Microplastics

Problem Statement:

Microplastics can greatly reduce the lifespan of marine species through the bioaccumulation of chemicals and direct ingestion in their digestive systems. Plastics are used in many everyday items, and improper disposal/management results in the build-up of these tiny particles in our oceans. There needs to be a large-scale shift in the attitudes surrounding recycling and eco-friendly alternatives in order to reduce the amount of plastic going into the ocean.

What are Microplastics?

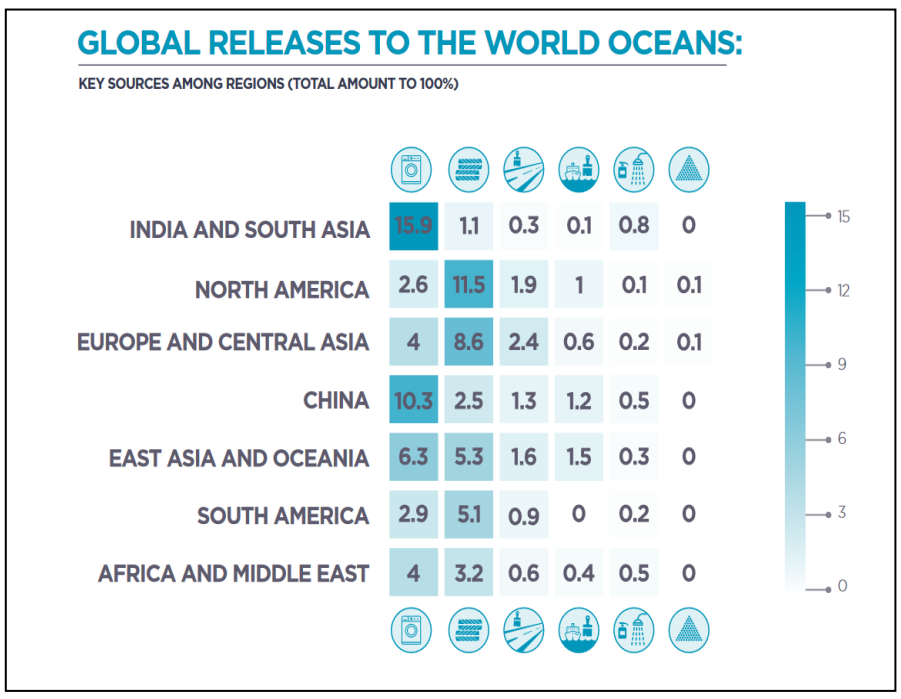
Microplastics are small pieces of plastic that are less than 5 millimetres long.

How are they formed?

There are two types of microplastics, primary and secondary. Primary microplastics are directly released into the environment and come from 7 main sources. Tires, synthetic textiles, marine coatings, road markings, personal care products, plastic pellets, city dust. Secondary microplastics are formed through the breakdown of larger plastics already in the environment through temperature variations, oxidation, sun exposure, waves, and marine organisms.

Social/Economic/Ecological Impacts:

- Degrades beautiful natural areas and inhibits social activities.
- Economic positive feedback loop: more single-use plastic is produced, costs get driven down, people buy more, more goes into the ocean; continues until something goes wrong.
- Decreases diversity/resilience of marine species
- Societally cultures are built around fishing, so a decrease in the ability to fish can hurt them



Different areas in the world release different amounts of primary microplastics through textiles, tires, road markings, marine coatings, personal care products and pellets. In all the areas, textiles and tire markings are biggest releases.

Why should we care?

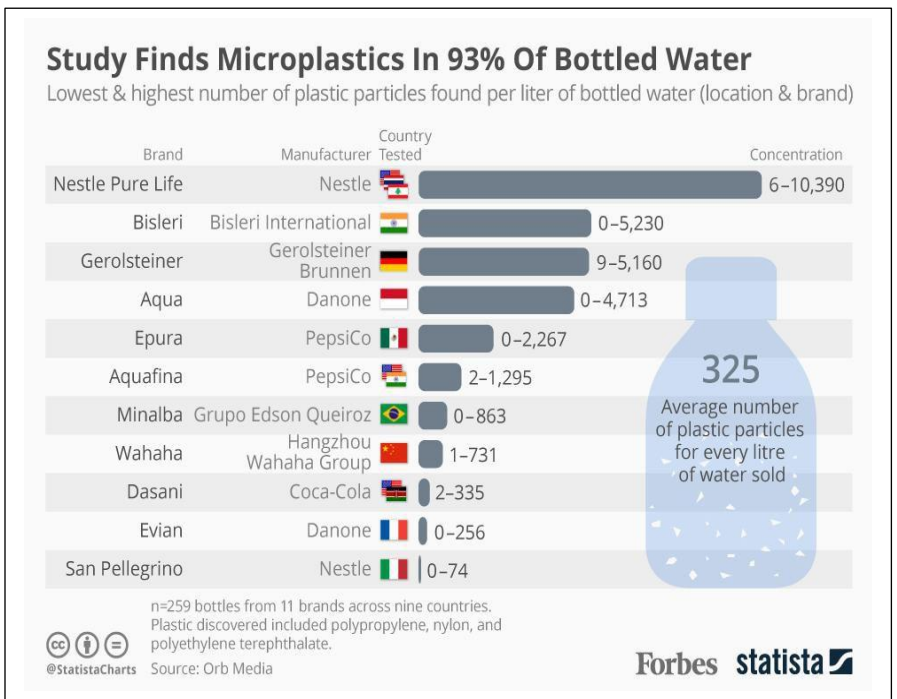
This issue is not confined to the depths of the ocean, microplastics have an observed effect on life. Increased plastic concentration in the ocean can weaken populations of marine life by blocking digestion tracts which can starve the animals and cause premature death, as well as accumulating chemicals that can affect growth and reproduction. These issues mean that we could be facing a decline in a global food source. At least 10% of the world's population relies on fish for their livelihood and billions more rely on it for some part of their diet.

Furthermore, if microplastics are having such an effect on marine life, it is highly likely that we will start to see negative effects in humans. Humans ingest around 39,000- 52,000 particles per year through drinking water, sea food, tea bags and even the air we breathe. Microplastics can accumulate PCBs, a group of chemicals that are known to cause cancer, a weakened immune system, reproductive problems, etc.

Solutions

Switch to plastic free products to stop it at the source, recycle, support initiatives or companies that repurpose ocean plastic (Rothy's, Patagonia, Sperry), and support local clean-up initiatives.

These solutions tackle waste at each step, simply reduce by avoiding single use plastic, recycle the plastic you do use, and support companies that repurpose the plastic rather than contributing to the problem.



Plastic bottles break down into microplastics, small enough to eventually find their way through filtration back into the water bottles.