

# ENVIRONMENTAL PROBLEMS OF WASTE DISPOSAL AT THE PRESENT STAGE

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## Abstract

One of the most important aspects of ensuring the safety and health of the population is the creation of normal conditions for living and living. Taking this factor into account, this article examines environmental problems associated with waste disposal at the present stage. By the end of the twentieth century, humanity faced acute problems of waste disposal in all regions and countries of the world as one of the negative factors of the world community. In this regard, great interest was noted by states in the issues of eliminating the large-scale increase in all kinds of waste. The article also analyzes the negative consequences of the waste disposal process and gives recommendations for eliminating deficiencies.

**Keywords:** World waste, laws of the biosphere, waste sorting, waste incineration, toxic substances, soil erosion, pyrolysis plants, carbon black.

## Introduction

As is known, one of the dangers threatening modern civilization and humanity is environmental crises with its numerous components, including environmental problems of solid waste disposal, 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.

The scale of waste produced by humanity is colossal. It is known that on average, one European family produces about a ton of household waste per year. Great Britain produces 27 million tons of waste during the same period, Russia - 150 million tons, the USA - more than 250 million tons. If we add to these values the amount of industrial waste produced annually, we get incalculable endless numbers.

## Literary Research

According to the World Bank, 2.01 billion tons of municipal solid waste (MSW) are generated annually in the world, and at least a third of it is not disposed of in an environmentally safe way. Globally, the amount of waste generated per person per day averages 0.74 kg, but varies

widely - from 0.11 to 4.54 kg. High-income countries, which account for only 16% of the world's population, produce about 34% or 683 billion tons of world waste.

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 downsides 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 aspects of these achievements is considered to be the inability of mankind 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 [1] notes that many developed countries are striving to recycle waste. In Western Europe, there are plants equipped with special equipment: belts with separating sorting, which use optical sensors to sort waste by type. The law requires citizens to sort their own waste; in fact, in the Western world, this has become almost part of the national idea: proper sorting is taught from kindergarten, and the corresponding propaganda is carried out on TV.

According to the site [2], waste incineration was the first alternative to its burial. In this way, waste can be disposed of without creating large landfills. On the one hand, this solves the waste problem, on the other, it creates a new environmental threat. The fact is that during waste incineration, a large number of toxic substances are formed. They enter the atmosphere and pollute the air. In some countries, the problem of toxic gases has been solved by secondary processing. Thus, the gas is not simply emitted into the atmosphere, but is purified before entering the environment. This method of waste incineration is safer, but much more expensive. Not all countries can allow reprocessing of gases.

As the website [3] notes, the problem with garbage is becoming more acute every year. The problem with garbage is becoming more acute every year. Efforts, including 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 the existence of a developed and global waste disposal infrastructure.

According to the website [4], even well-organized landfills create problems. The landfill in Gloucestershire (UK) is allowed to accept 150 thousand tons of hazardous waste per year (paints, varnishes, solvents), which makes it one of the most toxic in Europe. At the same time, 15 thousand people live within three kilometers, and the wind usually blows from the landfill to the village. The method of waste disposal here is extremely primitive: it is mixed with liquid in a silo pit, and then distributed over the entire area of the landfill so that the toxic dust does not spread to the surrounding land and houses. The resulting substance contains

chromium, cadmium and many other heavy metals. The owners of the landfills deny the existence of clouds of toxic dust, which local residents constantly complain about. The official conclusion of the authorities stated that the landfill most likely does not pose a real threat to human health. In reality, the proximity to landfills poses a serious threat to humans and animals. A study of 21 hazardous waste sites in five countries found that living three kilometres from a dump puts people at risk of birth defects. In the UK, which has the largest number of dumps in Europe, 80 per cent of the population lives just two kilometres from a dump. Environmentalists say the UK's waste industry has the resources to hire experts who are prepared to say the dumps are safe.

Referring to the materials of the site [5] we can state that India suffers not only because of the high population density, but also because of the high density of industrial enterprises. Mining and technical production annually produce tons of waste, pollute water and the atmosphere, and contribute to soil erosion. Today, in a country where agriculture is the basis of life for the majority of the population, about 150 million hectares of land are unsuitable for farming. Because of this, rural residents are moving en masse to cities, creating new environmental problems. Densely populated cities in India are suffocating from the abundance of garbage that no one even thinks to dispose of, and from exhaust fumes from cars and scooters. Forecasts regarding the environmental future of this country are extremely negative. At present, only 44% of the country's population has access to clean drinking water, and in the future this situation will only worsen.

