ENTEC

THE VALUE OF PLASTICS

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Today, there is a lot of controversy surrounding plastics and the environment

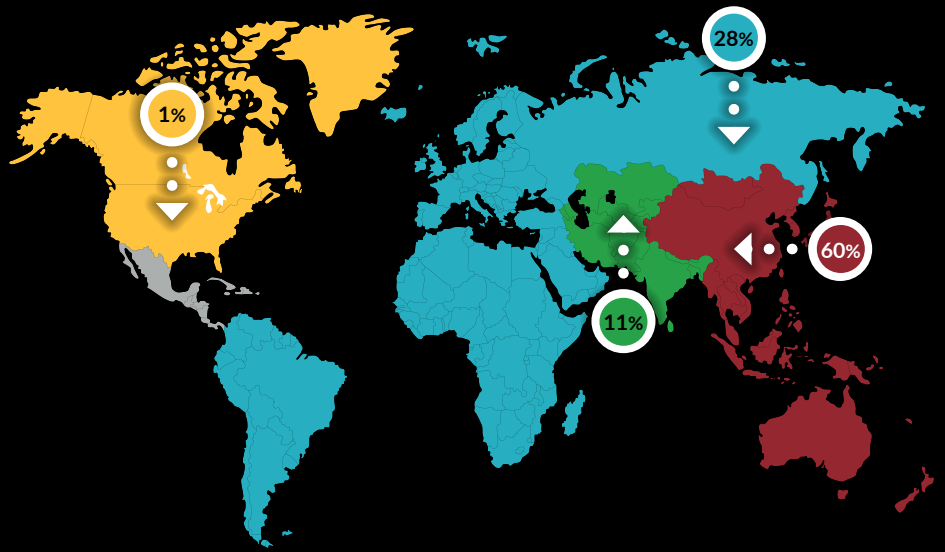
How plastics are polluting our oceans and killing fish and other wildlife

Or how plastics are littering our streets and parks and forests

Many people would like to ban plastics altogether and in fact, many states and some countries have bans on certain plastic items such as grocery bags or foam take-out food containers. "**Plastics are bad**" is all we hear. However, there is a lot of misinformation and incorrect information regarding plastics, their value and their effect on the environment. This document will discuss some of this misinformation and highlight the value of plastics and why we need to make decisions regarding plastics and plastic bans based on facts, not just feel-good emotions.

Some of the misinformation regarding plastics is that because most plastics are derived from petroleum, making plastics causes our gasoline prices to go up. This is absolutely not true. In fact only **4% to 8%** of global oil production goes into making plastics[1]. So, the amount of petroleum used to produce plastics is not big enough to have any significant influence in the cost of gasoline.

We need to ban plastic straws and plastics bags because they are polluting the oceans. It is estimated that only about 3% of the global plastic waste ends up in the ocean[2]. While plastic straws and plastics bags do contribute to pollution in the oceans, plastics in-and-of themselves do not pollute. People pollute. Most of the plastic waste in the ocean is due to mismanaged waste in coastal populations. Most of the mismanaged waste is in low-to-middle income countries where waste management and recycling systems are less effective.



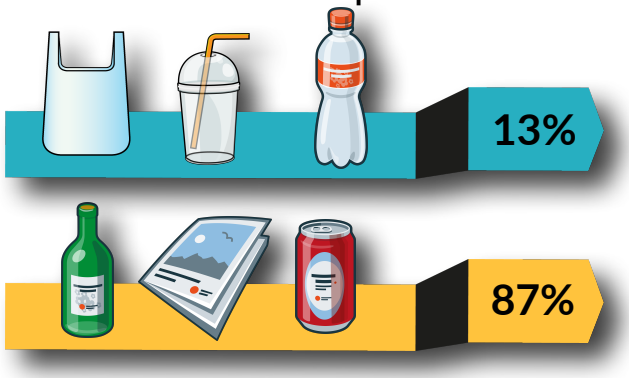
Most plastic ocean waste comes from East Asia and the Pacific **60%**

Followed by South Asia **11%**

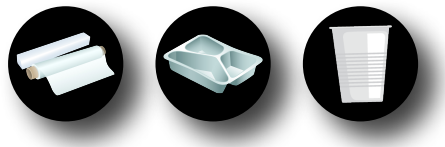
Europe, South America, the Middle East, and Africa account for about **28%**

Only **1%** of the ocean waste comes from North America!

If we ban all plastics we'll be greener and it will be better for the environment. **False!** Plastics like polyethylene and polypropylene are far greener than many alternative materials like cotton, paper or even biodegradable plastics. Replacing these plastics with alternate materials is 3 to 4 times worse for the environment because they use more energy, chemicals and water to produce and give off more CO^2. So, banning plastic straws, plastic grocery bags and foam take-out food containers does more harm to the environment than plastic does. Also, plastics only account for **13%** of our municipal plastic waste, so shouldn't we be focusing our attention on the other materials (paper, cardboard, metal, glass) that makes up the other **87%** of the municipal waste stream?



Plastic Packaging,
Especially **Flexible Packaging**



Has really been under attack lately. It's made out to be the biggest bad-guy of all the plastic products. Why? Because it has a shorter life span than many other plastic items, such as patio furniture or car parts, that are designed to have a long life. Plastic packaging, by its nature is generally used once and then discarded. It is also more difficult to recycle because it is often composed of multiple types of plastics rather than just one type of plastic. Also, because it is in the form of thin film it is more difficult for most recycling plants to handle as it tends to bind-up (clog) in the grinding equipment.

Compared to other materials such as paper, cardboard, metal etc., plastics offers many advantages. With all of the negative press lately surrounding plastics, it is important that we understand the real **Value of Plastics** and why substituting plastics with alternate materials is actually worse for the environment.

