

Ending microplastic ingredient use

**Preventing
microplastic pollution
due to proven threat
to biodiversity**



Dilyana Mihaylova: dilyana.mihaylova@fauna-flora.org

FFI's approach and experience in this field



High street brands pledge to phase out plastic microbeads

Posted on: 08.06.15 | (Last edited) 17 July 2015

8 June is World Oceans Day – what better time to talk about the positive steps being taken by companies to phase out plastic microbeads from cosmetic and beauty products...

In a striking example of the power of consumer pressure, a large number of leading UK retailers have pledged to phase out plastic microbeads from own-brand cosmetic and beauty products.



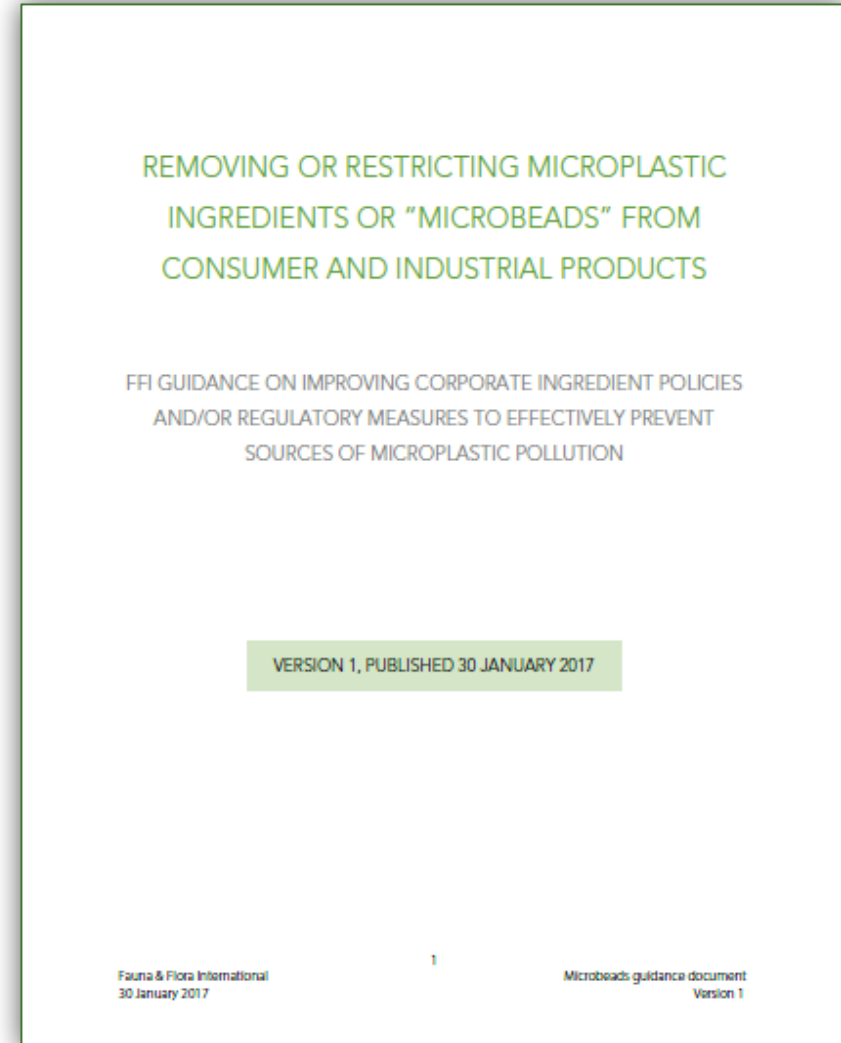
Endorsed guidelines

- UK Parliamentary Committee:

“The legislation should follow the principles set out by Fauna & Flora International around universality and consistency.”

