

ON THE ENVIRONMENTAL PROBLEMS OF PLASTIC WASTE

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Abstract

This article examines environmental issues related to plastic waste in the context of various regions and countries of the world as one of the negative factors in the modern world. It also examines environmental issues of plastic waste that have a negative impact on public health. A comparative analysis of the causes of environmental problems of plastic waste at the present stage is given.

Keywords: Plastic waste, synthetic resins, global pollution, triple planetary crisis, UN Assembly, waste disposal, garbage disaster, vichscycling, Gyre archipelago.

Introduction

As is known, one of the dangers threatening modern civilization and humanity is environmental crises with its numerous components, including environmental problems of plastic waste, accompanying environmental pollution. At the present stage of human development, humanity has faced, perhaps, the most pressing problem - how to preserve nature and civilization, since no one knows when and in what form this or that catastrophe may occur.

All kinds of waste have always been present - since the emergence of Homo sapiens. This problem was given importance even in the Middle Ages. The article draws public attention to the pollution of the environment with plastic waste as one of the negative factors of modern times. If earlier waste consisted mainly of natural products - paper, wood, food, wool and cotton, and they decomposed without much harm to the environment, then over time the garbage became more and more toxic. The content of heavy metals, radioactive substances and plastics based on synthetic resins increased. Modern garbage heaps are very toxic and continue to cause harm even after elimination.

LITERARY RESEARCH

People of all countries understand perfectly well that today one of the significant problems in the modern world is the process of pollution of the environment with various wastes. Wherever a



person appears, there is garbage. The population of the Earth is growing rapidly and, of course, the amount of waste too. Every year, more than 100,000 mammals, birds and fish die worldwide because of discarded plastic bags. Animals eat them or suffocate.

The modern world is characterized by accelerated rates of technological development and the introduction of high-performance technologies for the production of material goods, as well as the creation of comfortable living conditions for the population. Meanwhile, along with the introduction of high-performance technologies, the reverse sides of these achievements are beginning to emerge. In this regard, I would like to draw attention to the negative aspects of these advantages. In particular, one of the negative sides of these achievements is considered the inability of humanity to obey the laws of the biosphere. It is these wrong actions committed by humanity that can lead to an unpredictable abyss, that is, Man wants to dominate Nature. This in turn can have a detrimental effect on the existence of the human population.

The source materials [1] note that it is not the first generation in a row that humanity has lived with a constant and obsessive fear of environmental disasters. Deforestation, ocean pollution, destruction of the ozone layer - we have heard these phrases in our lives hundreds, if not thousands of times. But where is the real threat, and where is sheer speculation. Man has interacted with and influenced the environment around him since the very moment of the emergence of his species. However, this influence reached a truly tangible scale only in the eighteenth century, with the beginning of the industrial revolution. At that moment, man left the natural cycle of living nature and began to dictate his own rules to the planet. The planet began to change, but we noticed this far from immediately - our civilization was busy with other things: the extraction of fuel (coal, gas, shale, oil), metal and other minerals. All these substances, naturally derived by nature and removed by man, returned to nature, but in a different form. This resulted in global pollution of soil, water and air and became the cause of an ecological crisis. And the intensity of this process continues to grow at a catastrophic rate, and humanity will have to eliminate the serious consequences of the ecological crisis in the near future.

Based on the data from the website [2], I can state that the waste sector makes a significant contribution to the triple planetary crisis – climate change, loss of biodiversity and nature, and environmental pollution. Humanity produces an estimated 2.24 billion tons of municipal solid waste annually, of which only 55 percent is disposed of in controlled facilities. About 931 million tons of food is lost or thrown away annually, and up to 14 million tons of plastic waste ends up in aquatic ecosystems.

As noted in the materials of the website [3], it was stated that on December 14, 2022, the UN General Assembly, at its seventy-seventh session, adopted a resolution proclaiming March 30 as the International Day for a World without Waste. Turkey, along with 105 other countries, put forward this resolution. It follows other resolutions dedicated to waste, including "End Plastic Pollution: a non-legally binding international treaty" adopted at the UN Environment Assembly on March 2, 2022. International Day for a World without Waste aims to promote sustainable consumption and production patterns, support the transition of society to circularity, and raise awareness of how zero waste initiatives contribute to the advancement of the 2030 Agenda for Sustainable Development.



Source materials [4] note that developed countries produce more waste per capita because they have higher consumption levels. The solid waste stream contains more plastic, metals, and paper, and labor costs are higher. Developing countries produce less waste per capita with a higher proportion of organic materials in the solid waste stream. When measured by weight, organic (biodegradable) residues make up at least 50% of waste in developing countries.

As the website [5] notes, the problem with garbage is becoming more acute every year. Efforts that include separate waste collection and subsequent recycling have long been a necessity, not an excess that developed countries can afford. At the same time, even one person can help preserve the environment in which he lives by reducing the amount of disposable goods, plastic bags and dishes he uses. Although polyethylene seems convenient and cheap, it should be remembered that by throwing it in the trash, people increase the likelihood that it will end up in their stomachs along with toxic substances. However, humanity in any case needs a developed and global waste disposal infrastructure.

According to the website [6], in some countries there is a monetary incentive for returning containers and packages. When buying products in plastic or paper containers, you pay for them separately. Then, when the container is returned to a special collection point, the money for it is returned. The payment is a kind of guarantee that the packaging will be returned. The problem of waste recycling exists in many countries. Not every state can afford a plant that would process waste. This is an expensive undertaking that does not always pay for itself. In terms of preventing an environmental disaster, waste recycling is the most effective way to get rid of waste.

