

Forum: Environment

Issue: The Question of plastics in the ocean

Specialist Chair: Emma Ferone

Introduction:

The quantity of plastic waste in the sea is steadily increasing, at the moment plastic accounts for 100% of floating waste in the ocean.

The University of California alongside the University of Georgia have conducted a research, with results suggesting that since the 1950s 9.1 billion tons were manufactured, of which 7 million are not in use, researchers estimate that 1.47 billion tons of these plastics have been incinerated and recycled, leaving 5.53 billion tons of plastics in the oceans and land.

The plastics found in the oceans can range from fishing nets and buoys to micro plastics₁ originating from cosmetics such as toothpastes and soaps. It is estimated that there are around 51 trillion micro plastics in the ocean and every year 8 million tonnes of plastic waste end up in the ocean. Plastic takes more than 400 years to degrade, and with an increased rate of production and consumption means that there is an increase in plastic waste in the ocean.

According to research by the year 2050 99% of seabirds will have ingested plastic.

Ingestion of plastic has several consequences for the animal, firstly it reduces the absorption of nutrients in the stomach of the animal as well as taking up space in the digestive system, this can cause the animal to die of starvation. Meanwhile, the toxins contained in the plastic can be absorbed by the animal and can cause ulceration₂ of tissue.

Another form of harm which plastic marine debris₃ can cause is known as ghost fishing. This occurs when discarded fishing nets continue to trap fish, this inflicts severe physical harm to the animal.

Finally, the last form of harm which plastic marine debris causes, is its adverse effect on specie population and the disruption of the food chain. Small plastics often clump together, blocking the sunlight. Autotrophs₅ are microorganisms which require sunlight for their energy, they are producers in the food chain and provide food for the bottom of the food chain. This decrease in sunlight will cause the productivity and population of the autotrophs to decrease and so the productivity and population of the animals higher up in the food chain will also decrease.

The problem of plastic in the ocean is not only harmful to the animal which ingests the plastic, but can easily disrupt the marine food chain of which the effects include the extinction of several species, a drastic change in species numbers and populations.

Meanwhile on the economical side, plastic in the oceans would damage the fishing industry on which many communities and countries rely on.

Tackling mismanaged waste is necessary to slow down the amount of plastic entering our oceans. Unfortunately, in several countries especially developing countries, waste management facilities are scarce or are not managed properly due to a lack of training, this prompts the build-up of open dumps which eventually overflows into the oceans, rivers or

lakes. An example is the Payata waste mountain in the Philippines, which collapsed causing a major loss of life and large amounts of plastic waste leaked into the sea and river. In many cases these large illegal dumps are not effectively tackled due to corruption in enforcement systems.

China, Indonesia and the Philippines are the countries with the largest amounts of mismanaged plastic waste and marine debris

One of the most prominent features of the plastic pollution in the oceans is the Great Pacific garbage patch, its size is roughly 10,000,000 km² and lies in the north Pacific between Hawaii and California. The analysis of the size of the garbage patch has proved to be difficult as the plastics usually float just below the water surface therefore are not properly visible by aerial observation.

Definition of Key Terms:

1. **Micro plastics** are small plastic pieces less than 5mm long, these can be harmful to the ocean and aquatic life
2. **Ulceration** is the process of the formation of lesions that is eroding away the skin or mucous membranes
3. **Marine debris** is any persistent solid material that is manufactured or processed and that is intentionally or unintentionally disposed of in the marine environment
4. **Mismanaged plastic** waste is material that is either litter or inadequately disposed. Inadequately disposed waste includes disposal in dumps or open and uncontrolled landfills.
5. **Autotrophs** are organisms that manufacture their own food using inorganic substances, they are the producers in a food chain and provide energy for all the other organisms (not autotrophs) in the food chain

Major Countries and Organizations Involved:

Communities of Ocean Action – is an organisation created by the UN where different organisations ranging from academic institutions to non- governmental organisations can make a commitment to one or more of the sections of SDG 14.

China – has the largest amount of mismanaged plastic waste (8.80 million tons) and the total marine debris is 3.53 million tons

Indonesia – has the second largest amount of mismanaged plastic waste (3.20 million tons) 1.29 million tons

Kenya – has enforced a very strict ban against all plastic bags (fines can reach up to \$38,000)

Vanuatu –has begun to eliminate single-use plastic bags and bottles

UK – has introduced tax on plastic bags as well as banning the use of microbeads in rinse out products

Taiwan – has restricted the use of single use plastic bags, straws, utensils and cups

Zimbabwe – has put a total ban on expanded polystyrene (a Styrofoam like material)

The ocean project – is a non-governmental organisation based in America, their main purpose is to collect plastic from the ocean and recycle it to produce other plastic goods

Timeline of Events:

1982 – The United Nations Convention of the Law of the Sea, the constitution set out a legal framework for all the activities carried out in the sea and oceans

2017 – The Ocean conference

2017 – The United Nations Conference to Support the Implementation of Sustainable Development Goal 14

Current attempts to solve the issue:

- Some companies have changed the plastic they use so the plastic can eventually be recycled, for example supermarket chains are eliminating black plastic, a non-recyclable plastic, in their food packaging. This is likely to be effective as it increase the amount of packaging which can be recycled decreasing the amount which could end up in dumps and leak out into the ocean
- Several of organisations have organised beach and coastal clean ups all over the world. So far they have been effective, the flow of plastic will come from the coast so by targeting plastic near the coast (where the concentration of plastics may be lower than the great pacific garbage patch), we can reduce the amount of harm the plastic causes to marine life, as well as our own health and local fishing economies.

Relevant UN Treaties and Events:

- Oceans and the Law of the Sea, 23/12/2016 (Resolution Number) clauses 209 and 210
- The Ocean Conference 5/06/2017
- The United Nations Conference to support the Implementation of Sustainable Development Goal 14 5/06/2017

Possible Solutions:

- Evaluating and creating a different chemical structure for plastics
- Increase the percentage of plastic recycled by making more types of plastics recyclable and creating new strategies
- Providing financial incentives for companies to reduce or even eliminate plastic packaging where possible
- Ban or apply tax on non-reusable plastic goods (such as non-reusable plates, cutlery and cups)
- Provide more education on the disposal of plastics within educational establishments, the workplace and within communities in both LEDCs and MEDCs

Bibliography:

<https://news.nationalgeographic.com/2017/07/plastic-produced-recycling-waste-ocean-trash-debris-environment/>

<https://news.un.org/en/story/2017/02/552052-turn-tide-plastic-urges-un-microplastics-seas-now-outnumber-stars-our-galaxy#.WLA81BLyBJ>

<https://oceanservice.noaa.gov/facts/microplastics.html>

<http://advances.sciencemag.org/content/3/7/e1700782>

<http://science.sciencemag.org/content/347/6223/768.full>

<https://www.globalcitizen.org/en/content/plastic-bans-around-the-world/>

<https://www.climate-policy-watcher.org/waste-management/garbage-challenges-in-developing-countries.html>

<http://www.un.org/depts/los/>

<https://oceanconference.un.org/sdg14>

<https://sustainabledevelopment.un.org/topics/oceanandseas>