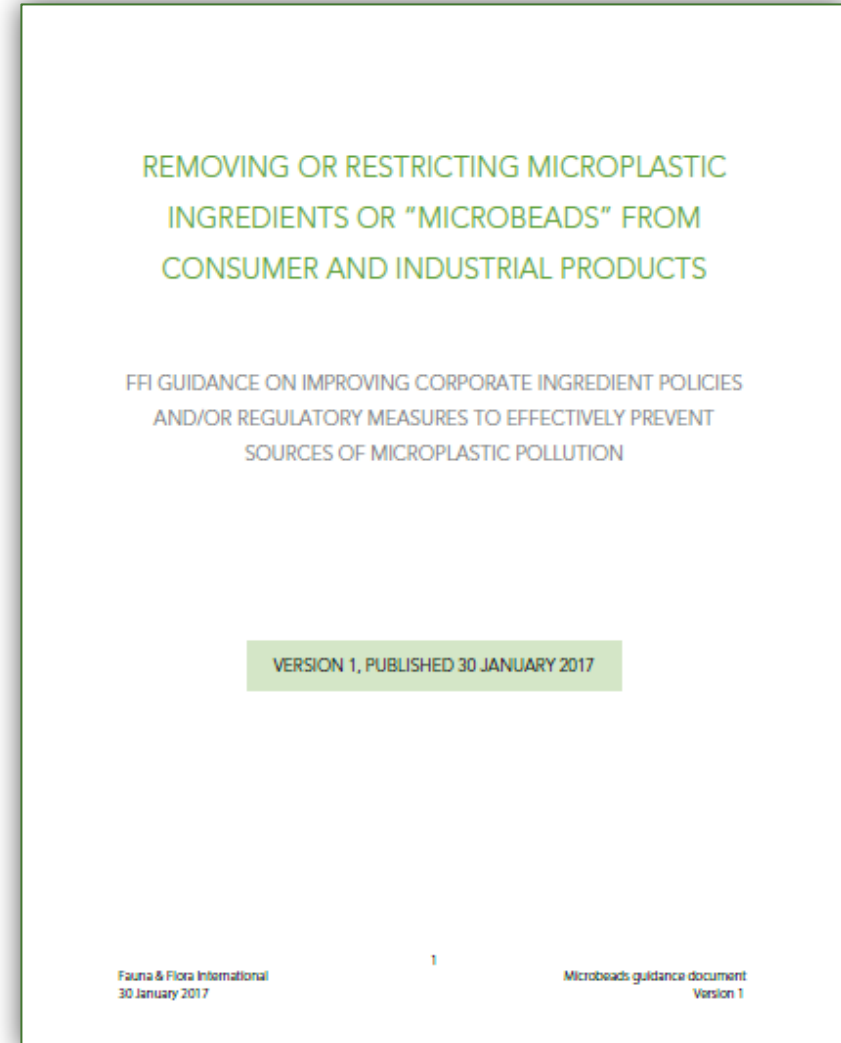
- Microplastics expert Richard Thompson:

*“Legislation in some other countries may have inadvertently left ambiguity and we need to be sure this is not the case in the UK. **The all-inclusive list of criteria supplied by Fauna and Flora might be a starting point for discussion.**”*



The FFI Guidelines

<https://live-fauna-flora-international.pantheonsite.io/wp-content/uploads/old-images/FFI-Microbeads-Guidance-Document-January-2017.pdf>



Advising and assessing corporate policies

	1. All plastic particulate ingredients removed?	2. All products reaching sinks or drains?	3. All own brands?	4. All countries where available?	5. All future formulations?	6. No 'biodegradable' plastics exemption?	7. No lower size limit exemption?
Sample Brand	✓	✓	✓	✓	✓	✓	✓

- Understanding **beyond non-specific terms** (e.g. microbeads)
- Seven **key criteria** to ensure best practice
- **Evidence-based** and **consistent** assessment

Ideal legislation?

Table 2: Comparison of ideal microplastic ingredient legislation, the US Microbead-Free Waters Act 2015, the Cosmetics Europe voluntary phase-out recommendation and the Defra proposals to ban the use of plastic microbeads in the UK (as of January 2017)

