Plastic Is Poisonous

Plastics, such as polyvinyl chloride (PVC) and polyurethane (PU), consist of poisonous substances and a high percentage of chloride, a highly toxic chemical element. Even though the production of polystyrene (PS) requires less additives than PVC ♺, the carcinogenic benzene is employed. Almost every synthetic material contains toxic substances. Those substances, such as hardeners, softeners, flame retardants or stabilizers, are problematic not only during the production process but also in daily use because plastic – contrary to popular belief – does interact with other chemical substances. Usage, abrasion or exposure to heat detectably cause those poisonous substances to dissolve out the plastic and to enter our organism and the environment. Polycarbonate (PC)♺, for example, contains the hardener bisphenol A (BPA), a synthetic hormone that acts as an artificial estrogen causing our bodies to feminize. The disruption of the hormone system caused by hormonally effective substances is associated with premature puberty in girls, adiposis in adults and teenagers, type 2 diabetes, an increase in prostate and breast cancer, as well as with low sperm count and deformities of the sexual organs. BPA can be found in water bottles, comforters, microwave dishes and in the internal coating of beverage and tin cans.
Thus the omnipresence of plastic has – from its production, use and disposal – harmful effects on humanity and the environment. Considering the gigantic amounts of plastic produced and consumed worldwide each year, the issues described above become even more dramatic.

Mountains of Plastic

Worldwide, an unbelievable 300 million tons of plastic is produced each year. The majority of it is made into disposable products, which end up at the waste landfill or in the oceans after being used for just a short time.

Plastic Bags

In the USA, approximately 380 billion plastic bags are used every year, which is the equivalent of more than 1,200 plastic bags per American citizen. About 2 billion liters of crude oil are needed for this. Worldwide, more than 600 billion plastic bags are produced each year.

The Ocean – A Waste Disposal Site

According to the UN, of the 300 million tons of plastic produced in the world each year about 6 million tons end up in the oceans. 80% of the waste is washed into the sea by rivers or carried out to the ocean from garbage dumps by the wind. The remainder is carelessly or intentionally thrown overboard from big passenger ships, cargo vessels or fish trawlers. This plastic waste only slowly decomposes into small parts. Depending on their constitution and the environmental conditions, it can take centuries until they dissolve. The duration and the extent of the concomitant chemical pollution however are hardly assessable. We need to anticipate long-term and permanent damage to our entire ecosystem.

Estimated duration of the physical decomposition of plastic waste in the sea:

Plastic bags:	20	Years
Plastic cups:	50	Years
Plastic bottles:	450	Years
Fishing nets:	600	Years

Trash Vortexes in the Oceans

Ocean currents create vortexes in which the waste products of civilization are accumulating. The biggest floating garbage dump – the “Great Pacific Garbage Patch” – rotates between the North American West Coast and Japan. It extends over a surface area of about 1.4 million km², which is about twice the size of Texas. At the beginning of 2008, approximately 100 million tons of plastic waste circulated in this trash vortex. 70% of it sinks to the ocean floor, which is why the dramatic extent of the pollution is not visible on the surface.

Plastic Content of the Oceans

Plastic garbage is not only found in those trash vortexes but is increasingly polluting all the world‘s oceans. Estimates from the UN Environment Programme showed that in 2006 each square mile of the ocean contained 46,000 floating plastic pieces. The latest research shows that there is six times more plastic than vital plankton in the Earth’s oceans. In the trash vortexes, the ratio between plastic and plankton is even 40:1.

Poisoning of the Food Chain

Plastic pieces are synthetic polymers (chemical compounds of chain molecules or branched molecules), which are extremely long-lasting. Characteristically, they also sequester dangerous environmental pollutants such as DDT (dichlorodiphenyltrichloroethane, an insecticide) and PCB (polychlorinated biphenyl). Due to environmental influences, the plastic decomposes into small particles (micro plastic) and releases dangerous chemicals into the oceans. These substances are then ingested by marine creatures. The toxic concentration in the food chain increases with the size of the animal and finally ends up on our plates. Marine animals and birds perish by eating small plastic pieces mistaking them for food. They feel full but finally starve to death with a trash-filled stomach. Sea turtles mistake plastic bags for jellyfish, their principal food, and suffocate. In Hawaii alone, 200,000 albatrosses eat themselves to death every year. All in all, 267 different animal species worldwide fall victim to the waste. An estimated 100,000 marine animals get killed by plastic each year.

Bioplastic – A Real Alternative?

Plastics that are produced with renewable resources are classified as bioplastic. They can consist of various starchy materials such as corn or potatoes. Biodegradable plastics are not necessarily the same as bioplastics because they may also be made from non-renewable resources such as crude oil. Today, the share of bioplastic is 0.2%. Bioplastic can be a non-toxic, biodegradable alternative to conventional plastic products. Yet its eco-balance is diminished by the necessary intensive cultivation of resources such as corn, wheat, potatoes and sugar beet. Additionally, there is the danger emanating from the use of pesticides, genetic engineering and climate-damaging emissions caused by long transportation routes. Therefore, bioplastic is not necessarily an environmentally sustainable solution; more so as this kind of plastic may contain softeners too.

What You Can Do at Present

- As a rule of thumb: Reduce, reuse, recycle!
- Reduce the use of disposable articles.
- Shop with more awareness; favor natural materials and long-lasting products. Don't follow every trend.
- Buy second-hand articles.
- Choose products with little packaging. Leave big wrapping in the shop in order to sensitize the sales personnel.
- Use glass containers instead of plastic ones.
- Choose reusable bags made of cloth or paper instead of disposable plastic bags.
- Avoid PVC ♺ and PC ♺ because of their high toxicity.
- Don't drink bottled water and don't eat meals from plastic containers.

Sustainable Solution

For a long-term and sustainable solution of the issues associated with plastic a fundamental change in values and awareness is necessary. On the one hand, scientists are called on to search for solutions which feature the conveniences of plastic without doing any harm to life. Following nature's example, where all elements serve one another, new materials should be developed that can not only be produced and disposed of without harming the environment, but also nourish another part of life or flow into the production process of new materials.
In turn, the manufacturing industry must finally assume its responsibility and put the well-being of man and nature above short-term profits.
But first and foremost, every single person is asked to honor nature's resources and all her gifts, to cherish and treat them with care so that all life is preserved, nurtured and refined … and let's not forget:

The truly important things in life are not made of plastic!

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Plastic

Problematic Material

SEA PLASTIC WATCH OUT

Our world, our daily lives without plastic – it's unimaginable. Plastic is light, unbreakable, durable and inexpensive, at least at first sight. Yet plastic is also poisonous and very hazardous to our health and it is mainly made of crude oil, which is a non-renewable resource.