
# Introduction

## "If you ignore little things, they become big problems" – Rohinton Mistry

In March 2022, at its fifth session, the United Nations Environment Assembly (UNEA) adopted resolution 5/14 titled "End plastic pollution: Towards an international legally binding instrument," convening an intergovernmental negotiating committee (INC) to develop a new global agreement on plastic pollution. Negotiators must now move swiftly to agree to measures across the full lifecycle of plastic to end plastic pollution.

Among the myriad of sources of plastic pollution, the ever-increasing discharges and accumulation of microplastics in the environment is a serious global concern.[1] Previous UNEA resolutions recognised with urgency the threat that microplastics pose to planetary health,[2,3] taking a progressively expansive view that, to address the impacts on human health and the environment, interventions at the global level across the full lifecycle of plastic must be made.[4,5]

For these reasons, resolution 5/14 was clear that "plastic pollution includes microplastics", placing microplastic pollution squarely within the remit of the new international legally binding instrument (ILBI) to end plastic pollution.[6]

## Microplastics: the definition

Often considered as plastics measuring 5mm or less in diameter, the term "microplastics" need not be defined in the new ILBI and, indeed, it could be counterproductive to do so.

For example, plastic pellets are considered microplastics yet these materials can be produced to exceed 5mm in diameter. In order to avoid inadvertently incentivising a transition towards larger sizes of plastic pellets to evade regulation, control measures on plastic pellets should apply regardless of the size of the plastic pellet.

To the extent a size boundary is necessary, such as for the harmonisation of global microplastics monitoring, this would most appropriately be done via a decision to allow for flexibility and prevent perverse outcomes.

# Microplastics: the problem

Microplastics can be classified as primary or secondary microplastics, depending on their origin. Primary microplastics enter into the environment as microplastic form and include plastic pellets, intentionally added microplastics and those from wear and tear, such from synthetic textiles, tyres or paints. Secondary microplastics result from degradation of macroplastics, such as bottles, packaging and other plastic products.

Microplastics can therefore be contextualised into four broad categories:

- **Plastic pellets (mismanagement) –** microplastics used in the production of other plastic products that are mishandled and spill into the environment, including both virgin and recycled polymers

- **Intentionally added microplastics (intentional) –** microplastics in their primary form, purposefully designed to be small in size for application and use, such as microbeads in cosmetic products, cleaning agents, industrial abrasives or slow-release fertilisers

- **Use-phase microplastics (wear and tear) –** microplastics generated during intended product use, such as microfibres from synthetic textiles during washing, tyre dust and particles from paints.

- **Degradation-based microplastics (degradation) –** microplastics generated from the degradation and weathering of macroplastics in the environment, such as from the weathering of plastic bottles or packaging in the ocean over time.

The focus of this briefing is on primary microplastics – the first three categories.

In recent years, our understanding of the scale and impacts of microplastic pollution has grown. Governments around the world have slowly started to introduce domestic legislation and policies to address microplastic pollution, focusing predominantly on intentionally added microplastics which represent a small percentage of overall microplastic pollution.[7]

Despite increasing global awareness and efforts, it is estimated that at least 2.9 million tonnes of microplastics are lost into the environment each year.[8] In 2022, studies found microplastics in human blood, lung tissue, placentas and breast milk, suggesting their presence in human bodies is now ubiquitous and exposure is unavoidable.

Studies into the impacts of microplastics are reaching increasingly alarming conclusions, highlighting the significant risks to environmental health and increasing concern over human health if unabated. Microplastics can cause physical harm (in biota) through the ingestion of plastic particles,[9] risk of chemical harm via degradation and leaching of toxic chemical additives into the environment[10] and pathological harm as vectors for disease.[11]

Global trends show dramatic increases in the release — and concentration — of microplastics in the environment. For example, two major sources of microplastic pollution, microfibers and tyre dust, are estimated to comprise 34.8 per cent and 28.3 per cent of microplastics released into the marine environment, respectively.[12]

In a business-as-usual scenario, the growth in demand for textiles is expected to lead to more than 22 million tonnes of microfibres entering our oceans between 2015-50 and consumer preferences for larger and heavier vehicles are leading to more abrasion of tyres.[13,14]

Research already shows that microplastics in the marine environment have contributed to taking us outside planetary boundaries — the safe operating space for the environment — with more research forthcoming on concentrations at which essential biological and climactic functions in our oceans will be disrupted.[15]

Due to their nature, microplastics are almost impossible to remediate once in the environment. In light of the above, and in line with the precautionary principle, countries should undertake decisive action to prevent serious and irreversible damage to the planet.