One way that plastics bring value is in their **Energy Efficiency.** Plastics require much less energy to produce than paper, metal, wood or glass. Plastics require 2% to 4% less energy to produce than these alternate materials. Plastics also generate about 3 times less greenhouse gases compared to these alternate materials. Replacing plastic with these other materials would require, on average, about 57% more energy and would generate 61% more greenhouse gases! So, contrary to some of the misinformation out there, plastics are actually better for the environment than the materials that replace them.

Another way that plastics bring value is that they help prevent food waste. **Food packaged in glass...**

Weighs about four times as much as plastic packaging

Has about double the energy consumption

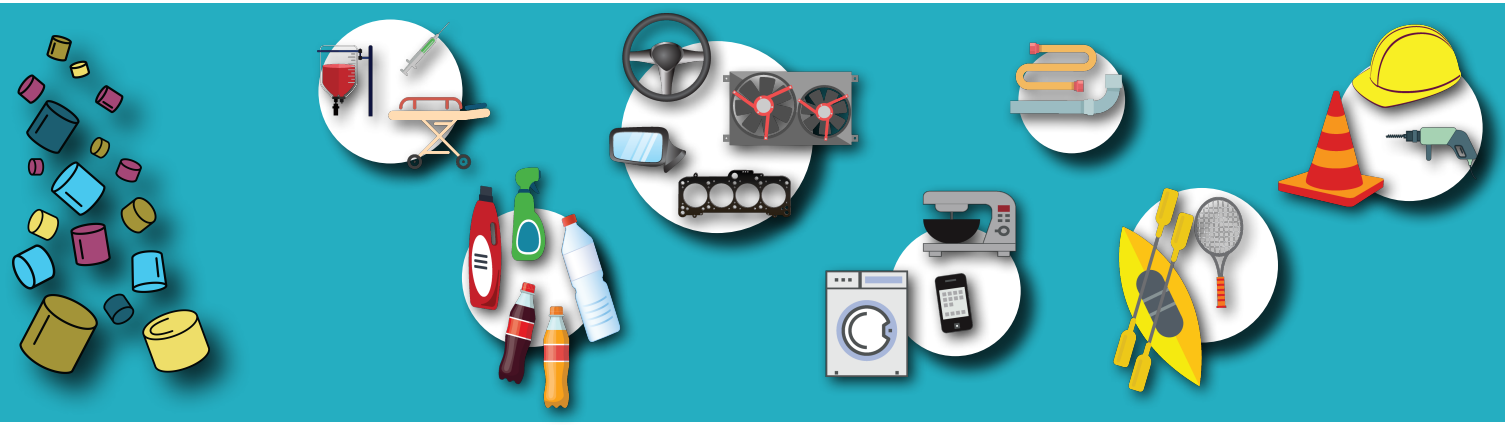
Gives off triple the greenhouse gas emissions

Often results in increased food waste

As an example, a container made from 2 pounds of plastic could hold 10 gallons of liquid. The same container made from aluminum would weigh 3 pounds; from steel 8 pounds and from glass 40 pounds. One major coffee producer changed their packaging from metal to plastic and reduced the overall container weight by 84%. In addition, the plastic container used less energy to produce compared to the metal container and also saved fuel during its shipment. In the leaflet entitled Preventing Food Waste published by the American Chemistry Council, they state that a cucumber wrapped in plastic wrap stays fresh for 11 days longer; bananas last 22 days longer and beef lasts 26 days longer. Plastic helps food stay fresh longer which helps to reduce food waste[3].

Because of their lower density compared to other alternate materials, plastics can result in lower transportation costs. In the automotive industry plastics help the auto manufacturers achieve higher fuel economy. Because of plastics, the typical car of today weighs 145 pounds less than cars from 30 years ago. In the aeronautical industry plastics help airplanes weigh less which not only saves fuel but allows them to carry more passengers, heavier payloads or fly farther.

These are not the only value of plastics. Plastics are valuable materials in virtually every market segment and application.



Plastics are used in medical applications from syringes, IV bags and tubing to medical equipment housings, pill bottles and artificial knee components. In hygiene and personal care, plastics are used in shampoo bottles, razors, toothbrushes, deodorant tubes, diapers, feminine products, combs & brushes and bandages. Plastics are used in power tools, hair dryers, coffee makers and other large and small appliances. Plastics are used for food and storage containers, plates and bowls and cutlery. Plastics are used extensively in the automotive industry for everything from interior panels, wheel well liners and wheel covers, to intake manifolds and other engine components as well as brake pedals. Plastics are used extensively in both flexible and rigid packaging such as water and soda bottles, meat packaging, cereal bags, and candy wrappers and for bread and snack packaging. Plastics are used in office supplies, computers, printers, cell phones and virtually any and every type of application you could imagine.

It is truly difficult to imagine a world without plastics because of the many values and benefits they bring.

They help us to...

Save and Reduce Energy

Reduce Weight and Save on Transportation Costs

Reduce Greenhouse Gas Emissions

Reducing plastic litter and pollution is certainly an important topic for discussion. Improving local, state and national recycling efforts and educating people about the benefits and importance of properly disposing of plastic waste would go a long way toward balancing the benefits of plastics while simultaneously reducing the negative environmental impact of plastics in our environment.

Sources:

1. Neufeld, L., Stassen, F., Sheppard, R., & Gilman, T. (2016). The new plastics economy: rethinking the future of plastics. http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf.
2. Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., ... & Law, K. L. (2015). Plastic waste inputs from land into the ocean. Science, 347(6223), 768-771. http://science.sciencemag.org/content/347/6223/768.
3. https://plastics.americanchemistry.com/fact-sheets-and-infographics/Reducing-Food-Waste-Through-Plastic-Packaging.pdf