



MYTHS ABOUT PLASTIC

Addressing pollution requires greater effort than just abandoning this or that material.

Waste pollution is a crucial issue of our day, and the broad public tends to believe that the easiest way to solve it is to switch from plastic packaging to good old “eco-friendly” materials such as paper, glass, and metal. However, the general image of good alternative materials and evil plastics has little to do with the reality, because in most cases, it is only partially true.

Myth No. 1. Plastics production fuels global warming

According to anecdotal evidence, plastics manufacturing is the main contributor to CO₂ emissions. However, figures suggest the opposite: the manufacturing of plastics results in 0.2 tonnes of CO₂ emissions per tonne of products. The production of glass is responsible for 0.7 tonnes of CO₂, while aluminium tops the list with its 8.1 tonnes of CO₂.

As packaging transportation is another contributor to carbon dioxide emissions, it is worth noting that plastic bottles on board use less fuel thanks to their little weight, thus reducing CO₂ emissions by 60% compared to the same quantity of glass bottles.



Light plastic containers result in less fuel used during transportation.

Myth No. 2. Plastics manufacturing harms the environment

Plastic products are made from raw NGL obtained by processing associated petroleum gas (APG), a by-product of oil production, which is otherwise burnt off in gas flares. APG flaring is responsible for 12% of Russia's air emissions. Petrochemical companies which process APG into feedstock for polymer products prevent it from being emitted into the atmosphere and reduce the greenhouse effect.

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Energy is another important resource that needs to be used sparingly. Paper and polymers are reputed to be the most energy-efficient materials; yet, it takes 40% less energy to manufacture a plastic bag than a paper one.

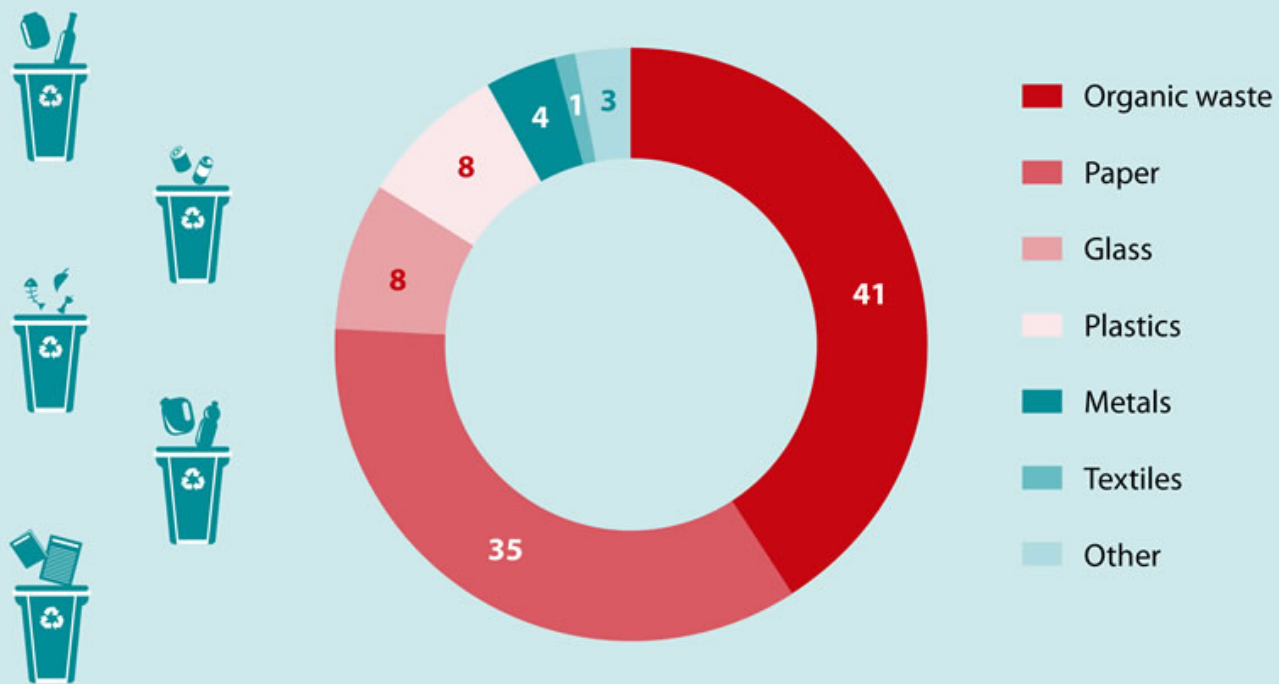
Myth No. 3. Plastics make up the majority of the world's garbage, particularly in the ocean

Plastics really stand out among other waste in water, but it is not the only material polluting the ocean. It should be borne in mind that most of waste remains onshore. Every year, people generate around 1.3 trillion tonnes of solid municipal waste, where plastics represent less than 10%, and only 3% of that volume (ca. 8 million tonnes) reaches the ocean.

Available data demonstrate that "garbage" does not mean plastics only: paper and cardboard are major contributors to Russia's total waste. The garbage problem stems from an inappropriate disposal technology and commingled collection. This is also true for other types of garbage. As a result, landfills seize another 0.4 million hectares every year.

