

Fact Sheet

Microplastics 101



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INTRODUCTION

The ever-increasing discharges and accumulation of microplastics in the environment is a serious global concern. Microplastics are found in polar ice caps, at the top of mountains, in soil, freshwater systems, and all ocean basins, from the surface to the deep sea. Ocean life is particularly vulnerable to exposure to, ingestion of and the damaging effects of microplastic pollution, given the ubiquitous nature of microplastics.

Resolution 5/14 of the United Nations Environment Assembly 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.

Relevance to the Pacific Context

- The Pacific Islands are large ocean states, cleaning up and removing microplastics from the ocean is neither possible nor cost-effective.
- Fish is an important staple food in most Pacific Island countries and territories and subsistence and commercial fishing activities make essential contributions to both household and individual food security. Microplastics can enter the food chain through the accumulation of plastic particles in animals that are eaten by humans, this is particularly well known in fish, thus posing a risk to food security in the region
- Plastic accumulation in ocean gyres, such as in the North Pacific, are predominantly made up of microplastic pollution.

Key Considerations

Microplastics and Nanoplastics Definition:

- Microplastics are broadly defined as pieces of plastic measuring 5 mm or less in any dimension.
- Nanoplastics are defined as plastic particles from 1 nm or less.
- The definition of microplastics need not have a lower limit on size when considering regulation in a legally binding instrument, therefore can include those particles within ‘nano’ range.

Depending on their origin, microplastics can be broadly categorised as either:

- **Primary microplastics** are plastic particles manufactured to be of microplastic size range.
- **Secondary microplastics** are plastic particles derived from the breakdown or fragmentation of larger plastic items.



Known sources of Primary and Secondary microplastics:

Primary Microplastics:



Intentionally added microplastic ingredients in personal care products and cosmetics



Drilling fluids for oil and gas exploration and mining



Intentionally added microplastic ingredients in domestic and commercial cleaning products



Agricultural pesticide/fertiliser delivery systems



Industrial abrasives



Plastic pellets, flakes and powders



Rubber infill for artificial turf

Secondary Microplastics:



Geotextiles and agri-plastics



Synthetic sports field and play areas



Expanded polystyrene from maritime infrastructure



Degradation of macroplastics in the entire plastic life cycle



Abandoned, lost or otherwise discarded fishing gear (ALDFG), aquaculture and mariculture gear



Vehicle tyres (especially cars as their tyres have much larger proportion of synthetic polymers than heavy duty vehicles)



Paints (including marine paints)



Synthetic fibres from textiles



Cigarette butts



Recycling

Over recent years, global understanding of the scale and impacts of microplastic pollution has grown. 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, risk of chemical harm via degradation and leaching of toxic chemical additives into the environment, and pathological harm as vectors for disease.

Due to their nature, microplastics are almost impossible to remediate once in the environment. Tackling microplastic leakage through preventative measures that focus on the source of pollution, rather than mitigating the issue further downstream is regarded as the most effective approach. The different sources of microplastic leakage into the environment and pathways to the ocean means that effective solutions will not be achieved with a 'one size fits all' approach to eliminate this type of pollution.

