LOVE LETTER FROM A MERMAID: ON PLASTICS AND YOUR HEALTH

April 30, 2024

Member Submission by Lois Wilcken

Dear Coop Members,

Allow me to introduce myself. I go by many names: Atargatis, Ba, Liban, Little Mermaid, Lorelei, Mami Wata, Orehu, Seirēn. I bear many attributes: seduction, wealth, vanity, irresistible music. The reason for this diversity lies in the nature of my dwelling, the sea that girds our planet Earth. All nations know me. They love me, but they also use me as a receptacle for their waste, especially plastics. Words of caution: What goes around comes around. Just as plastics harm the marine life I see day by day, so they harm you and your family.

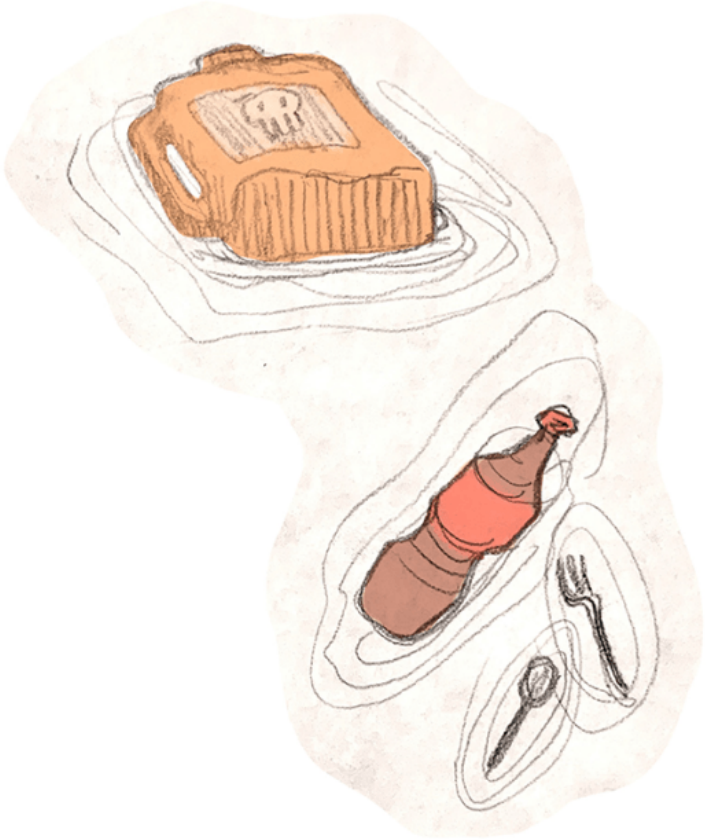

ILLUSTRATION BY KAITLYN QUACH

Life did not evolve with plastics. In planet-Earth time, the existence of plastics barely fills the blink of an eye. Scientists call it a novel entity, synthetically created from fossil carbons little more than a century ago. Pliable chains of large molecules called polymers form the foundations of plastics and host additional chemicals capable of imparting such properties as color, texture, durability, water resistance and more. Today's plastics bear 13,000 chemical additives; science associates about 2,300 of these with health impacts including cancer, birth defects and diminished cognitive function. Your vulnerability depends on your engagement in the basic phases of plastic's life cycle: production, use and disposal. Workers and people in communities close to production sites suffer most from the first phase, and disposal sites like myself (the sea) suffer most from the last. Everyone suffers from the second phase.