The author's article [7] notes that workers in the UK recycling industry say they do not know how they will manage plastic waste (Fig. 1) after China banned the import of such waste. Britain used to send up to 500,000 tonnes of plastic to China for recycling each year, but now the trade in plastic waste has been suspended. According to representatives of the UK Recycling Association, the country is currently unable to cope with about a quarter of the plastic waste it produces.



Figure 1: Illustration of accumulated plastic waste in the UK.

According to the site [8], everyone should speak up and encourage others to join in on climate action. It's one of the fastest and most effective ways to make a difference. Talk to your neighbors, coworkers, friends, and family. Let business owners know you support bold changes, from plastic-free products and packaging to zero-emission cars. Call on local and global leaders to take action now. Fighting climate change is a challenge for us all. And it affects us all. The site goes on to note that no one can do anything alone, but together we can do a lot.

Methodology

The ecological problem of plastic waste is an international problem. It exists in all countries, but each nation approaches its solution in its own way. Some are less successful, while others are more effective. There are several main points of application to solving the garbage problem.

The global accumulation of waste was first discussed in the 19th century, when the Industrial Revolution took place in Great Britain. The first manufactories appeared, where, along with manual labor, machines began to be used. Today, environmentalists and analysts talk about a garbage catastrophe. This is due to the total use of plastic. This material does not decompose for centuries, which leads to a negative impact on the ecosystem.

Plastic poses a particular danger to the environment. The scale of its consumption is simply catastrophic. Thousands of tons of plastic end up in landfills, from where they enter the water, destroying marine animals and birds, ruining entire ecosystems. In addition, most types of waste decompose not just tens, but also hundreds and thousands of years. Thus, what a person throws into a landfill during his life decomposes longer than he himself, his children, grandchildren and great-grandchildren live. Landfills occupy large areas. After them, the land in this place becomes unsuitable for life.

It should be noted that plastic containers, packaging and disposable tableware have a negative impact on the environment. Refusing to use them is an important step towards solving the problem of plastic waste pollution. It is also recommended to buy quality products that will last longer.

In the modern world, humanity has to deal with plastic waste everywhere, and its amount is constantly increasing. Unfortunately, the amount and volume of all kinds of solid and other types of waste are rapidly increasing all over the world. Beijing, where there are over 400 waste disposal sites, is no longer able to accommodate garbage. Over the past decade, 14 landfills in the New York area have filled to capacity. Every year, people throw away more than 200 billion plastic bottles, 58 billion disposable plastic cups, and a billion plastic bags. About 3 million kilograms of garbage are removed from coastal areas around the world every day.

At the end of the 20th century, the solution to the garbage problem was very unexpected. Plastic and other hard-to-decompose items were simply taken to third world countries. Thus, entire regions emerged in Africa, drowning in the garbage of developed countries. In the 21st century, it became clear that this does not solve the problem, but only worsens it. Now the issue of ecology has become more relevant than ever.

Since the early 2000s, Western European countries and the United States have been sending millions of tons of scrap metal, paper, and plastic to China for recycling. For rich countries, it was an easy and cheap way to get rid of waste, and for China, it was an opportunity to make



money. In 2018, China launched Operation National Sword, imposing large-scale restrictions on the import of most waste from abroad. The new bans led to huge landfills in the United States, as the country did not have enough recycling plants at the time. However, people wanted to hope that the waste would be reused rather than sent to a landfill, so they threw everything into recycling containers. This is when the term “wish recycling” appeared – specialists from waste disposal companies to educate the population invented it.

Thanks to the efforts of the government, corporations and environmentalists, recycling has become popular in the United States. This was especially true for plastic products, the identification codes of which were a triangle of arrows with a number inside (from 1 to 7). Outwardly, the symbol indicated that the product could be recycled. However, this was not true - in fact, only products with numbers 1 and 2 are easily recycled. In order not to mislead people, in 2013 in the United States the triangle of arrows was replaced with regular ones.

It is worth noting that the largest pile of garbage is located on an archipelago in the Pacific Ocean. This place is called Gyre and it is extremely difficult to call it a dump in the usual sense. No one here sorts and recycles waste, it is simply dumped regularly, poisoning the lives of animals and plants. According to rough estimates, the size of the garbage patch is about fifteen million square kilometers. The main mass is plastic, which releases poisonous toxins when decomposing. However, despite the possible danger, a large number of people visit the dump every day in the hope of finding something worthwhile. For many of them, this is the only way to earn some money.

Conclusions

Based on the above, we can state that in the modern world, plastic waste will negatively affect the environmental situation and cause great harm to the human population and other living organisms. The more people join in solving the environmental problem, the more benefit there will be to society. I believe that if we want to live in an ecologically safe country, breathe fresh air, drink clean water, then all the inhabitants of our planet need to change their attitude to the problem of plastic waste.

In conclusion, I would like to state that the negative consequences of industrialization in all regions and countries of the world have forced humanity to take urgent measures to eradicate the problem of plastic waste in the modern world. It follows that the environmental problems of plastic waste have revealed two versions of the development of events. Either humanity must look for a different way of relating to nature management, or it will exist under the influence of harmful plastic waste.

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