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On Air Pollution and Public Health in the Republic of Uzbekistan

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Abstract: This article discusses the issues of air pollution in the territory of the Republic of Uzbekistan and public health at the present stage. The problems of atmospheric air pollution due to the clogging of rivers, which bring toxins, chemicals and pathogens that contribute to the spread of dangerous infectious diseases, have been studied. An analysis of the most contaminated territories of the Republic of Uzbekistan was also carried out.

Keywords: Pollutants, cancer, drinking water, droughts and sandstorms, air quality, water resources, pesticides and defoliants, gaseous emissions, toxins, toxic effluents.

INTRODUCTION

As a rule, the state of the environment largely determines a person's life expectancy, his state of health, his performance, and much more. Clogging of water resources occurs everywhere, which in turn pollutes the atmospheric air. Rivers carry toxins, chemicals and pathogens. This situation is deteriorating the health of the population around the world and threatening the quality of life. Air pollutants cause respiratory diseases such as asthma, allergic rhinitis, cardiovascular problems and other types of ailments. And high temperatures contribute to the spread of infectious diseases.

Over the past half century, a huge number of local environmental disasters have occurred that have negatively affected the environment and contributed to a decrease in air quality. People return the benefits they receive from nature back to it in the form of waste, which results in air pollution on the planet. Despite the efforts of international organizations to prevent this undesirable process, there is a steady increase in large-scale pollution of atmospheric air. For several generations of the planet's inhabitants, they have been sounding the alarm, trying to draw attention to these problems.

The process of air pollution today is global in nature and poses a great threat to the existence of the human population. Atmospheric air pollution adversely affects people's health, causing an increase in respiratory diseases, digestive diseases, and allergies. The saddest thing is that the number of oncological diseases (malignant tumors) is growing among the population.

LITERARY RESEARCH

The WHO notes that every year about 7 million people die worldwide and billions of people suffer from the effects of air pollution. Problems arise not only with human health. Agricultural yields and labor productivity are declining, and health care costs are only increasing. According to experts, to improve the current deplorable situation, consolidated actions are required on the part of the authorities at all levels with the involvement of international experts, scientists and the public.

Everyone knows that every year the number of countries where the air quality index tends to worsen begins to increase. Today, countries where the level of air pollution exceeds all permissible standards include: Afghanistan, Nigeria, Vietnam, Bangladesh, Pakistan, Nepal, India and China. In these countries, in addition to problems with waste disposal and lack of quality drinking water, the population suffers from drought and sandstorms, which harm both rural and urban residents. Almost all these countries suffer due to high population density and also a large part of the population in these

countries lives below the poverty line. The environmental situation in these countries has long been out of control. Forecasts regarding the environmental future of these countries are extremely negative.

From this perspective, I would like to draw attention to atmospheric air pollution in the territory of the Republic of Uzbekistan. In recent years, as in other countries and across the territory of the Republic of Uzbekistan, there has been a sharp deterioration in air quality. It is no secret that due to the inhalation of such dusty air, the number of people visiting medical institutions with complaints of shortness of breath and itching in the eyes, as well as deteriorating health, is sharply increasing. Below we consider and analyze emergency situations that were recorded in different regions and regions on the territory of the Republic of Uzbekistan.

According to the source [1], almost 2 million people in the western part of Uzbekistan (in the Autonomous Republic of Karakalpakstan and Khorezm region) are directly affected by air pollution from dust blown from the surface of the dried bottom of the Aral Sea. It is estimated that strong winds transport 15–75 million tons of contaminated sand and dust per year. This dust contains salts, pesticides and heavy metals, and public health research and analysis shows that rates of bronchitis, asthma, anemia, heart disease and some cancers are high in these regions. In 2004–2010 and in 2012–2014. Observations were established in Tashkent to measure PM10 and PM2.5 dust fractions to gain more information on air quality and monitor the impact of mitigation measures on former seabed stabilization.

Figure 1. Illustration of a sandstorm in the Samarkand region.

The material on the site [2] contains an episode from a video, which presents a video fact (Fig. 1) illustrating the beginning of a terrible sandstorm, which was recorded on June 13 and 24, 2023 in the Samarkand region. As you can see from the picture, this sandstorm was a terrible situation. Due to strong winds and dust, short-term power outages occurred in some areas.

