

The pathway by which plastic enters the world's oceans



Estimates of global plastics entering the oceans from land-based sources in 2010 based on the pathway from primary production through to marine plastic inputs.

Global primary plastic production:
270 million tonnes per year

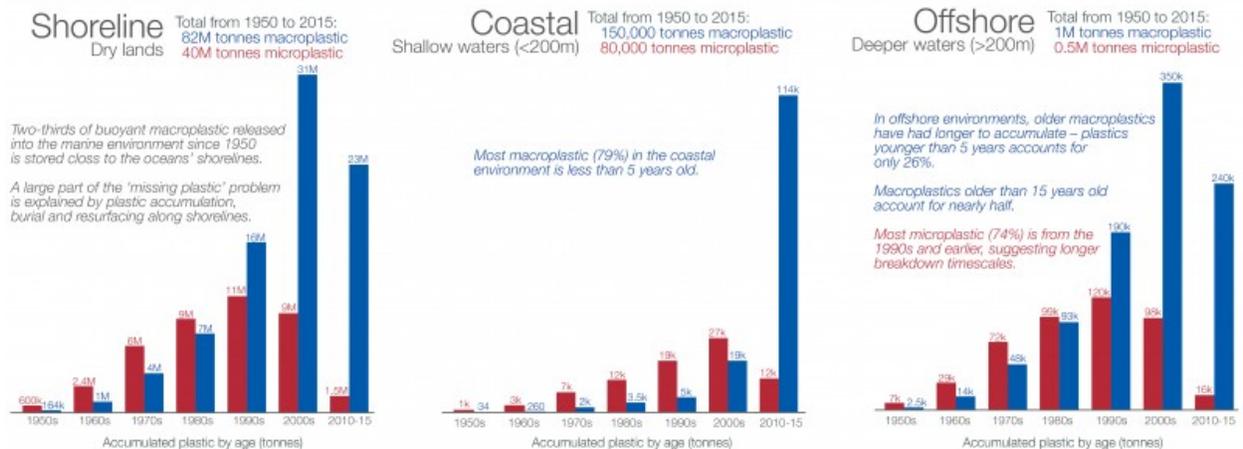


Source: based on Jambeck et al. (2015) and Eriksen et al. (2014). Icon graphics from Noun Project.
Data is based on global estimates from Jambeck et al. (2015) based on plastic waste generation rates, coastal population sizes, and waste management practices by country.
This is a visualization from OurWorldInData.org, where you will find data and research on how the world is changing. Licensed under CC-BY-SA by the authors.

Where does plastic accumulate in the ocean?



Macroplastics are greater than 0.5cm in diameter
Microplastics are smaller than 0.5cm



Data source: Lebreton et al. (2019). A global mass budget for positively buoyant macroplastic debris in the ocean.
This is a visualization from OurWorldInData.org, where you find data and research on the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

Website: <https://ourworldindata.org/plastic-pollution>

Reference:

Hannah Ritchie and Max Roser (2020) - "Plastic Pollution". Published online at OurWorldInData.org.
Retrieved from: 'https://ourworldindata.org/plastic-pollution' [Online Resource]

As a science educator, I believe that being able to collect, analyze, and develop conclusions over data is very important. Thus, students should be taught these skills within the classroom to prepare them for their future. The “Plastic Pollution” data found at the website listed above, would be a wonderful resource for my classroom. I included a few examples of the data charts found at this particular website. In my science classroom, one of my standards addressed states “communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials” (NGSS). During this standard, we discuss the structure and properties of plastics. This data would be a wonderful addition to connect, so my students can determine what makes plastics so harmful to the environment. This would allow for a very real-world application and possibly get students to think about the future of the planet. The data does a wonderful job expressing the different levels of plastic pollution as well as, the yearly rate of plastic pollution. The website and data are very user friendly that would allow for easy access for my students.

Looking at this data, it is clear that it can connect to the standard I already listed but would also allow me to tie in an engineering standard. As, I already discuss the structure and properties of polymers, this data would allow me to get my students to think on a deeper level. As they could look at the formation of polymers and determine what allows them to be durable and, thus, harmful to our environment. However, I could take this data further and challenge my students to develop solutions for the plastic pollution problem. This would require students to analyze the data, determine the main issues, and develop solutions to meet the needs of the problem. This would be a great addition, as students will be using real-world data to develop solutions for a real problem seen in our world. Thus, allowing the standard that states “design a solution to a complex real-world problem by breaking it down into smaller, more manageable

problems that can be solved through engineering” to be addressed (NGSS). Mathematics could also be applied to this lesson, as students could determine the percentage of plastic use per year. To determine how the rate of plastic has increased throughout the years. Overall, this data would be a wonderful addition to my classroom, as it would allow me to cover more standards at once and connect the standards to real-world situations.