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Management and regulation of municipal solid waste in Ukraine

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Анотація
Розглянуто сучасний стан поводження та управління муніципальними твердими відходами в Україні.
Ключові слова: поводження з відходами, муніципальні тверді відходи.

Abstract
The modern state of appeal and management with the municipal solid waste in Ukraine considers.
Keywords: appeal with waste, municipal solid waste.

Introduction

The problem of waste recycling is becoming more acute with the growth of the Earth's population and the share of people living in cities. In 1900, there were 220 million citizens in the world, which was 13% of the total number of people who produced less than 300 thousand tons of garbage per day. By 2000, 2.9 billion people living in cities (49% of the world's population) produced more than 3 million tons of solid waste per day. By 2025, the amount of waste generated will double.

If the current system of consumption and waste generation is maintained, by 2050 humanity, which by then will grow by about 2 billion people, will need to increase food production by 60%. However, the world's population could feed itself with less food than before if it switched to sustainable agriculture, reduced waste and stopped excessive consumption, according to the FAO.

According to scientists, if the growth rate of household waste does not decrease, world waste production by 2100, due to population growth to 9.5 billion people. and urbanization to 80%, will triple compared to the current level and reach 11 million tons per day.

Thus, when forming a system of economic needs, an important aspect is to determine the optimal ratio between consumption and production, and accordingly for the system of environmental needs – to determine the optimal ratio of consumption and opportunities of the natural environment.

Many scientific works are devoted to the problems of waste generation and rational use as a component of resource conservation and greening of production [1, 2]. However, the lack of research on this issue in Ukraine, which causes a number of problems in the field of waste management, necessitates further research in this area.

Research results

To clearly understand the problem of waste, first of all, let's explore this category. Waste – any substances, materials and objects that are generated in the process of human activity and have no further use at the place of formation or detection and which their owner must get rid of by disposal or disposal [3]. In other words, waste is all types of residues of production and consumption, residues arising from man-made or natural disasters.

Solid waste (there are still liquid and gaseous) are divided into production waste and consumption waste. Under the waste of production means unfit for the production of certain products types of raw materials, its residues that are not used, or substances that arise as a result of technological processes that are not subject to disposal in this production. This group accounts for 90% of solid waste. The other 10% is consumer waste, according to another classification they are municipal solid waste or solid household waste (MSW).

Household waste – a type of waste generated in housing and communal services (household). These include waste generated in residential and public buildings, commercial, entertainment, sports and other enterprises (including waste from the current repair of apartments), waste from local heating devices, estimates, fallen leaves collected from backyards, and large waste.

There is a direct link between the existence of a relatively small mass of solid waste and a huge mass of industrial waste. After all, industrial waste is generated in the early stages of obtaining raw materials used for the production of goods. Manufactured goods after a short period of use become waste. In addition, the

production of raw materials for future consumer goods consumes a large amount of energy, and energy, in turn, is one of the main producers of industrial waste. It is estimated that each ton of solid waste corresponds to five tons of industrial waste at the stage of production and twenty tons – at the stage of obtaining primary resources from the subsoil.

Solid waste is one of the most important factors of environmental pollution and negative impact on virtually all its components. Infiltration of storage facilities, burning of heaps, dust formation, other factors that cause the migration of toxic substances, lead to pollution of groundwater and surface water, deterioration of air, land resources and more. Thus, the increase in solid waste is the root cause of the accumulation of industrial waste.

According to the latest data from environmentalists, Ukraine is a leader in Europe in the amount of waste. Indicators of waste generation and accumulation in Ukraine indicate a threatening environmental situation in the country. According to the Ministry of Ecology and Natural Resources of Ukraine in our country has accumulated about 35-36 billion tons of waste, 7% of the territory, which is more than 50 thousand tons / km^2 of garbage. Of these 35 billion tons, about 2.6 billion tons are highly toxic wastes. It should be noted that the area of landfills in our country exceeds the area of nature reserves (7% vs. 4.5%). Every year, 12,000 illegal dumps are created in the country, as there are not enough landfills [25]. Most of the existing landfills have already exhausted their resources, and landfills have become a factor of anthropogenic pressure on the environment. Every Ukrainian now has more than 750 tons of waste. From 670 to 770 million tons are generated annually, or 15-17 tons of waste per capita.

According to the Ministry of Environmental Protection, annually in Ukraine the total volume of solid waste increases by about 50 million m^3, and industrial – by 175 million m^3 [1, 2]. In Ukraine, the amount of solid waste is not far behind the European average and is about 38-40 million m^2 per year (or about 10 million tons). The total mass of solid waste in the country reaches 1 billion tons annually. In terms of their composition, Ukrainian solid waste corresponds to the category of transition countries.