Different Sources and Pathways into the Environment

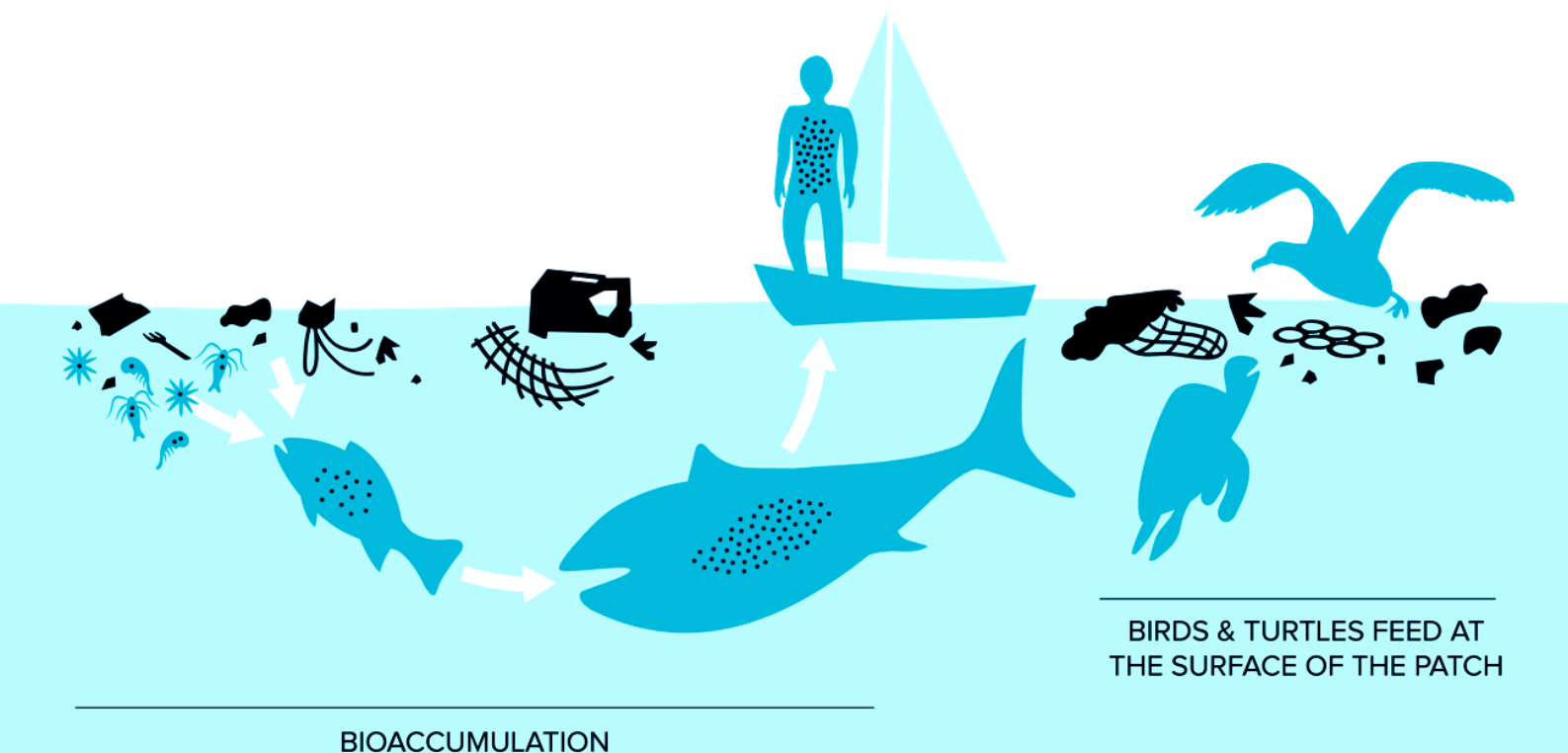
Microplastics are released in from a wide range of sources/sectors

Known pathways include:

- Wastewater and effluent
- Biosolids and sludge
- Run-off and stormwater
- Disposal
- Accidental loss
- Fragmentation
- Wind/Airborne
- Precipitation (rain and snow)
- Salt spray
- Deep ocean deposition

Sectors:

- Plastic production
- Plastic manufacturing and packaging
- Personal care and cosmetics
- Domestic and industrial cleaning products
- Wastewater treatment
- Plastic treatment and disposal (recycling and landfilling)
- Agriculture
- Clothing and textiles
- Fisheries, aquaculture and mariculture
- Maritime operations
- Transportation
- Tobacco
- Recreational play
- Construction
- Medical and healthcare



Considerations for ILBI

When regulating plastics to reduce and eliminate microplastics, countries may consider that microplastic pollution occurs at every stage of the lifecycle, from extraction to end of life. Therefore, countries may seek impose measures at different intervention points across the lifecycle.

Reducing microplastics can also be considered an objective at every stage, from plastic production reduction targets to product design standards and measures to strengthen waste management and end-of-life treatment.

Further, countries could consider measures to eliminate the toxic additives and chemicals used in production to mitigate the harm of microplastics that may still end up in the environment.

Considering specific measures for microplastics, different sources will require different solutions. For example, it may be straightforward to ban intentionally added microplastics in products or create mandatory reporting and handling practices across the supply chain of plastic pellets; however, sectors with significant emissions of microplastic pollution, like fisheries or packaging, may need to work together to develop pragmatic solutions to reduce this pollution.

Therefore, a final consideration could be to create dedicated work programmes for sectors identified as large emitters and task them with reducing plastic pollution, including microplastics.

Summary

Microplastics are a complex and significant source of plastic pollution that can pose serious risks to communities, particularly large ocean states.

Considering their management in an International Legally Binding Instrument to prevent their release into the environment will be key to mitigating the further accumulation in the environment, particularly in the ocean.



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P.O Box 240, Apia, Samoa, T: +685 21929
E: sprep@sprep.org

www.sprep.org



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