The work of E. Abdulakhatov [3] gives an example of air pollution in the city of Tashkent. According to the author, the dust storm that covered the city of Tashkent and the Tashkent region on November 4-8, 2023 was the first such incident in its 150-year history. Adverse weather conditions have negatively affected the health of many people. During the disaster, a state of emergency was not declared, and not all services functioned equally, and this emergency situation was not covered on the website of the Ministry of Emergency Situations, or on their Telegram channel. Although the ministry conducts training sessions on what to do in the event of such dust emissions or dust storms. They even have developed tactics for how people should move in the dust. The scientist noted that the government did not take adequate measures during the period of air pollution, which not only led to difficulties for the population, but also left without attention a number of scientific aspects that should have been studied. The researcher also commented on the Ministry of Innovation's message that dust in the air is harmless. As you know, “Fine particles in dust are considered harmful to public health throughout Russia and European countries. I wonder why the Ministry of Innovation said that dust is harmless? The dust particle itself is harmful, as it inflames and damages the respiratory system. Next come diseases of the respiratory system. After studying it in the laboratory, they said that the chemical composition does not contain heavy metals. But if they talk about whether this has a negative impact on human health or not, they definitely should have provided the facts. He further notes that the dust was declared harmless. The damage was done and everyone knew it. The hydrometeorologist recalled that during the days of the dust storm, it became known that 4-5 thousand people called an ambulance due to shortness of breath, but the majority simply breathed this dust.

Figure 2. Illustration of a sandstorm on the territory of the Republic of Karakalpakstan.

As noted in the source materials [4], on July 18, 2023, dust storms occurred on the territory of the Autonomous Republic of Karakalpakstan, which is illustrated in Figure 2.

The materials of the channel [5] noted that for two days (August 24-26, 2023) a sandstorm raged in the Nevoinskaya (Fig. 3) region. In connection with this, classes in schools were reduced, and in some schools classes were completely canceled, since in these conditions it was impossible to breathe the polluted air.

Figure 3. Illustration of a sandstorm in the Nevoinsky region.

According to channel [6], sandstorms were also observed in the southern regions of the Surkhandarya region and in the city of Termez.

According to the source [7], on January 17, 2024, sandstorms covered Bukhara and most of the Nevoinsky region. Figure 4 shows an episode representing the consequences of a sandstorm in the city of Zarafshan. The source also states that the eastern part of the Bukhara region and the center of the Nevoinsky region suffered from dust.

As noted by the authors [8], clean air around populated areas almost completely disappears, rivers turn into sewers, piles of garbage, landfills, mutilated nature are everywhere - this is a striking picture of the insane industrialization of the modern world. Air pollution is the most serious environmental problem in modern cities; it causes significant damage to the health of citizens and green spaces. Over large cities, the atmosphere contains 10 times more aerosols and 25 times more gases. At the same time, 60-70% of gas pollution comes from road transport. In general, vehicle emissions are significantly more toxic than emissions from stationary sources. Along with carbon monoxide, nitrogen oxides and soot (for diesel cars), a running car releases into the environment more than 200 substances and compounds that have a toxic effect. Among them, heavy metal compounds and some hydrocarbons should be highlighted, especially benzopyrene, which has a pronounced carcinogenic effect.

Source [9] notes that poor water management and intensive use of agricultural chemicals also pollute the air. Salt and dust storms, as well as the spraying of pesticides and defoliants on the cotton crop, have led to a serious deterioration in air quality in the territories of the Central Asian republics. In urban areas, factories and automobile emissions pose a growing threat to air quality. Less than half of factory smokestacks in the Central Asian republics are equipped with filter devices, and none are capable of filtering gaseous emissions. Additionally, a large percentage of existing filters are faulty or do not work. Air pollution data for Tashkent, Fergana and Almalyk show that all three cities exceed recommended levels of nitrogen dioxide and particulate matter. High levels of heavy metals such as lead, nickel, zinc, copper, mercury and manganese have been found in the atmosphere of Uzbekistan, mainly from the combustion of fossil fuels, waste, and ferrous and non-ferrous metallurgy.

Figure 4. Illustration of sandstorm traces in the city of Zeravshan.