Legislation/recommendation	All solid plastic ingredients included? ⁷²	All product types reaching domestic or industrial drainage? ⁷³	"Biodegradable plastics" exemption absent?	Deadline for implementation	Ingredient definition	Product type definition
Ideal microplastic ingredients legislation (i.e. "gold standard")	✓	✓	✓	Two years from announcement	any solid, water insoluble, plastic particulate ingredient of 5 millimetres or less in size, performing any function in a product	any product that is, or can be, discharged to domestic or industrial drainage after its use
US Microbead Free Waters Act 2015¹²	✗	✗	✓	2017 (two years from announcement)	"any solid plastic particle that is less than 5 millimeters in size and is intended to be used to exfoliate or cleanse the human body"	"rinse-off cosmetics... (the term 'rinse-off cosmetic' includes toothpaste)"
Cosmetics Europe voluntary phase-out recommendation⁵⁴	✗	✗	✗	2020 (five years from announcement)	"synthetic, solid plastic particles used for exfoliating and cleansing that are non-biodegradable in the marine environment"	"wash-off cosmetic products" (<i>no further details given</i>)
Defra proposals to ban the use of plastic microbeads in cosmetics and personal care products in the UK (published in December 2016)⁷⁰	✓	✗	✓	2018 (two years from announcement)	"solid microplastic ingredients < 5mm in size in every dimension"	"rinse-off cosmetics and personal care products including but not limited to exfoliating scrubs, shower gels and toothpastes"

Non-exfoliating microplastics in 'rinse-off' products

PET glitter in bubble bath

- **Potential pathways:** designed to be washed down the drain during/after use
- **Function:** aesthetic
- **Alternatives:** ingredients in a wide range of plastic-free bubble bath products

PTFE in shaving products

- **Potential pathways:** designed to be washed down the drain during/after use
- **Function:** “aid in dispersibility, lubricity and feel”
- **Alternatives:** ingredients in a wide range of plastic-free shaving products

Microplastics in 'leave-on' products

'Leave-on'
vs. 'down-
the-drain'

Key points
for
discussion

- 60% of people in the UK who use 'leave on' products such as sun lotion or moisturiser **wash this off directly down the drain;**
- 45% of people in the UK who use face, lip, or eye make-up either **wash this off directly down the drain or dispose of any tissues or wipes they use down the toilet.**

- Ingredient lists contain common plastics: PET, PE, Nylon, PMMA, PTFE
- Many are routinely washed down the drain by the UK general public
- Rinse-off vs. leave-on terminology does not reflect environmental fate

Plastic ingredients in 'Leave-on' products

Table 31 – PET found in 'Leave-on' Cosmetics Products



Product Type	Concentration of PET	Form of PET
Eye Shadow	46.3%	Flake
Face Powders	99.6%	Powder
Body Sprays	0.3%	Not stated
Mascara	0.05%	Fibre
Nail Extenders	0.6%, 14%	Gel, Powder
Body Lotions	0.005%	Powder
Lipsticks	0.12%	Flake

Source: Cosmetics Ingredient Review

'Leave-on' products – UK examples

- **Foundation with common microplastic ingredients:**

*Talc, **Polymethyl Methacrylate**, Aluminum Starch Octenylsuccinate, Boron Nitride, Lauroyl Lysine, Dimethicone, Trimethylsiloxyphenyl Dimethicone, Octyldodecyl Stearoyl Stearate, Silica, Caprylyl Glycol, Phenoxyethanol. MAY CONTAIN/PEUT CONTENIR (+/-): Mica, Zinc Oxide (CI 77947), Titanium Dioxide (CI 77891), Iron Oxides (CI 77491, 77492, 77499).*

- **Foundation with no microplastic ingredients:**

Mica, Kaolin, Zinc stearate, Zea mays (Corn) starch, Tapioca starch*, Butyrospermum parkii (Shea butter) oil*, Ethylhexyl stearate, Helianthus annuus (Sunflower) seed oil*, Prunus amygdalus dulcis (Sweet almond) oil*, Squalane, caprylic/capric triglyceride, Ethylhexyl palmitate, Tocopherol, Camellia sinensis (White tea) leaf extract, Alaria esculenta extract, CI 77891 (Titanium dioxide), CI 77492 (Iron oxides), CI 77491 (Iron oxides), CI 77499 (Iron oxides).*

