

Environmental Problems of Lakes in The Modern World

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Abstract

Currently, the most vulnerable part of nature and society has become the process of pollution of lakes, which are often intensively polluted by various industrial and household waste. Wastewater, pesticides, fertilizers, heavy metals and much more in huge quantities flow into lakes, seas and oceans. This article examines the environmental problems of water pollution in different regions of the world in the modern world. An analysis of the causes of the formation of the most polluted water bodies in a number of countries with various waste and pollutants is given. The article examines the factors influencing the process of lake pollution, and gives recommendations for maintaining the cleanliness of water bodies.

Keywords: Phytoplankton, humus, radioactive components, wastewater, radiation sickness, Brexit, UN Convention, caustic black tar, pathogenic microorganisms, T. Malthus' theory.

Introduction

Lake pollution, including surface and groundwater pollution with harmful substances, primarily oil-based substances, is increasing. Phytoplankton, the basis of the food chain in water bodies and an important source of oxygen, is dying. Atmospheric pollution continues, temperature inversions, oxygen starvation in cities, and acid rain are observed. The global climate is changing, and the El Niño phenomenon is becoming more and more catastrophic.

The problem of lake pollution on Earth is becoming more and more urgent every year. The problem of lake pollution and, in parallel with this, the issue of drinking water shortage has been considered one of the global problems of our time since the last decade of the twentieth century. As the population of our planet grows, the scale of water pollution and, accordingly, water shortage has increased significantly, which subsequently led to deteriorating living conditions and slowed down the economic development of countries experiencing a shortage of water resources.

LITERARY RESEARCH

One of the most formidable and difficult to solve problems at the present stage is the environmental problem with all sorts of negative consequences. The manifestations of the environmental crisis are diverse, which are accompanied by numerous dangers for humanity, fraught with a global environmental catastrophe. Lakes, seas and oceans are being polluted with harmful substances. Particularly dangerous among them are radioactive substances and dioxins. Soils are degrading - they are losing humus, desertification and salinization are expanding. At the same time, the shortage of fresh water is increasing. At the present stage, the process of lake pollution occurs throughout the world everywhere. The problem of lake pollution on the globe is becoming more and more urgent every year. The problem of lake pollution and, in parallel with this, the issues of drinking water shortage have been considered one of the global problems of our time since the last decade of the twentieth century. As the population of our planet grows, the scale of water pollution and, accordingly, water shortage has increased significantly, which subsequently led to deteriorating living conditions and slowed down the economic development of countries experiencing a shortage of water resources.

The source materials [1] provide information about Lake Karachay (Fig. 1), which is located in the Chelyabinsk region (Russia). This Russian Lake is the most polluted place on Earth. About seventy years ago, the USSR government built a secret nuclear weapons plant. All waste that was generated during production was sent to a nearby lake. Lake Karachay is contaminated with radioactive components to a depth of three and a half meters. It is still not recommended to move along the shores of this lake. In some places in this zone, the radioactivity reaches 600 roentgens per hour. Just a minute on the shores of this "reservoir" without a radiation protection suit can result in radiation sickness. And an hour on the shore is enough to die from radiation.



Figure 1. Photo illustrating pollution of Lake Karachay (Russia).

The author's materials [2] noted that three French MEPs filed statements in August 2022 stating that the UK was threatening human health, marine life and fisheries by dumping untreated sewage into the English Channel and the North Sea. They wrote that "With Brexit, the UK has freed itself from EU environmental rules and we now fear negative consequences for the quality of the seawater we share with this country, as well as for marine biodiversity, fisheries and shellfish farming." The letter pointed out that although the UK is no longer bound by EU rules, it is still obliged to comply with the UN Convention on the Law of the Sea and the Charter on the Protection of Common Waters. "Despite this, the UK has chosen to lower water quality standards. This is unacceptable and calls into question the efforts made by EU Member States over the past 20 years. The UK has a duty to preserve the seas that surround it and that we share with it." On the same site, the author noted that another most polluted lake, the Black Hole (Fig. 2), is located on the territory of Russia between Nizhny Novgorod and Dzerzhinsk. This reservoir is considered an object of socialist heritage, saturated with waste from the Orgsteklo plant, and is recognized as one of the most polluted in the world. The stench emanating from the Black Hole is so strong that it even drowns out the soot from the fires that engulf Russia on hot summer days, and the liquid filling the lake resembles caustic black resin that sucks in all living things.



Figure 3. Photo illustrating the pollution of Lake Black Hole (Russia).

Referring to the source [3], we can state that the shores of Lake Tai in eastern China are "occupied" by over 3,000 factories, and it is colored green. It is very far from what is considered a healthy water surface. Its color is caused by algae. A huge amount of algae has polluted the lake to such an extent that its water is undrinkable. There are no aquatic animals there, and people risk their health by direct contact with this water. Lake Chaohu, with an area of 780 square kilometers, is a dead zone in a thriving industrial area. It is industry that is responsible for most of its pollution. The third largest reservoir in the Middle Kingdom is also one of the most polluted bodies of water in the world. Several billion dollars have already been spent to save Lake Tai - industrial waste

and sewage sludge must be removed from there. In addition, the entire surface of the lake is covered with a thick layer of algae, which impedes the access of oxygen and leads to the extinction of fish living in it. The materials of this site also note that Lake Onondaga (USA), located near the American Syracuse, was a popular vacation spot in the 19th century. A century later, the reservoir, influenced by technical "progress", was on the brink of an environmental disaster. Onondaga Lake is so polluted that it has been designated as an extremely dangerous place in the United States. Phosphates, nitrates, mercury and extremely dangerous bacteria clearly indicate the development of industry in the region. Swimming in wastewater can be fatal. In 1901, Onondaga water, saturated with nitrates, phosphates, mercury and pathogenic bacteria due to the discharge of industrial waste, was banned from use in the food industry. In 1940, a veto was imposed on swimming, and in 1970 - on fishing. After the ban on waste disposal, the installation of treatment facilities and the adoption of the Clean Water Act, the situation with the lake is gradually improving, but the reservoir will still take a long time to clean up.

