The Unseen Plastics Contributing to Pollution

By Lily Schweinfurth

Summary: Nearly all of Earth's ecosystems have accumulated heaps of pollution. It is easy to see that the mounds of tossed away plastics have reached and tainted the natural environment. However, what about what we can't see? Today, microplastics from our products have been a great point of concern for many scientists.

There's more to pollution than meets the eye. In fact, humans have contaminated all ecosystems with tiny particles of plastic that have seemed to go under the radar, unseen by humans yet disrupting the natural life around us. "When people hear about plastic pollution in the oceans, they picture turtles with straws stuck in their noses or dolphins wrapped in take-away bags," asserts Mrs. Mayr, Lawrenceville's environmental sciences teacher. The ocean has become visible evidence of the impact human's consumerist tendencies have left on the environment, and while the overwhelming presence of thrown away coke cans and old clothing must be reckoned with, there exists another insidious culprit of pollution. "Those are real problems, but the bigger, unseen problem comes from microplastics, which accumulate up the ocean food chain and end up in all kinds of interesting places," Mrs. Mayr continues. These heaps of tiny plastic particles pervade our environment and disturb the balance in ecosystems. They affect more than just animal life, too. "As microplastics degrade into smaller bits they cause health problems for humans and other organisms."

Microplastics are tiny, sometimes microscopic, bits of plastic which have degraded through outside factors like sunlight, wind, and water. Microplastics also include microfibers from synthetic fabric in clothing and microbeads in cosmetic products.[1] They are a product of

many everyday activities we do not consider to be harmful for the environment: wearing our favorite clothing, washing our faces, and brushing our teeth all contribute to the trillions of microplastics lingering in the environment. They are nearly impossible to remove because of their size, some even shrinking to be so small that they are essentially undetectable.[2] Worse yet, microplastics won't just disappear—they continue shrinking and shrinking to nanoscale sizes. How, though, can they threaten life if they are just...so...*small?*

Though small, microplastics are mighty. Their minute size makes them easily ingested by aquatic organisms, terrestrial animals, and humans. Even miniscule plankton in the oceans are at risk for ingesting these harmful particles of plastic. They can cause physical and chemical damage to the organisms who ingest them by harming organs and bringing dangerous chemicals with them. Scientists have found evidence of these microplastics nearly everywhere imaginable: oceans, rivers, soil, air, and the bellies of animals.[3] Microplastics may find their way in agricultural land through the usage of fertilizers and hurt the soil's health, eventually end up in the food that we eat on a daily basis, or trickle down to reservoirs of groundwater that we directly use for drinking. In any ecosystem, microplastics can also work their way up the food chain.[4] For example, say a worm were to ingest any amount of tiny plastic particles. The organism that eats the worm will also take in microplastics, and the hazardous plastics will continue to be passed from organism to organism, damaging life along the way.

Scientists are currently conducting research to learn more about these elusive plastics. They are trying to determine which where concentrations of microplastics are the highest, what sources contribute the most to microplastic pollution, and what effects they have on organisms.[5] This research would enable them to find exactly who is the most vulnerable to microplastic

pollution in order to go about creating change through policy-making.[6] In the meantime, it is important for all people to take part in reducing our own levels of plastic pollution.

There exist many ways to limit our contributions to microplastic and plastic pollution altogether. The most direct option is to eliminate the usage of single-use plastics. Whether this means trading out single-use utensils for reusable ones, switching to a reusable water bottle, or buying food in bulk to reduce packaging, there exist many alternate opportunities to diminish our plastic footprint on the environment. An option which pertains more specifically to microplastics includes being aware of the impacts that the materials in cosmetic and clothing products have on plastic pollution. Clothing, for example, produces over one million microplastic fibers in each round of laundry.[7] By purchasing clothing made of natural materials with less synthetic fabrics, installing a washing machine filter, or putting the washing machine on a more gentle setting can all decrease this massive release of microplastics.[8] Being aware of the ingredients in cosmetics is also critical. Many companies discreetly put plastics into their products by hiding them in ingredient labels with scientific names; face washes, lotions, makeup, and toothpastes all have the potential of carrying plastics in them. Some of the most popular names that plastic disguises itself as include Polypropylene, Polyethylene, Polymethyl methacrylate, Nylon, Polyurethane, and Acrylates copolymer, among others.[9] Just as microbeads seem to hide themselves in different environments, these plastics in cosmetics do just the same. In order to combat the problem of microplastic pollution that humans have created for ourselves, it is vital to be cognizant of the sources of pollution and work towards mitigating them for the health of the planet and ourselves.

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