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Junior Editor's Report

The Impact of Plastic Pollution on Marine Life and Human Health

By Shanica Louis – Martin Luther King High School Chapter

Every year, over 8 million metric tons of plastics enter our oceans, causing the death of more than 1 million marine animals. This alarming figure highlights the issue of plastic pollution, which dates back to the early 20th century. Plastic pollution refers to the accumulation of synthetic plastic products in the Earth's environment. Once in the ocean, plastic decomposes very slowly, breaking down into tiny particles known as microplastics, which can enter the marine food chain, becoming hazardous to aquatic life. These pollutants enter the ocean in multiple ways, including improper waste disposal, landfills, and rainwater or floods, which carry them into bodies of water. Consequently, this causes widespread environmental damage and health concerns. Plastic pollution has negative effects on both marine life and human health.



According to Ocean Conservancy, "Every year, 11 million metric tons of plastics enter our oceans on top of the estimated 200 million metric tons that currently circulate in our marine environments. That's like dumping one New York City garbage truck full of plastic into the ocean every minute of every day for an entire year." The speed at which plastic enters the ocean is staggering. Understanding these statistics and knowing where this plastic is coming from is essential. The primary sources of plastic pollution are usually land-based, with 70% to 80% coming from urban runoff, littering, industrial activities, and inadequate waste management along coastlines and rivers. In contrast, 20% to 30% comes from marine sources like fishing nets, ropes, and abandoned vessels. These items can remain in the ocean for years, causing damage to ecosystems and trapping aquatic life.

Moreover, plastics break down into tiny colorful pieces that can be easily mistaken for food by marine animals, often resembling their natural prey, such as fish eggs, plankton, or jellyfish. Over time, plastics can accumulate algae and other organic materials, making them smell like food. Filter feeders like fish and whales can unintentionally ingest these harmful plastics while feeding. As a result, ingestion can cause cuts and injuries to their digestive systems, leading to internal damage, blockages that prevent food from passing through, or a false sense of fullness, eventually causing malnutrition or starvation. In addition, fishing nets, ropes, or plastic bags can cause entanglement, leading to physical injuries that may become infected over time as they

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tighten. This can also restrict movement, impairing their ability to swim, hunt, or escape predators, and even leading to an increased rate of drowning since smaller animals like sea turtles get trapped in heavy or restrictive debris, making them unable to reach the surface for air. "At least 52% of all sea turtles have eaten plastic, and about 1,000 of them die each year due to being entangled in plastic."

Consequently, plastic pollution also disrupts the marine food chain. When large predators consume smaller prey that have ingested plastic, the plastic transfers up the food chain. As it moves up, the plastic accumulates in the bodies of predators, causing them to have a high concentration of plastic and toxins in their systems. This process is called bioaccumulation, which can lead to health issues, reduced reproductive success, and even death. This can have a significant effect on ecosystems since predators maintain balance in the food chain. Additionally, plastic debris can destroy marine habitats like coral reefs by crushing, smothering, or blocking sunlight, which is essential for photosynthesis. Plastic can also leach harmful chemicals or carry pathogens, which can be toxic to marine life and cause diseases in coral reefs such as white syndrome and black-band disease. This can lead to a decline in biodiversity and disrupt the growth process, further weakening the ecosystem.

Furthermore, plastics can enter the human food chain through marine animals that are contaminated by them, such as fish and shellfish. Once ingested, microplastics accumulate in the tissues of these aquatic organisms. When humans consume seafood, particularly species that are eaten whole, such as shellfish, they also ingest the microplastics within these organisms. This creates a direct pathway for microplastics to enter the human body. According to Science News, "Microplastic has been documented in all parts of the human lungs, in placental tissues, in human breast milk, and in human blood. Microplastic particles were detected in blood samples from 17 of 22 healthy adult volunteers in the Netherlands." This shows that microplastics can be absorbed into the bloodstream as well. Additionally, chemicals can leach out from the plastics, leading to health risks in humans, especially during critical developmental stages such as in utero or early childhood. These risks can include long-term health effects like neurodevelopmental disorders and reduced fertility. Some chemicals, like Bisphenol A (BPA) and Per- and Polyfluoroalkyl Substances (PFAS), have been linked to various cancers.

To address this issue, we must spread more awareness about the effects of plastic pollution on marine life and human health. For example, plastic takes years to decompose, leading to long-term pollution in rivers and oceans, which increases the chances of marine animals ingesting plastic and dying. Furthermore, humans can consume these plastics, which is detrimental to our health and can increase our risk of cancer. Educating the public about these impacts will lead to more informed choices and a demand for safer alternatives, such as stainless steel or glass

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straws, reusable shopping bags, and biodegradable packaging in stores and offices. Additionally, you can contribute by supporting organizations dedicated to taking action against plastic pollution and advocating for sustainable practices. This may include donating to or becoming involved with environmental organizations and participating in community clean-up events. Through these steps, we can improve our planet for future generations and create a cleaner and healthier environment for all.