

Plastic pollution assignment



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Plastic pollution, the accumulation in the environment of man-made plastic products to the point where they create problems for wildlife and their habitats as well as for human populations. In 1907 the invention of Bakelite brought about a revolution in materials by introducing truly synthetic plastic resins into world commerce. By the end of the 20th century, however, plastics were found to be persistent pollutants of many environmental niches, from Mount Everest to the bottom of the sea.

Whether being mistaken for food by animals, flooding low-lying areas by clogging raining systems, or simply causing significant aesthetic blight, plastics have attracted increasing attention as a large-scale pollutant.

Objectives Students will gain a greater understanding of the need to carefully use all resources in ways that are not wasteful and damaging to the environment both now and in the future. Students will gain a greater understanding of the threats facing a variety of organisms, including endangered species, and the need to reduce plastic pollution and aluminum waste. Students will understand that they can personally play an important role in reducing plastic elution and increasing recycling rates for a healthier environment. Students will gain a greater understanding of the different types of plastics, and which can and cannot be recycled. Students will learn more about different states of matter and how plastic and aluminum can be changed into different states and reformed during the recycling process. Students will learn that aluminum beverage cans and certain plastics are excellent examples of closed-loop recycling and learn how recycling cans can save energy and reduce greenhouse gas emissions. Students will understand that recycling involves a firsthand commitment to making the environment

healthier. IMAGES The problem of plastics Plastic is a polymeric material?? that is, a material whose molecules are very large, often resembling long chains made up of a seemingly endless series of interconnected links.

Natural polymers such as cellulose and silk exist in abundance, but nature's "plastics" have not been implicated in environmental pollution, because they do not persist in the environment. Today, however, the average consumer comes into daily contact with all kinds of man-made plastic materials that have been developed specifically to defeat natural decay processes?? materials derived mainly from petroleum that can be molded, cast, spun, or applied as a coating. Since synthetic plastics are largely nonprogrammable, they tend to persist in natural environments.

Moreover, many lightweight, single-use plastic products and packaging materials, which account for approximately 50 percent of all plastics produced, are not deposited in containers for subsequent removal to landfills, recycling centers, or incinerators. Instead, they are improperly exposed of at or near the location where they end their usefulness to the consumer. Dropped on the ground, thrown out of a car window, heaped onto an already full rubbish bin, or inadvertently carried off by a gust of wind, they immediately begin to pollute the environment.

Indeed, landscapes littered by plastic packaging have become common in many parts of the world. (Illegal dumping of plastic and overflowing of containment structures also play a role.) Studies from around the world have not shown any particular county or demographic group to be most responsible, though population centers generate the most litter. The causes

and effects of plastic pollution are truly worldwide. According to the trade association Plasticizer, world plastic production grew from some 1.5 million tons in 1950 to an estimated 260 million tons in 2007.

Compared with materials in common use in the first half of the 20th century, such as glass, paper, iron, and aluminum, plastics have a low recovery rate. That is, they are relatively inefficient to reuse as recycled scrap in the manufacturing process, due to significant processing difficulties such as a low melting point, which prevents contaminants from being driven off during heating and reprocessing. Most recycled plastics are subsidized below the cost of raw materials by various deposit schemes, or their recycling is simply mandated by government regulations.

Recycling rates vary dramatically from country to country, with only northern European countries obtaining rates greater than 50 percent. In any case, recycling does not really address plastic pollution, since recycled plastic is “properly” disposed of, whereas plastic pollution comes from improper disposal. Plastic pollution in oceans and on land Since the ocean is downstream from nearly every terrestrial location, it is the receiving body for much of the plastic waste generated on land. It has been estimated that 6.6 million tons of debris end up in the world’s oceans every year and that some 60 to 80 percent of that debris, or 3.8 to 5.3 million tons, is improperly discarded plastic litter. Plastic pollution was first noticed in the ocean by scientists carrying out plankton studies in the late 1950s and early 1960s, and oceans and beaches still receive most of the attention of those tidying and working to abate plastic pollution. Floating plastic waste has been shown to

accumulate in five subtropical gyres that cover 40 percent of the world's oceans.

Located at Earth's mudslides, these gyres include the North and South Pacific Subtropical Gyres, whose eastern "garbage patches" (zones with high concentrations of plastic waste circulating near the ocean surface) have garnered the attention of scientists and the media. The other gyres are the North and South Atlantic Subtropical Gyres and the Indian Ocean Subtropical Gyres. In the ocean, plastic pollution can kill marine mammals directly through entanglement in objects such as fishing gear, but it can also kill through ingestion, by being mistaken for food.

Studies have found that all kinds of species, including small zooplankton, large cetaceans, most seabirds, and all marine turtles, readily ingest plastic bits and trash items such as cigarette lighters, plastic bags, and bottle caps. Sunlight and seawater embitter plastic, and the eventual breakdown of larger objects makes it available to zooplankton and other small marine animals. In addition to being nutritive and indigestible, elastics have been shown to concentrate pollutants up to a million times their level in the surrounding seawater and then deliver them to the species that ingest them.

In one study, levels polyunsaturated phenyl (PC), a lubricant and insulating material that is now widely banned, were shown to have increased significantly in the preen gland oil of streaked shearwaters (Calorimetric leucotomies) after these seabirds had been fed plastic pellets culled from Tokyo Bay for only one week. TOPICS plastic pollution There are also

terrestrial aspects to plastic pollution. Drainage systems come clogged with plastic bags, films, and other items, causing flooding.

Land birds, such as the reintroduced California condor, have been found with plastic in their stomachs, and animals that normally feed in waste dumps?? for instance, the sacred cows of India?? have had intestinal blockages from plastic packaging. The mass of plastic is not greater than that of other major components of waste, but it takes up a disproportionately large volume. As waste dumps expand in residential areas, the scavenging poor are often found living near or even on piles of residual plastics.