Photo of the Day |



A campus preacher talks to students on Oct. 27 at the intersection of Hillside Road and Fairfield Way. The last notable preacher to come to Storrs was Sister Cindy on Oct. 13. PHOTO BY NORA MARIANO, ASSOCIATE PHOTO EDITOR/THE DAILY CAMPUS

IN MEDIAS RES:

We need to be more afraid of microplastics



ILLUSTRATION BY COLBI LORANGER, ASSOCIATE ARTIST EDITOR/THE DAILY CAMPUS

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Happy Halloween. It's time to talk about microplastics.

By now, many of us have heard of microplastics: minute pieces of plastic less than five millimeters wide, which can be invisible to the naked eye. As a result of their microscopic size, and the vast amount of plastic our society consumes, microplastics have come to pervade nearly every aspect of our life. They have polluted our soil, our water and our food; no stream has been left untainted and no sip of water left unspoiled.

If the body is a temple, we too have been desanctified; microplastics have been found in the brain, heart, liver, stomach, ovaries, testes, lymph nodes and placenta, as well as in plaque lining the carotid arteries. They've also been detected in blood, urine, breast milk, semen and meconium (a baby's first stool). There is not a single part of our bodies that remains clean.

The health aspects of this mass defilement are, of course, grim. Microplastics have been associated with obesity, diabetes and lymphoma. According to some studies, microplastics have been found capable of disrupting hormones, thereby affecting fertility, as well as inflaming and damaging the lungs and increasing the risk of stroke and cardiovascular disease. As is the case with most things that do not belong in the body, emerging science suggests microplastics may even increase cancer rates.

New studies, however, have unveiled the chemical dangers of microplastics. Published in the scientific journal "Nature," researchers from Columbia University and UC Berkeley discovered that when microplastics come into contact with water, their hydrophobic surfaces trigger electron transfers. This chemical reaction spontaneously generates high-energy reactive oxygen species — chemically unstable, oxygen-containing molecules that possess high levels of energy and attack surrounding biological and chemical structures.

In layman's terms, that's bad. The human body is roughly 60% water. Because human blood and cells are water-rich, these microplastics act as sources of toxic molecules that harm surrounding cells. They overwhelm natural antioxidants, cause oxidative stress and damage proteins. In laboratory tests, the presence of microplastics led to red blood cell shape changes and rupture, known as hemolysis.

Such a mass adulteration of the natural world and the human body has not been seen since the proliferation of the toxic DDT, a probable carcinogenic made famous by Rachael Carson's "Silent Spring." In that instance, grassroots activism and eventual federal pressure led to the discontinuation of the chemical, and its later global restriction under the Stockholm Convention. Although the Environmental Protection Agency has listed microplastics as a priority contaminant group in its draft Contaminant Candidate List, no formal legislation has been made to contain the spread of microplastics, or to eliminate their root source: our own obsession with the unsustainable material.

Our paralysis in curbing our consumption of plastic is understandable. Americans continue to waste an average of 287 pounds of plastic waste each year; worldwide, humanity produces around 350 million tonnes. Plastic makes up our food, our infrastructure, our medicine, our baby bottles and our clothes. The issue appears insurmountable — yet humanity has turned away from widespread toxic material use before.

Just 40 years ago, the United States consumed 1.3 million tonnes of lead annually. It was in our paint, our glassware, our oil and our pipes. After learning of lead's dangers to brain development, however, we slammed the brakes. The Clean Air Act was amended to ban the sale of leaded gasoline for on-road vehicles. The Consumer Product Safety Commission outright banned lead in paint. Congress prevented the creation of new lead pipes through its 1986 amendment to The Safe Drinking Water Act. Today, widespread legislation prevents its proliferation to protect both our children and natural world.

Microplastics demand the same treatment. Legislation curbing the spread of microplastics has been proposed in the Microplastics Safety Act (H.R. 4486) which would provide funding for more concrete research on the effects of microplastics on our health. Where federal support networks fall short is addressing the very real effects that we know microplastics already have. We must bring ourselves to face the invisible enemy that has contaminated our world. Humanity has come to understand the dangers of invisible viruses and plagues; so too must we come to understand the dangers of the invisible pollution that has sullied the water we drink and the air we breathe. Comprehensive standards for federal review and management must be established to monitor and control microplastic pollution. Simultaneously, we must reduce unnecessary plastic production and phase out the worst of our excess — just as we have done in the past with other pollutants. For the sake of the world and our species, one thing is clear: we must act.



Hand holding plastic granules under sunlight at a recycling facility. These microplastics can be found in all aspects of our lives.

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