According to the website [6], the most effective in terms of waste disposal and at the same time the safest for the environment are pyrolysis plants for solid waste disposal, which use thermal decomposition technology in an oxygen-free environment. During operation of the plant, solid waste decomposes to form a vapor-gas mixture, which is important since there is no combustion process, and the waste inside the plant dissolves under the influence of external temperature. The vapor-gas mixture enters the internal systems of the plant and is separated into fractions:

- liquid (furnace fuel/pyrolysis/synthetic) - accumulates in a special container and is subsequently used as fuel;
- gas - enters the gas distribution line, from where part of the gas is fed to the burners, and the excess is burned in the afterburning system or fed to other plants (if more than one pyrolysis module is used, and the plants are connected to each other).

At the end of the pyrolysis process, a solid non-combustible residue remains inside the unit – pyrocarbon (sometimes it is called technical carbon, which is not entirely correct, since technical carbon is obtained from gas). Pyrocarbon burns and can be used as a solid fuel, and it can also be used to make construction soot, fuel briquettes, etc.

### Methodology

Waste is a global problem for humanity. Garbage is a global environmental problem that may soon become irreversible. In the modern world, the volume of consumption of material goods is growing rapidly, and with it the amount of waste is increasing.

You can't remain indifferent, looking at garbage dumps. Inaction can lead to serious consequences that will not be slow to affect human health. It should be noted that unutilized waste provokes:

- The spread of infectious diseases leading to epidemics.
- Genetic changes.
- An increase in the number of patients with oncology.
- Decreased reproductive function.
- Respiratory pathologies.

It should be noted that children and pregnant women are especially at risk. Intoxication can lead to kidney problems and hearing loss. For no apparent reason, the child begins to lag behind in intellectual and physical development. Steps are taken to solve the problem, but this is not enough. According to statistics, one person produces half a ton of garbage per year. Experts explain this by the low level of development of consumer culture. Buying cheap goods leads to rapid accumulation of waste. It is not always disposed of properly.

The environmental problem of garbage and solid waste is an international problem. It exists in all countries of the world, and 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 in solving the garbage problem.

Modern waste incineration and waste processing plants with all their arsenal are a kind of entire industry for processing and recycling solid municipal waste of the urban population. In furnaces, waste is burned at very high temperatures, turning it into gas, ash, heat and electricity. There is a more advanced version of this method of getting rid of waste - energy recycling. But this method has its drawbacks. Harmful chemicals are released into the atmosphere, including dioxins - chlorine-containing compounds based on dibenzodioxin. These are some of the most dangerous xenobiotics with a cumulative toxic effect.

Complex filters that trap dioxins are expensive and short-lived. In addition, toxic ash also needs to be disposed of somehow. It is believed that 50 to 80 percent of the planet's total dioxin pollution comes from waste from waste incineration plants. The Arctic has become one of the most dioxin-contaminated places on the planet. In the last 20 years, due to global warming, harmful substances contained in polar ice have again entered the environment.

Burning in open dumps (Fig. 1) and burial are the most well-known and accessible methods of waste disposal. Experts ask how effective they are? As a rule, when burning waste, harmful and toxic chemical compounds are released into the air in huge quantities. Open dumps, in addition to spreading a stench, are teeming with insects and rodents - sources and carriers of many infectious diseases. Burial of waste, especially if it is carried out uncontrolled, which, unfortunately, is not uncommon, can lead to dangerous consequences: contamination of groundwater or uncontrolled fires that occur when biogas formed as a result of waste decomposition without access to air ignites. In addition, methane, which makes up 70% of the biogas released by rotting waste, at high concentrations leads to the death of vegetation.





Figure 1. Illustration of waste incineration at the Tondo landfill in Manila, Philippines.

At the present stage, the most advanced countries in waste disposal are Belgium, Sweden, Japan and the Netherlands. As of 2012, there were about 800 waste incineration plants in the world. In Japan there are about 500, in Britain – more than 30, and this number continues to increase.

### Conclusions

Based on the above, we can state that the problem of garbage is the most pressing problem in the modern world. It is no secret that in all countries of the world, hundreds of thousands of tons of various waste are sent to landfills every year. They pollute the soil, water, air - and cause irreparable harm to the ecosystem. All countries around the world are thinking about how to solve the problem of garbage. There are some successes in this matter, but the ideal form of waste disposal has not yet been found.

It should be noted that in the modern world, the problem of waste disposal at the present stage, negatively affects the environmental situation and causes enormous harm to the human population, as well as other living organisms. As we can see, the negative consequences of industrialization in all regions and countries of the world have set humanity the need to take urgent measures to solve the problem of waste disposal at the present stage. At the present stage, all ecologists of the world declare the need to recycle garbage into secondary raw materials with the prospect of further regenerative cremation.

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