

Cena y Ciencias 2019-2020  
Ciencia para Salvar El Mundo  
“Sustainability”

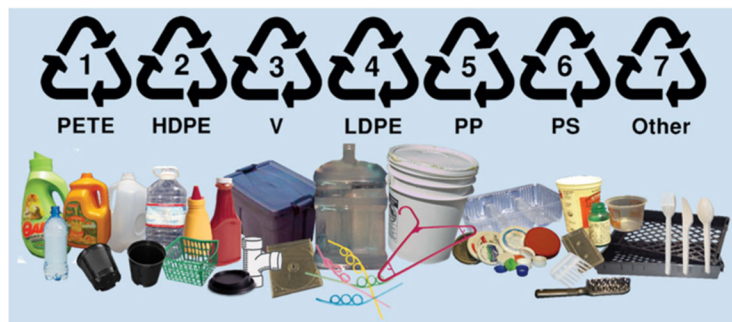
Our daily activities use all sorts of plastics. Plastics are polymers – small molecules linked by chemical bonds that confer them flexibility, durability, and ease of transforming them into useful materials for plastic bags, utensils, containers, etc. However, these same strong chemical bonds make plastics hard to degrade into its simpler chemical components. Nonetheless, scientists have found ways to recycle plastics, that is, to use chemical processes to transform waste and reconvert it into useful materials. In an ideal world, the cycle of use would consist of producing plastic products, discarding them, recycling them, and thus revert them to useful products.

But there are several problems: recycling consumes energy, and not everything can be recycled. Furthermore, not all plastic is collected for recycling facilities. Worse, humanity has become highly dependent on plastics, even when they are not necessary. Disposable plastics, also known as single-use plastics, have become a problem. We use plastic cups and utensils without a second thought, for convenience, and we throw them away, often without knowing what will happen to them. But these accumulate in the environment, in the waste facilities, in the soil and water. Animals had not seen plastics until recently (some 70 years ago) have not learned how to cope with them. Many times they suffer due to the pollution caused by these plastics.



**Reduce, reuse, recycle... rethink!**

Not all plastics are made equal. Today in Cena y Ciencias we will learn several ways to prevent plastic pollution by learning more about plastics. We can reduce the use of disposable plastics (by using metallic utensils instead), or reuse them (using several times plastic bags). On the other hand, we can recycle. For this purpose, we need to know that there are different types of plastics based on their composition and



chemical structure. Not all plastics are recyclable. Recycling types 1, 2, 4, and 5 are generally recyclable. But types 3 and 6, and others cannot be recycled, or are very energy intensive. For instance, Styrofoam cups (type 6), which are highly used in restaurants, are not recyclable. In these cases, it is a much better idea to reduce their use.

Scientists have searched for alternatives: rethinking the plastic pollution problem implies using new compounds and chemical structures for making biodegradable polymers. Just as polymers in nature, such as cellulose and proteins, this type of polymers are tough enough to make utensils and containers, but at the same time, they can be degraded in the soil or water. There is much to learn from nature about becoming efficient when making materials!