# Comprehensive sectoral strategies to reduce microplastic pollution

Microplastic pollution is a complex transboundary issue requiring comprehensive global approaches with multiple interventions. The current approach, consisting of variable non-binding international guidelines, regional action plans and national laws, is fragmented and inadequate to address the most prominent sources of microplastic pollution.

Different categories of microplastics will require different measures, as outlined below.

**I. Plastic pellets**

Plastic pellets are pre-formed moulding material having relatively uniform dimensions and used as feedstock in plastic product manufacturing operations, transported in various forms including flakes, granules and powders around the world – also referred to as resin or nurdles.[16]

Pellets are melted and moulded to create almost all plastic items in existence and their mismanagement represents the first moment that plastic enters the environment as a pollutant. Spillage during production, transport, storage and conversion constitutes a major source of primary microplastic pollution.[17] It is estimated that billions of individual pellets enter the ocean every year, with spillage being both chronic and acute.[18] Control measures to reduce microplastic pollution from pellets are therefore naturally an important part of any new ILBI to end plastic pollution.

To this end, controls to cap and reduce overall virgin plastic production, including effective monitoring and reporting, will help reduce total leakage of pellets in absolute terms.

For the pellets we do use, preventing plastic pellet loss requires the implementation of best management and handling practices during production, transport, packaging, storage and conversion, including remedial measures to clean up and dispose of pellets where spillage does occur.

**II. Intentionally added microplastics**

Microplastics have various uses in consumer and professional products, ranging from cosmetics and detergents to agriculture, horticulture and infill material for synthetic sports surfaces.[19] Elimination of intentionally added microplastics should be a priority in the new ILBI, easily achieved through prohibitions on use.

**III. Wear and tear**

Microplastics released during use of plastic products represent a complex source of pollution requiring comprehensive sectoral strategies. Part of the challenge for addressing microplastic pollution from wear and tear are the multiple release pathways, which can be unique to each source. For this reason, countries should establish dedicated programmes of work to develop comprehensive sector strategies for each major source. In addition, research and development on alternatives and actions from stakeholders across the value chain should be undertaken in parallel.

Examples of the range of activities that could form part of dedicated programmes of work for microfibers and tyre dust are provided below.

**Microfibers**

Microplastics from synthetic textiles are typically released in the form of microfibres.

Measures to reduce the overall scale of the problem, such as using less plastic in textiles, moving away from fast fashion business models and prioritising materials with a lower environmental footprint, are an important first step.

Once plastics are used in textiles, microfibers are released at every stage of their lifecycle, from loss during the production of yarns, fabrication and tailoring, to shedding during washing and shedding during use and subsequent atmospheric deposition and at end-of-life.

There are various best practice processes and technologies to reduce loss at each stage, such as improvements in the design and manufacturing of yarns, uptake in the use of filtration devices in consumer washing machines and dryers as well as improvements in garment lifetime.

In addition, although not specific to the textile industry, measures to improve the environmentally sound management of waste and wastewater treatment should also form part of a comprehensive strategy to reduce leakage of microfibers generally and as a last resort.

| Upstream | Design and manufacturing | Use phase | End of life |
|---|---|---|---|
| Overall reduction of virgin polymer production<br><br>Reduction in the use of synthetic fabrics in the textile industry | Eco-design of synthetic textiles, including:<br><br>elimination of harmful substances<br><br>adoption of best practices in design and manufacture<br><br>adoption of best practices to mitigate industrial emissions<br><br>research and innovation on fibres, with an assessment of fibres over their full life cycle for unintended consequences<br><br>Eco-design of complementary products (e.g. laundry detergents, washing and drying machines) | Reduction in consumption and use of synthetic textiles<br><br>Adoption of best practices for maintenance and care (higher durability of garments, lower waste generation)<br><br>Identification of hotspots for microfiber emissions<br><br>Development of best practices and assessment of the cost-effectiveness of mitigation technologies | Reductions in textile waste generation<br><br>Separate collection of used garments<br><br>Identification of best practices for the recycling and reuse of garments without a higher burden on microplastic pollution<br><br>Restrictions on trade of post-consumer textiles to developing countries |

***Source:*** *OECD(adapted)*

**Tyre dust**

Similar to textiles, microplastics from tyres are released at all stages of their lifecycle.