Ban on plastics is not the way out, because people will simply use more glass, paper, and metals, generating other types of waste. If polymers are seen as the only thing to blame, it will build up pollution levels rather than bring them down.

Municipal solid waste in Russia, %



Source: EcoTechnologies

Myth No. 4. Plastics are non-recyclable

There are seven resin identification codes (RIC) of polymer packaging, with only No. 3 and No. 7 having a low recycling potential, while PET, polyethylene terephthalate used for beverage bottles, is fully recyclable if collected properly.

Plastic symbols explained

Properties and safety

Recycled plastics can be used to make new products



PET/PETE
Polyethylene
terephthalate



- High barrier properties
- ☀️ Resistant to sunlight
- 🌡️ Heating above 60°C not recommended
- 🔥 Microwave- and oven-safe if so labelled
- ♻️ Reuse not recommended



Great recycling potential



HDPE
High-density
polyethyl-
ene



- High durability and chemical resistance
- 🌡️ Can withstand temperatures up to 90°C



Good recycling potential



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A TONNE OF RECYCLED PET BOTTLES CAN BE USED TO MANUFACTURE INSULATING FILL FOR 750 WINTER JACKETS, 400 SLEEPING BAGS, OR 450 SQ M OF CARPETING.

Myth No. 5 Any degradable material is better than plastic

Opponents of plastic believe that polymers are unnatural non-organic substances.

Indeed, you cannot drop a PET bottle in a forest and be sure that it will completely degrade after a year passes. It will take 400 to 700 years for a plastic product to degrade, depending on the technology used in its manufacture. Polyethylene bags people use every day degrade in a century or two. This is the flip side of plastic products' endurance and durability.

However, aluminium degrades in 500 years, while glass decomposes in more than a millennium, much longer than domestic plastic waste. A paper package gives an illusion of safety, a feeling that you can drop a kraft bag anywhere. Although paper does degrade from one to three months, a paper bag also consists of glue, non-degradable inserts, and images made with some chemical paint, which all contaminate the soil.



Paper bags often contain non-degradable materials.

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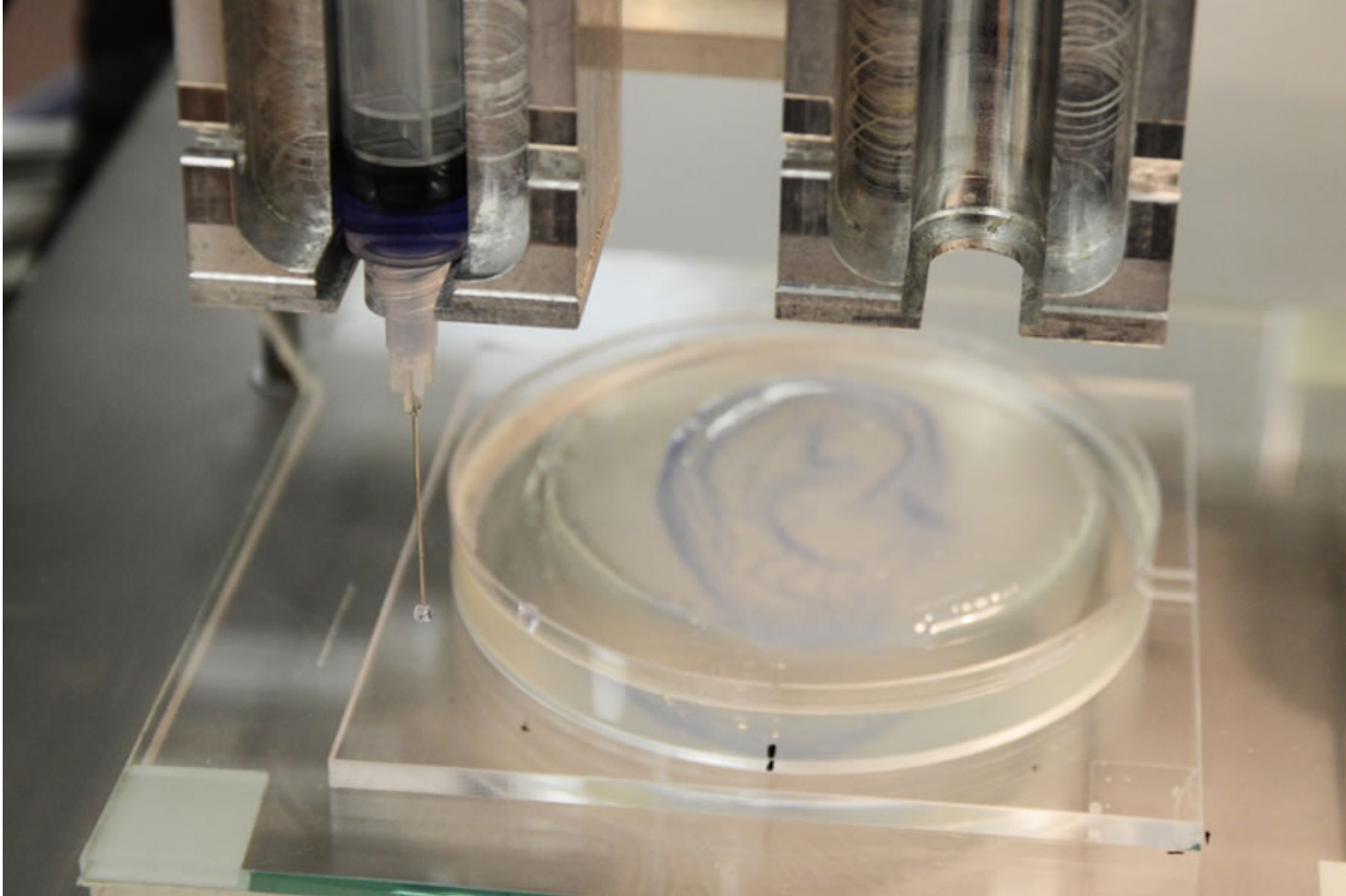
Myth No. 6. Plastics are unsafe

