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PLASTIC POLLUTION AND ITS ADVERSE IMPACT ON ENVIRONMENT AND ECOSYSTEM

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ABSTRACT

The accumulation of plastic and products made of plastic in the environment lead to plastic pollution which imposes a hazardous effect on wildlife and human food chain. The plastics have a chemical configuration by which they are resistant to environmental degradation resulting in high incidences of environmental pollution due to slow degradation. Plastic pollution occurs by plastic goods which vary according to its chemical configuration. It depends on the method of its polymerization and the method of natural degradation. Depending on the size, plastic pollutants are categorized into micro-, meso-, or macro debris.

KEYWORDS: Plastic, Pollution

INTRODUCTION

Land, oceans and large water bodies are mostly affected from these pollutions. The marine animals dwelling in the oceans suffer from an altered digestive physiology for the accidental consumption of plastic materials mixed with their feed. [1, 2]

The plastics exposed to ocean decompose rapidly than those to land. The debris waste products formed due to plastics are categorized into primary and secondary wastes. Secondary plastic wastes are produced from the degradation of primary wastes. [3]

The human population, wind and ocean currents, coastline geography, urban areas and trade routes contribute to the extent of spread of plastic pollution in our environment. [4, 11-12]

EFFECT ON ENVIRONMENT

SOIL:

Harmful chemicals are released by seepage in the groundwater and in the ecosystem especially in the soil from the plastics. Polymer and nylon degrading bacteria like *Pseudomonas*, nylon-eating bacteria and *Flavobacteria* contribute to the release of methane gas from the breakdown of nylon which contributes towards greenhouse gas and global warming. [5, 6, 14]

WATER:

Plastic contaminates the water bodies and oceans by storm-water runoff, flowing into watercourses or directly discharged into coastal waters. This pollution enters the food chain thereby causing hazardous long term carcinogenic effect to fishes, animals and human beings due to the release of diethylhexyl phthalate, lead, mercury and cadmium. Oceans are generally contaminated from micro-plastic debris which floats on the sea surface. [7-10, 14].

MARINE ANIMALS

Sea turtles are mostly affected by plastic pollution including some species of jelly fish which cause oesophageal obstruction in them and also accumulate in the stomach of whales.

Even small fishes also consume the tiny bits of plastic below the ocean surface. Tuna, sword fish and Lantern fish also consumes plastics by mistake which become a part of the ocean food chain. [11-14]

BIRDS

Including the animals, plastic pollution also affect the birds like Seabirds, which obstruct their digestive tract causing tissue damage by the toxic chemicals called polychlorinated biphenyls (PCBs). Marine plastic pollution can even reach birds that have never been at the sea through the food habits.

The plastic particles were found intact within the birds' gizzards and proventriculi along with the plastic debris, such as styrofoam mixed with their feed. [11-14]

CONCLUSION

For reducing the incidences of plastic pollution, research endeavors should be employed to convert petroleum-based plastics to bioplastics. Also, educating and spreading the awareness among people to clean the water bodies like rivers, ponds and lakes can reduce the mortality of fishes and sea animals due to plastic pollution. The animals exposed to plastic pollution suffer from developmental defects with lesser birth weights for exposure to bisphenol A in fishes and reptiles, long term exposure may lead to stall egg hatching and decreased body weight, tail length, and body length.

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