Countries in the respective categories face different challenges regarding solid waste. If in underdeveloped countries they are primarily related to the sanitary and hygienic problem (a large mass of unused organic matter contributes to the spread of dangerous diseases), then developed countries face more complex issues: loss of natural resources, chemical pollution, etc. In the so-called transition countries (which, according to this classification, include Eastern European countries and the former Soviet Union, including Ukraine, as well as a number of South American and East Asian countries), the problem of solid waste should be considered as a combination of both.

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There is a direct link between the existence of a relatively small mass of solid waste and a huge mass of industrial waste. After all, industrial waste is generated in the early stages of obtaining raw materials used for the production of goods. Manufactured goods after a short period of use become waste. In addition, the production of raw materials for future consumer goods consumes a large amount of energy, and energy, in turn, is one of the main producers of industrial waste. It is estimated that each ton of solid waste corresponds to five tons of industrial waste at the stage of production and twenty tons – at the stage of obtaining primary resources from the subsoil.

Solid waste is one of the most important factors of environmental pollution and negative impact on virtually all its components. Infiltration of storage facilities, burning of heaps, dust formation, other factors that cause the migration of toxic substances, lead to pollution of groundwater and surface water, deterioration

of air, land resources and more. Thus, the increase in solid waste is the root cause of the accumulation of industrial waste.

Solid household (municipal) waste, in contrast to industrial waste, is characterized by extremely scattered, and currently they are the most in the spotlight. The infrastructure for dealing with them in our country, in contrast to the EU, is in its infancy. As of the beginning of 2013, the number of overloaded landfills in Ukraine is 334. (5%), and 878 units. (13%) – do not meet environmental safety standards [24]. Improper work on certification, reclamation and remediation of landfills. Of the 2,715 landfills in need of certification, 587 were actually certified in 2012. (requires certification of 32% of landfills of their total number).

The largest number of landfills in need of certification is in Zaporizhia oblast – 84% of the total number of landfills in the oblast. Of the 750 landfills in need of reclamation, 182 were actually reclaimed. (8% needs reclamation). Of the 455 landfills in need of remediation, 63 were actually rehabilitated. (6% need remediation) [24]. The largest number of landfills in need of reclamation is in Zaporizhia oblast – 84% of the total number of landfills in the oblast and Ivano-Frankivsk oblast – 30%.

The need for construction of new landfills is more than 671 units. The greatest need for construction of new landfills in Zaporizhia region – 58 units and in Dnipropetrovsk region – 57 units [24].

Due to the introduction of separate solid waste collection in 185 settlements, operation of 12 waste sorting lines, 2 incinerators and 3 incinerators in 2012, about 6.2% of solid waste was recycled and disposed of, of which: 2.3% burned and 3.9% solid waste got to the procurement points of secondary raw materials and waste processing plants [24].

Due to inadequate solid waste management systems in settlements, usually in the private sector, about 32 thousand unauthorized landfills covering an area of more than 1 thousand hectares are detected annually [25]. Almost all unauthorized landfills discovered in 2012 were liquidated.

Collection of solid waste in our country is the main task of sanitary cleaning of settlements and is carried out by more than 7.5 thousand special vehicles of 56 specialized car companies and 650 shops. However, the rolling stock of specialized car companies is outdated, almost 75% of cars have exhausted their resource and are subject to write-off. At a rate of 12 percent, only 1 percent of the park is restored. The high level of tariffs for the provision of services in the field of solid waste management has led to a decrease in the number of contracts for these services.

However, it should be noted that today in Ukraine there are only 4 incinerators – in Kiev, Dnepropetrovsk, Kharkov, Sevastopol. Only Kyiv works, ie in fact we do not have a branch for waste processing and disposal [26].

It should be noted that in addition to incineration and disposal, a negligible share of solid waste and waste of 1-3 hazard classes in Ukraine falls on the procurement points of secondary raw materials and waste processing plants. According to these data, it can be concluded that the discrepancy between the progressive accumulation of waste and methods aimed at preventing their creation, disposal, disposal and disposal, threatens not only the deepening environmental crisis, but also exacerbate the socio-economic situation in general [17].

In Europe, 10% of waste goes to landfills, the remaining 90% is put back into production [27]. In Denmark, Belgium, Switzerland, the Netherlands, Austria, France, Italy, the United States and Japan, solid waste is used as a secondary raw material. In most countries, this figure exceeds 50%. In Ukraine, this figure, according to various sources, ranges from about 5-15%, although the potential – 75% [26].

Thus, the difference between Ukraine and Europe is not the amount of solid waste, but the lack of proper means of handling them, including separate collection and recycling. It should be noted that in the EU countries the management of this waste has evolved in the last decade in the direction of gradually reducing the share of incineration and landfill, although in absolute terms this share is still quite significant.

Conclusions

Despite some progress in addressing waste in Ukraine, the municipal solid waste management strategy remains undeveloped. Therefore, it is necessary to speculate less on the extremity of the situation, not to solve problems by emergency, but, based on strategic approaches and international experience, to form a pragmatic national policy in the field of municipal solid waste management.

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