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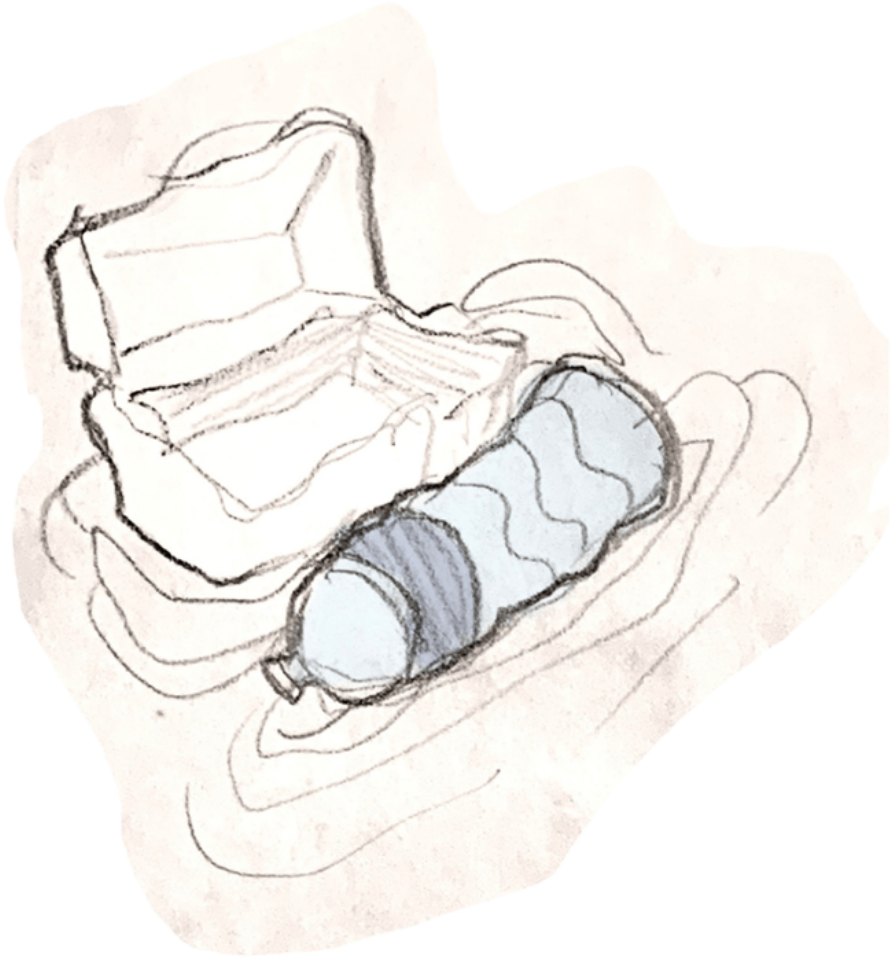
You might imagine that plastics are fixed in form, but they actually change over the course of their lifetime. If you could eat the kind of mushroom Alice ate in Wonderland, you might shrink to a size where you could witness the degradation of plastic. First, you would see macroplastics, fragments splintered off over time from the deceptively coherent original. With an additional mushroom or two, particles of microplastics and nanoplastics (MNPs, less than ten-millionths of a meter) would appear. We know MNPs best for their explosive population growth in aquatic ecosystems like my own; plastic polymers and their chemical additives have invaded every corner of the sea. Migration, you might say, occurs at the end of plastic's life cycle—in the disposal phase. It happens, however, during the use phase as well, mostly in your plastic packaging and storage.



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A peer-reviewed study published in *Environmental Science and Technology* in 2023

confirms the migration of MNPs during use. The scientists conducting the study measured MNP release from plastic containers and reusable food pouches under three scenarios: storage at room temperature, refrigerated storage and heating by microwave. By far, three minutes of microwave heating caused the highest release of MNPs (temperature factor), while refrigeration and room-temperature storage over six months came in a close second (time factor). The reusable food pouch released more particles than the plastic containers (physical properties factor). The Food Packaging Forum, based in Zurich, identifies surface-to-food ratio as an additional factor influencing extent of migration, identifying single-serving packages as most likely to contaminate food.

What exactly is the risk here? What happens when MNPs migrate from food into your bodies? The research is young, but evidence of health hazards due to the ingestion of MNPs is mounting. Fragmented plastics accumulate in tissues and cells, causing inflammation and oxidative stress, but they also act as vehicles for their toxic chemical additives. In its work toward a Global Plastics Treaty the Minderoo–Monaco Commission on Plastics and Human Health in 2023 named decreased fertility, premature births, neurodevelopmental disorders, cardiovascular disease, and renal disease as just a few hazards humans face. (Download the report here and see Figure 4.1 on page 71.) Tragically, infants in the womb and young children are at highest risk. The sensitivity of early development increases the odds of such conditions as low birth weight, impaired lung growth and childhood cancer. Some conditions manifesting in adults can have their roots in fetal and early childhood exposure.

Is waiting for yet more definitive research worth the risks? Should policy, on the other hand, follow a precautionary approach, placing the burden of proof that the product is safe on those companies profiting from the manufacture of plastics? What can you do meanwhile? Can you think of precautions that your Coop can take as the science moves forward? Although I live in the sea, I do encircle the planet, and I hear just about everything. Some of you have ideas about alternative (non-plastic) bags for produce and bulk; others would like to see the larger bins replace small packages in the bulk aisle as a reduction of surface-to-food ratio. I’ve heard one member talk about a

special section—with lots of visibility—for items that do not come in plastic packaging. I feel certain you, too, have ideas. A little sea bird tells me that you may get involved by contacting plasticfreefoodcoop@gmail.com.

With love from the sea,
Your Mermaid

ILLUSTRATION BY KAITLYN QUACH

Artwork by Kaitlyn Quach

Kaitlyn Quach is a cartoonist and activist who works part-time in food service. They love long walks, grape hyacinths and slightly scary-looking mermaids. It is now impossible for them to get lost inside the NY State Capitol/LOB because they've been lobbying for climate legislation so many times.

You can find Kaitlyn on Instagram @the.gauntlets