The website [4] notes that the Great Lakes in North America (Fig. 3) are located on the border between the United States of America and Canada. There are five lakes and they are the largest group of freshwater lakes on Earth with a total surface area of 244,106 square kilometers. Due to pollution from the automobile industry, oil refineries, chemical plants and increased transportation, they have a significant dose of toxicity. And although they are much cleaner than some Asian rivers, the lakes are polluted, and this is a problem that will probably get worse in the future. The same website provides information about Lake Victoria, which borders three African countries, Kenya, Tanzania and Uganda. For this reason, it is questionable which country is the main polluter of the water in the lake. This is also the reason why it is not clear how to clean the lake and how to stop the pollution of its water. Due to loopholes in the law, many people wash their cars to dump waste into the water, allowing wastewater to flow into Victoria almost unchecked. Many people who swim in the lake are at risk of contracting parasitic schistosomes, cholera, pneumonia, diarrhea and skin diseases.



Figure 3. Photo illustrating pollution of the Great Lakes (North America)

We would like to note that the degree of human influence on the planet is regulated by the technical equipment of people. The development of mankind required the creation of comfortable conditions for existence. The deterioration of the planet's environmental problems changes in parallel with the progress of human thought. With the development of technology, the world becomes better, but the number of emissions and other deteriorating factors increases. All this can entail fraught consequences for civilization and humanity.

METHODOLOGY

It should be noted that humanity is too cruel to natural resources. Despite the fact that it is considered a rational being, it cannot properly control its actions. Hence, situations encountered in everyday life shock us all: first of all, these are lakes, from which we usually expect freshness and purity. Humanity is too slow in understanding the scale of the danger created by a frivolous attitude to the environment. Meanwhile, the solution (if it is still possible) of such formidable global problems as environmental ones requires urgent energetic joint efforts of international organizations, states, regions, and the public. Scientists have established that humanity is a natural part of a complex unified system "Nature-Man-Society". The state and development of this system depend on the transformative activity of people. At the same time, the resources of nature for people and their transformative activity on the planet are limited. Transforming nature, one cannot endlessly take everything from it. Serious scientific discoveries were preceded by the speculative theory of the English scientist monk T. Malthus (19th century) that the growth of the Earth's population (according to the law of geometric progression) is dangerously different from the growth of food production (according to the law of arithmetic progression). Malthus's idea was far ahead of its time and for a long time served only as an object of critical attacks.

Environmental problems of lakes at the present stage occur due to a significant deterioration in the quality of water resources as a result of the entry of harmful pollutants and chemical waste into lakes, due to which various pathogenic microorganisms develop in water bodies. This process is directly related to the failure to apply the necessary environmental protection measures to disinfect fresh water. Most often, chemical pollution in it is indistinguishable due to the dissolved state. Oil spills, untreated household and industrial waste, foamy detergents are immediately noticeable. Pollution of water bodies occurs as a result of harmful substances entering river runoff, which flow into lakes and seas. These substances usually include microorganisms and chemicals, such as oil and other pollutants. With these and other types of water pollution, the quality of water deteriorates and ultimately becomes toxic to humans and the environment. As we know, there is a lot that needs to be done to protect the environment, one of the very important methods of maintaining a healthy environment is to reduce water pollution in rivers and reservoirs, for which there are many effective solutions that can help achieve this goal.

Observing the state of lakes and seas, we rarely think about the danger that awaits in their waters. But there are reservoirs that are simply terrifying and are heavily polluted. Some are dangerous because of the predators that live in them, and some are even a kind of poison. There are lakes in the world, the temperature of which is close to the boiling point and, naturally, anyone who decides to swim in it is taking a great risk. There are also lakes on our planet in which acid splashes instead of water, corroding everything organic. At present, we can confidently state that it is impossible to boast of a single river in the world that would correspond to the ideal state, because humanity

is too ignorant of the gifts of nature. Contrary to the desire of humanity for rivers to be clean and not polluted, nevertheless, we have to face the process of widespread pollution with all kinds of waste from the life of humanity itself. It turns out to be an absurdity of human thinking and actions.

CONCLUSIONS

At the present stage, the most vulnerable part of nature and society has become the process of pollution of lakes and seas, which are often subject to intensive pollution. Wastewater, pesticides, fertilizers, heavy metals and much more in huge quantities flow into lakes, seas and oceans. According to experts, in some regions of the globe about 80% of all diseases are caused by poor quality drinking water. If we take into account that water intake structures, water pipes, which, as a rule, receive water from open water bodies, show in samples almost 30 percent of pollution both in microbial and chemical state, which in turn directly negatively affects the health of the population.

In our opinion, one of the ways to solve the problem of reducing the problem of lake pollution and the associated shortage of drinking water is to take a careful approach to water resources, as well as the use of clean technologies in all production processes. At the same time, it is necessary to tighten the rules for monitoring compliance with the requirements of quality standards for consumed water. In our opinion, this mechanism of action is considered the most effective.

REFERENCES

1. Source: <https://www.fresher.ru/>
2. Marina Romadova BBC October 29, 2022
3. <https://waterservice.kz/blog/art32.html>
4. <https://dzen.ru/a/WoxJodyvjrf1pHTh>