Methodology

Changes in population health are not only an indicator of the ecological state of regions and continents, but also its most important socio-economic consequence, which should determine the leading directions for improving the quality of the environment. In this regard, it is very important to emphasize that the health of citizens itself, within the biological norm, is a function of economic, social (including psychological) and environmental conditions.

I would like to note that public health is directly related to air pollution in the modern world. In particular, polluted air causes respiratory diseases such as asthma, cardiovascular and other ailments. At the present stage, the level of air pollution exceeds several times the maximum permissible standards in all countries. Meanwhile, it is polluted atmospheric air that contributes to the development of various kinds of diseases, sometimes incurable.

As we know, clogged rivers bring toxins, chemicals and pathogens. In addition, the lack of drinking water, accompanied by climate change, contributes to the spread of dangerous infectious diseases, which negatively affects the health of the population, especially the immature health of the younger generation. Nevertheless, we trumpet everywhere that the future belongs to the youth! The question is which one? A patient, crippled by health, perhaps unable to correctly assess dangerous situations arising at every step that could harm him.

It should be noted that new diseases have appeared. Facts are accumulating about the increased impact of harmful emissions and cancer of drinking water, the population suffers from drought and sandstorms, air quality contaminated with sand and dust. Dispersed particles sandstorms. mutilated nature compounds of heavy metals water resources pesticides and defoliants gaseous emissions. toxins from toxic wastewater from enterprises on heredity. It is very dangerous. Every year, tens of thousands

of new chemical compounds are developed and put into production in research laboratories. Sometimes enterprises themselves produce products that are hazardous to health. It would be naive to hope that this can continue indefinitely: the percentage of newborns with genetic abnormalities is growing. That is why humanity, in order not to degenerate and die out, must take urgent measures.

In general, the health of the population is influenced by many factors, especially the characteristic features of the urban lifestyle - physical inactivity, increased nervous stress, transport fatigue and a number of others, but most of all - environmental pollution. This is evidenced by significant differences in the incidence of the population in different areas of the same city. The most noticeable negative consequences of environmental pollution in a large city are manifested in the deterioration of the health of city residents compared to residents of rural areas.

Significant air pollution, in turn, leads to a decrease in insolation and a reduction in the flow of ultraviolet radiation to the earth's surface. This negatively affects the health of the population, since with reduced insolation, the elimination of a number of toxic substances from the body, in particular heavy metals and their compounds, slows down; in addition, reduced insolation inhibits the synthesis of a number of important enzymes in the body. Meanwhile, residents of large cities very often, especially in winter, experience a lack of insolation.

As we know, the widespread and intensive use of agrochemicals, the diversion of huge amounts of irrigation water from the two rivers that feed the region, and the chronic lack of water treatment facilities are some of the factors that are sources of air pollution, which in turn cause huge health and environmental problems. environment. The environmental devastation in Uzbekistan is best illustrated by the Aral Sea disaster. With diversion of the Amu Darya and Syr Darya for cotton cultivation and other uses, what was once the world's fourth largest inland sea has shrunk over the past fifty years to about half its 1960 volume and more than half its 1960 geographic size.

The drying and salinization of the lake has caused severe storms of salt and dust from the dried seabed, damaging the region's agriculture and ecosystems, and public health. Desertification has led to large-scale death of plants and animals, loss of arable land, changing climatic conditions, depletion of crops from the cultivable lands that remain, and the destruction of historical and cultural monuments. Many tons of salt are reportedly transported over distances of up to 800 kilometers each year.

CONCLUSIONS

From all of the above, it becomes clear that the upward trend in air pollution in the Republic of Uzbekistan is in a depressing state, which negatively affects the health of the population and, above all, the health of the younger generation. In this regard, I would like to note that for thousands of years man lived, worked, developed, but he did not suspect that perhaps the day would come when it would become difficult, and perhaps impossible, to breathe clean air, drink clean water, grow anything on earth, since the air is polluted, the water is poisoned, the soil is contaminated with radiation or other chemicals. These factors pose a real threat to all humanity and especially to the younger generation.

Thus, it can be stated that the growing severity of threats to human civilization in the form of a number of global problems, including the process of air pollution, poses a great danger to the human population. To solve this problem, the people of all countries of the world should consolidate all their capabilities for the sake of survival on planet Earth.

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