'Leave-on' products – UK examples

- **Mascara with common microplastic ingredients:**

*WATER\AQUA\EAU, STEARIC ACID, MYRICA CERIFERA (BAYBERRY) FRUIT WAX, SUCROSE POLYBEHENATE, POLYISOBUTENE, POLYVINYL ACETATE, PARAFFIN, AMINOMETHYL PROPANEDIOL, ISOSTEARIC ACID, SILICA, PANTHENOL, PANTETHINE, ROSMARINUS OFFICINALIS (ROSEMARY) EXTRACT, COPERNICIA CERIFERA (CARNAUBA) WAX\CERA CARNAUBA\CIRE DE CARNAUBA, KAOLIN, HYDROXYETHYLCELLULOSE, CHOLESTEROL, HYDROGENATED OLIVE OIL, **PTFE**, VP/EICOSENE COPOLYMER, OLEA EUROPAEA (OLIVE) FRUIT OIL, OLEA EUROPAEA (OLIVE) OIL UNSAPONIFIABLES, SODIUM POLYACRYLATE, SIMETHICONE, POLYESTER-5, PVP, CAPRYLYL GLYCOL, TOCOPHERYL ACETATE, HEXYLENE GLYCOL, **NYLON-6**, LAURETH-4, **POLYETHYLENE TEREPHTHALATE**, **NYLON-66**, SYNTHETIC FLUORPHLOGOPITE, CHLORPHENESIN, POLYAMINOPROPYL BIGUANIDE, PHENOXYETHANOL, [+/- TITANIUM DIOXIDE (CI 77891), MICA, IRON OXIDES (CI 77499), IRON OXIDES (CI 77491), IRON OXIDES (CI 77492), BLACK 2 (CI 77266 NANO), FERRIC FERROCYANIDE (CI 77510), COPPER POWDER (CI 77400), YELLOW 5 LAKE (CI 19140), CHROMIUM OXIDE GREENS (CI 77288), CHROMIUM OXIDE GREEN (CI 77289), CARMINE (CI 75470), BISMUTH OXYCHLORIDE (CI 77163), ALUMINUM POWDER (CI 77000), BLUE 1 LAKE (CI 42090), ULTRAMARINES (CI 77007), YELLOW 5 (CI 19140), BLUE 1 (CI 42090), BRONZE POWDER (CI 77400)]*

- **Mascara with no microplastic ingredients:**

Aqua, Copernicia cerifera (Carnauba) wax, Cocos nucifera (Coconut) oil*, CI 77499, Glycerin, Cetearyl glucoside, Ricinus communis (Castor) seed oil*, Argania spinosa (Argan) kernel oil*, Glyceryl caprylate, Bambusa arundinacea (Bamboo) stem powder, Dextrin palmitate, Xanthan gum, Sucrose laurate, Heptyl undecylenate, Camellia sinensis (White tea) leaf extract, Aloe barbadensis (Aloe vera) leaf juice powder*, Sigesbeckia orientalis extract, Abies picea (Spruce) extract, Caprooyl tetrapeptide-3, Tocopherol, Helianthus annuus (Sunflower) seed oil, Pullulan, Sorbitol, Trehalose, Glyceryl undecylate, Acacia Senegal gum, Vanillin, Maltodextrin, Alcohol, Sodium levulinate, Dextran, Levulinic acid.*

