0.0%	0.0%
<b>Soaps</b>	Rinse-off	0.0%	0.2%
<b>Styling cream</b>	Leave-on	0.0%	11.6%
<b>Sunscreen</b>	Leave-on	4.2%	12.3%
<b>Thickening product</b>	Leave-on	0.0%	1.7%
<b>Tinted lip balm</b>	Leave-on	0.0%	0.0%
<b>Toners and mists</b>	Leave-on	0.1%	1.0%
<b>Toothpaste</b>	Rinse-off	0.0%	0.0%
<b>Treatments</b>	Leave-on	0.2%	4.6%
<b>Wipes</b>	Leave-on	0.0%	1.9%

Source: CosmEthics