In everyday life, plastics are most commonly used for food storage. Plastic is light and easy to use. Plastic containers are good when you need to take some food along with you.

Every kind of plastics is safety certified. However, everyone should bear in mind the intended use of such products, as not every plastic is good for microwaving or, oppositely, refrigeration. No. 1 means PET, which is not recommended for heating above 60°C, for heating food inside it, or for reuse. Polypropylene products with symbol 5, for instance food containers, can be used for both microwaving and freezing. Polystyrene containers (No. 6) are not recommended for hot food and drinks. In addition to standard RICs, microwave-safe containers are marked with a special symbol.

Another prevalent myth says that plastic bottles pose health risks. To disprove this misconception, the Fraunhofer Institute for Process Engineering and Packaging IVV, Germany, conducted a major research on PET bottles to find any harmful substances ever mentioned by media – phthalates (dibutyl phthalate, isobutyl phthalate, and 11 other phthalates), bisphenol, methanol, and formaldehyde. The study concluded that “none of the above substances was found in PET and PET bottle samples. The samples studied met all safety requirements of Article 3 Regulation (EC) No 1935/2004 when coming into contact with all types of food, in any environment and at any filling level.”

The safe daily use of plastics is evidenced by the ubiquitous use of polymer products in healthcare. Due to its high chemical resistance, minimum content of low molecular impurities, and other process additives, absence of smell, and ability to keep liquid medicines stable when in contact with polymeric material, plastic has become the best solution for medical products.



Polymers are used to produce over 3,000 various medical products, including those mimicking human tissues and organs.

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Comprehensive approach

So, what is the best option for bags? Is it polyethylene or paper? What is perfect for bottles and jars? Glass or plastic?

The key objective here is to use a comprehensive approach to identifying both beneficial and harmful effects of using different materials. At first, it may seem easy: biodegradable materials are better than synthetic ones, while durable and reusable containers are better than single-use ones. However, if we rely on only one criterion, for example, durability, we will miss the bigger picture.

What is the environmental impact of manufacturing this or that packaging material? How much fuel and energy is required to transport finished products in different kinds of containers? How good is the packaging for keeping product properties and what is the shelf life of such product? Is the packaging easy to recycle or dispose of?

Answering these questions makes it clear that it should be decided on a case-by-case basis. A drink in a glass bottle may have a smaller carbon footprint, if, for example, you buy water in a glass bottle made domestically, while the plastic bottle standing next to it has been imported from Australia.

WE MUST ASSESS THE PACKAGE'S ENVIRONMENTAL IMPACT FROM THE VERY BEGINNING – THAT IS WHEN IT IS MADE FROM NATURAL RESOURCES – TO THE VERY END, WHEN IT IS DISCARDED OR DISPOSED.

The idea is to assess the package's environmental impact from the very beginning – that is when it is made from natural resources – to

Choose recycling

Plastic is light, cheap, and quite eco-friendly in terms of production and use.

That is why polymers are forcing, say, metals out of the market in various industries – from water pipes to automotive parts, that is why plastics have been dominating the packaging industry for quite a long time. On the other hand, people know how to make millions of tonnes of plastics from oil by-products, use those plastics for goods manufacturing but are still unable to dispose of them in a proper manner.



Waste recycling is one of the first steps towards tackling the garbage problem.

TODAY, 240 RECYCLING FACILITIES OPERATE IN RUSSIA, AND THIS NUMBER IS GRADUALLY INCREASING.

The best choice is to minimise waste while maximising the number of material life cycles and recycling rates.

Countries that put high emphasis on waste recycling (for example, the EU) recycle about a third of all household plastics. Russia's waste recycling is gaining traction too, though its infrastructure for separate waste collection leaves much to be desired. Today, 240 recycling facilities operate in Russia, and this number is gradually increasing. There are 11 new materials recovery facilities which will soon be commissioned in the Moscow Region, adding only 4% to the current waste treatment and recycling figures.

Anyway, it is people who are ultimately responsible for the future of things they dispose of, irrespective of where and how well they live. Therefore, the promotion of waste management culture is the first thing to be done to save our environment.

Sources:

Hightech (<https://hightech.fm/2019/07/16/6-plastic>)

