MICROPLASTICS AND MICROBEADS

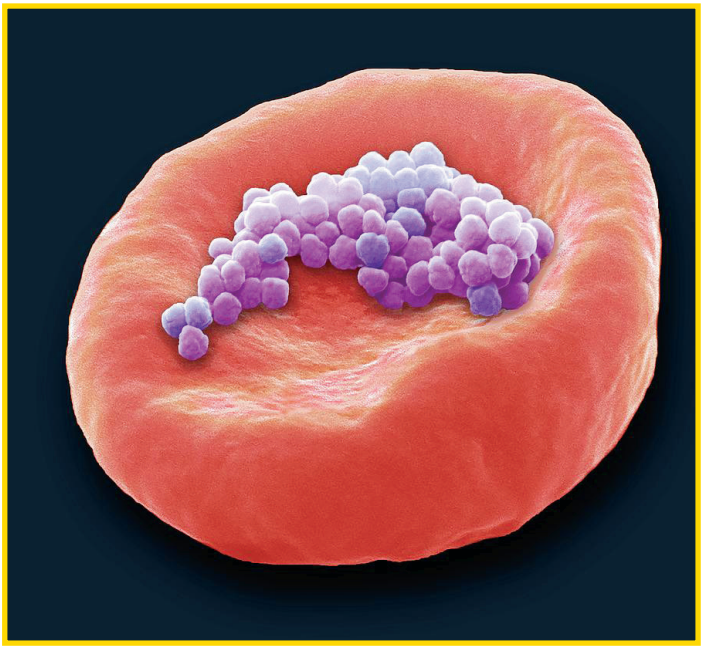
By Kevin Maine

What is a microplastic? What is the difference between microplastics and microbeads? According to the U.S. National Oceanic and Atmospheric Administration and the European Chemicals Agency, microplastics are fragments of any type of plastic less than 5 mm in length and visible to the naked eye. Where do they come from? Sources include cosmetics, clothing, food packaging, and industrial processes.

Microbeads are tiny pieces of polyethylene plastic added to health and beauty products, such as some cleansers, shampoos, soaps, and toothpastes. These particles usually can be seen with the aid of a microscope. However, microbeads are not new. Plastic microbeads first appeared in personal care products about fifty years ago, with plastics increasingly replacing natural ingredients. Microbeads are still relatively unknown, and their impact on water and wastewater and the human body.

These particles have been discovered in our air, water, and food, and in the human blood stream. Eight years ago, New York Senator Kirsten Gillibrand urged federal regulators to ban microbeads that are often found in personal care products like shampoo and facewash that eventually end up in our water.

What are the effects in the body? If they cause potential health hazards in humans is one of the debatable topics in scientific literature. Currently, there isn't much concrete evidence that shows if microplastics have long-term health effects on humans. They do have the potential to attach themselves to red blood cells.



Like PFOS & PFAS, microplastics are indigestible and indestructible. Studies have shown we are consuming about 5 grams of microplastics in our diet every week. However, some studies have shown some particles can travel around the body and may lodge in our organs. Studies have detected them in human blood for the first time, finding the tiny particles in almost 80% of the people tested. The impact on health is yet unknown.

How do we treat our water and wastewater? Removal in drinking water appears simple on a small scale. Carbon filters are typically effective down to 0.5 microns. Reverse osmosis is effective down to 0.001 microns.

Reverse osmosis is a good option if you want to remove various contaminants aside from microplastics. It will be like hitting two birds with one stone. However, it will remove water-rich minerals and may require routine maintenance.

How is removal in wastewater accomplished? Primary treatment, especially sedimentation and solids skimming, may remove up to 72%, on average, of plastic particles present in sewage influent. However, final effluent still contains significant amounts of microplastics.

In addition, the amount of microplastics that are entrapped in sludge often get no further treatment and are mostly disposed of onto the land. Resulting in the contamination of groundwater and soils.

I'm sure as time progresses, we will be hearing more on microplastics and microbeads. 💧💧💧

Work Cited: https://bit.ly/3JNVUbL

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