Plastic Pollution 2F

Plastic has become the defining medium of our Synthetic Century precisely because it combines the ultimate twentieth-century characteristics – artificiality, disposability and synthesis – all rolled into one.

Plastic too good to throw away

In the five decades since the end of World War II, plastic has crept unceasingly, and often invisibly, into our homes, cars, offices, even our bodies; some of us have plastic hearts, joints, valves or limbs. The very qualities that have made plastics so vital to life in the twentieth century, make them ideally suited to pollute the marine environment. Plastics are not designed to biodegrade. A plastic container will survive in a landfill site for between 50 and 80 years and most plastics will have a long life in the sea.

Types of plastic pollution

The fact that plastic floats makes it especially problematic as a marine pollutant. Plastic items can be dispersed over long distances and impact areas far removed from the source of pollution. As a result of its durability, and the ease with which it may be transported, plastics make up more than 80% of marine litter. The average age of plastic litter on beaches is 2.9 years; older material is generally in fragments and stranded high on the shore. Over half the stranded plastic is in the form of containers for lavatory and household cleansers, which are made of polyetheylene, but there is a great variety of other types of plastic packaging, made from a variety of plastics.

Research into the sources and types of marine litter found in South Africa has revealed the scale of plastic pollution in our seas. Small plastic pellets are found on all beaches, but the greatest concentrations occur at industrial centres such as Cape Town, Port Elizabeth, East London and Durban. This indicates that the plastics industry continues to lose significant amounts of pellets into the environment. (These small pellets of polythene, polypropylene, and sometimes polystyrene, 3-4 mm in diameter are used in plastic manufacture and are widespread in the oceans. They probably reach the sea through accidental spillages at ports, or at factories close to rivers. They are buoyant, virtually indestructible and are presumably steadily accumulating in the sea and on coasts all over the world.)

Other types of small litter, such as foamed plastics and fragments of plastic articles are also found on beaches close to major centres, which emphasises the importance of land-based sources for marine litter. Crude estimates suggest that in Cape Town alone, more than four million litter items find their way into stormwater drains, and eventually the sea, every day!

Large litter items found on South African beaches increased by 16% between 1989 and 1994, with a greater increase among plastic (17%) than non-plastic (3%) artefacts. Plastic packaging and recreational fishing wastes contribute significantly to the tally of large litter items found on South African beaches. It is thought that increased beach cleaning efforts during the past decade might be masking even larger increases in the abundance of large litter items.

Sources of plastic pollution

Overall, 96% of identifiable items collected on South African beaches were manufactured locally, but the proportion of foreign-made artefacts ranged from less than 2% at urban beaches to 14% at remote beaches. Assuming that most foreign-made debris derives from ships, it would appear that as much as 80% of the plastic pollution in our seas is derived from land-based sources. This would seem to emphasise the fact that littering is a people problem.

Impacts

The impacts of plastic litter on marine systems may be measured in terms of biological impacts and economic impacts. Biological impacts can be defined as those that affect marine animals and ecosystems, independent of their relationship with humans. Economic impacts are those which have a direct bearing on people and the resources they exploit.

It takes many years for litter to degrade