Microplastics are generated as a by-product of tyre manufacture, through tyre and road wear during use and at end-of-life from mismanagement of waste tyres and the use as rubber granulate in artificial sports turf. The amount of leakage can be influenced by the tread height of tyres, road surfaces, vehicle weight, driving speed and management of artificial sports surfaces and waste tyres.

The research and development of alternatives will need to account for other important characteristics, such as safety and performance.

For both textiles and tyre dust, stakeholder cooperation across the value chain will be needed — e.g. industry, civil society, research institutions, local authorities — to facilitate the sharing of best available practices, research and development, identification of hotspots and improvement of mitigation measures.

Such cooperation could be supported through provisions to initiate a multistakeholder action agenda in the new ILBI.

| Upstream | Design and manufacturing | Use phase | End of life |
|---|---|---|---|
| Overall reduction of virgin polymer production<br><br>Reduction in the use of plastic in tyres and artificial turf in favour of alternatives | Eco-design of tyres to reduce wear rate, including optimisation of tyre tread characteristics<br><br>Reductions in vehicle weight<br><br>Research and innovation on roads and pavement surfaces to minimise emissions of microplastics without compromising on other desirable characteristics | Reductions in transport volumes<br><br>Larger uptake of eco-driving practices<br><br>Larger uptake of regular maintenance of tyres and vehicles<br><br>Identification of hotspots for tyre dust emissions<br><br>Adequate regular maintenance of roads | Separate collection of waste tyres<br><br>Identification of best practices for the mitigation of microplastic release from tyre material recovery applications (e.g. artificial sports turfs) |

***Source:*** *OECD(adapted)*

# An international legally binding instrument fit for microplastics

The new ILBI will be relied upon for generations to come to deal with both known and unknown issues relating to microplastic pollution.

The current patchwork of national regulations and policies is inadequate. Dedicated programmes of work to develop comprehensive sectoral strategies are needed, bringing together governments, industries and stakeholders across the value chain. The challenge for negotiators is to ensure that the new ILBI has the requisite tools to address microplastic pollution, which should include at least the following provisions:

- **virgin polymer production, consumption and use –** provisions that eliminate the production of most problematic polymers while ensuring the sustainable production, consumption and use of those polymers that we do use. This should be accompanied by obligations on Parties to adopt best practices to prevent chronic and acute spillage of virgin and recycled polymers, namely pellets, during production, transport, packaging, storage and conversion

- **product design and use –** provisions to promote sustainable product design and use, which could be relied upon to address microplastic pollution from both intentionally added microplastics and use-phase microplastics (wear and tear). This would include the development of eco-criteria on product design, prohibitions on plastic use in specific applications and reporting obligations on plastic use by market segment

- **environmentally sound management –** provisions to promote the environmentally sound management of plastic waste in line with resource efficiency and the waste hierarchy

- **dedicated programmes of work –** provisions to establish dedicated programmes of work to develop comprehensive sectoral strategies, including for specific sources of microplastics, which would identify a package of policies and measures for adoption at the international and national levels. This should be accompanied by multistakeholder

action agendas, initiated in parallel and as part of the dedicated programmes of work, to identify interventions across the value chain, especially non-governmental actions that can complement those actions taken at the international level and via national action plans. Where relevant, cooperation and coordination with other multilateral environmental and regional agreements and bodies should be promoted

- **national action plans –** the new ILBI will require the adoption and communication of national action plans, which will consolidate actions to be taken by governments to comply with their international obligations. These should include actions to be taken by governments as part of the comprehensive sectoral strategies developed under the dedicated programmes of work.

# Conclusion

Addressing microplastic pollution is no simple task. It will require dedicated programmes of work to create comprehensive sectoral strategies with interventions across the value chain. Negotiators should therefore work to ensure that the new ILBI is fit for purpose, containing the tools necessary to end microplastic pollution.

**For more information:**

**Jacob Kean-Hammerson**
**Ocean Campaigner**
Environmental Investigation Agency
jacobkean-hammerson@eia-international.org
+44 20 7354 7977

**Tim Grabiel**
**Senior Lawyer & Policy Advisor**
Environmental Investigation Agency
timgrabiel@eia-international.org
+33 6 32 76 77 04

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