'Leave-on' products – UK examples

- **Lipstick with common microplastic ingredients:**

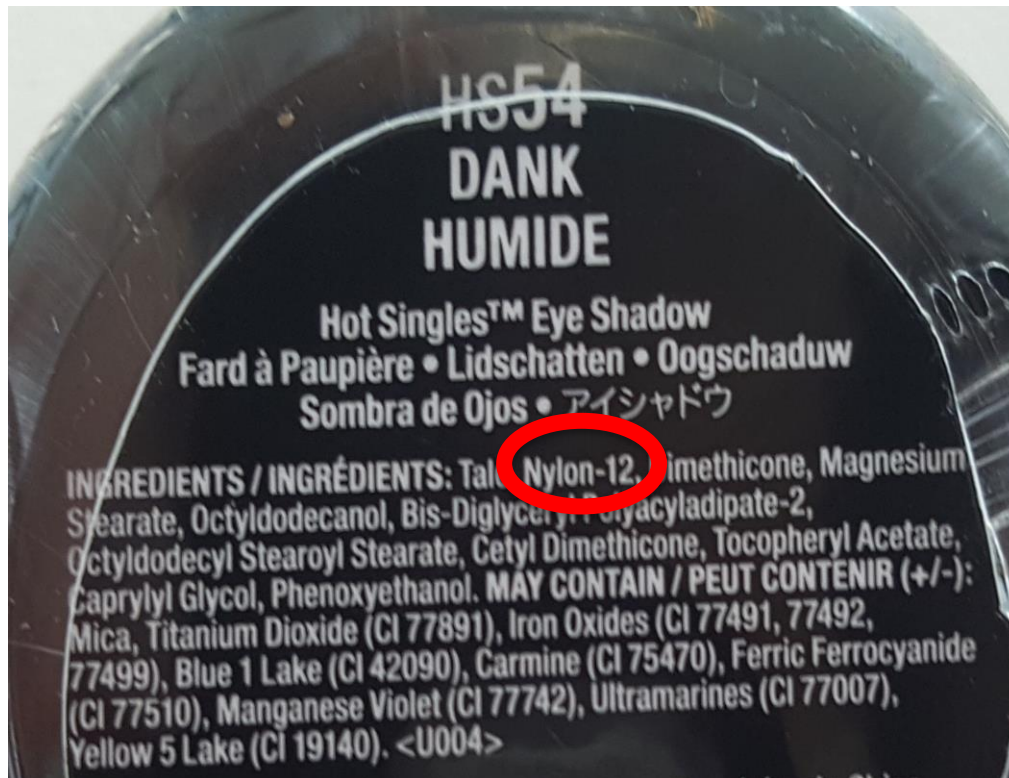
*TRIMETHYLSILOXYPHENYL DIMETHICONE, ISOHEXADECANE, OCTYLDODECYL NEOPENTANOATE, HYDROGENATED STYRENE/METHYL STYRENE/INDENE COPOLYMER, VP/HEXADECENE COPOLYMER, **POLYETHYLENE**, OZOKERITE, ALUMINA, SYNTHETIC FLUORPHLOGOPITE, VP/EICOSENE COPOLYMER, TIN OXIDE, CALCIUM ALUMINUM BOROSILICATE, CALCIUM SODIUM BOROSILICATE, DIMETHICONE, SILICA, **POLYETHYLENE TEREPHTHALATE**, ACRYLATES COPOLYMER, ACRYLIC ACID/ISOBUTYL ACRYLATE/ISOBORNYL ACRYLATE COPOLYMER, PENTAERYTHRITYL TETRA-DI-T-BUTYL HYDROXYHYDROCINNAMATE, GERANIOL, ALPHA-ISOMETHYL IONONE, CITRONELLOL, PARFUM/FRAGRANCE*

- **Lipstick with no microplastic ingredients:**

Ricinus communis (Castor) seed oil, Cera alba (Beeswax)*, Mica, Tapioca starch*, Helianthus annuus (Sunflower) seed cera\wax, Butyrospermum parkii (Shea nut) butter*, Rhus verniciflua (Sumac berry) peel cera\wax, Shorea robusta (Sal tree) resin, Olea europaea (Olive) fruit oil*, Citrus sinensis (Orange) peel oil expressed*, Linum usitatissimum (Linseed) seed oil*, Cannabis sativa (Hemp) seed oil*, Tocopherol, Punica granatum (Pomegranate) seed oil*, Argania spinosa (Argan) kernel oil*, Camellia sinensis (White tea) leaf extract, Helianthus annuus (Sunflower) seed oil, Persea gratissima (Avocado) oil*, Cucurbita pepo (Pumpkin) seed oil*, Oenothera biennis (Evening primrose) oil*, Ascorbyl palmitate, CI 77491 (Iron oxides), CI 77891 (Titanium dioxide), CI 77499 (Iron oxides), CI 77492 (Iron oxides), Citral, Citronellol, Geraniol, Limonene, Linalool.*

'Leave-on' products – UK examples

- Eye shadow with common microplastic ingredients:



- Eye shadow with no microplastic ingredients:

Mica, Zea mays (corn) starch, Zinc stearate, Ethylhexyl stearate, Squalane, Tapioca starch*, Ethylhexyl palmitate, Olea europaea (olive) fruit oil*, Punica granatum (pomegranate) seed oil*, Rosa canina (rosehip) fruit oil*, Tocopherol, Camellia sinensis (white tea) leaf extract, Helianthus annuus (sunflower) seed oil, CI 77491 (iron oxides), CI 77492 (iron oxides), CI 77499 (iron oxides).*



Thank you!

Dilyana Mihaylova

Projects Manager, Marine Plastics, Conservation Science

Fauna & Flora International | www.fauna-flora.org

Tel: +44 (0)1223 747 641 | M: +44 (0)7425 323 111 | Skype: dilyanamih

Address: The David Attenborough Building, Pembroke Street, Cambridge,
CB2 3QZ