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ABOUT AIR QUALITY AND PUBLIC HEALTH IN THE CITY OF TASHKENT

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Abstract: This article discusses the issues of air pollution, in the context of the air quality index and public health in the city of Tashkent and the Tashkent region at the present stage. The problem of atmospheric air pollution has been studied and a comparative analysis of air quality index indicators has been carried out. Issues of public health in the city of Tashkent, taking into account the level and quality of air, were also considered.
Keywords: Air pollution, ambient air quality, crop yield, air quality index, decreased immunity, sewers, WHO European Region, dust storm and particulate matter.

INTRODUCTION

It is known that the state of the environment largely determines a person's life expectancy, his state of health, his performance, and much more. Dirty water puts the health of people around the world at risk and threatens the quality of life. Rivers carry toxins, chemicals and pathogens. 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

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.

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. To

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improve the current disastrous situation, consolidated actions are required on the part of authorities at all levels with the involvement of international experts, scientists and the public. As the website notes [1], despite the snow that fell on February 21, 2024, the average air quality index (AQI) was 196 units and the city of Tashkent took first place in the ranking of the most polluted cities in the world (Fig. 1). Almost all sensors in the capital also recorded a red alarm in accordance with WHO recommendations. In such situations, a person develops a cough, his eyes become itchy and dust tickles his nostrils. According to health experts, living in such conditions begins to reduce the immunity of the human body.

According to website information [2], we can give an example of air pollution in the capital of the Republic of Uzbekistan. According to this site, on October 27, 2023, the average WPI in the city of Tashkent reached 196 and took first place among the dirtiest cities in the world.

Two days later, the same channel states that the level of air pollution in the city of Tashkent in the Republic of Uzbekistan again exceeded other cities in the world. At the same time, the air pollution indicator according to the ICI was 192 units, which corresponds to an almost heavily polluted situation. Despite the reduction in the WPI by 4 units, the city of Tashkent still took first place among the most polluted cities in the world (October 29, 2023),

Figure 1. Illustration of the most polluted cities in the world (February 21, 2024).

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Based on channel data [3], we can state that the city of Tashkent has exceeded all permissible limits (Fig. 2) in terms of air pollution in the world ranking of the most polluted cities in the world. As you can see, the level of pollution as of March 1, 2024, according to the average WCI indicator, was 216 units, which is considered very harmful (heavily polluted) for all segments of the population. This indicator of the level of air pollution is ahead of countries such as Pakistan, Bangladesh, Uganda and Kyrgyzstan.

As noted by the authors [4], 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.

According to the source [5], since 1995, life expectancy in Uzbekistan has increased by about five years. However, this rate is still one of the lowest in the WHO European Region. The same applies to maternal, neonatal and under-5 mortality rates in Uzbekistan, which have declined but remain among the highest in the WHO European Region. Noncommunicable diseases (NCDs) continue to account for the bulk of deaths and years of life lost in the country. Exposure to environmental factors such as air pollution and noise contributes to high blood pressure and low birth weight, which are among the most important risk factors for NCDs in the country, along with diet, child and maternal undernutrition and tobacco use. The incidence and prevalence of certain infectious diseases such as tuberculosis, particularly multidrug-resistant tuberculosis, remains a concern. Tuberculosis incidence rates, which began to decline steadily around 2005, remain twice those in the WHO European Region. The Republic of Karakalpakstan and the Tashkent region have the highest incidence of tuberculosis in the country. The source further notes that high risks and health hazards associated with the environment remain. In 2016, the annual mortality rate from indoor and outdoor air pollution was estimated by WHO to be 81.1 per 100 000 population, placing the country fifth in the WHO European Region for this indicator. The burden of diarrheal disease caused by poor water, sanitation and hygiene was estimated at approximately 14,860 years of life lost due to disability in 2016, ranking the country sixth in the WHO European Region for this indicator.

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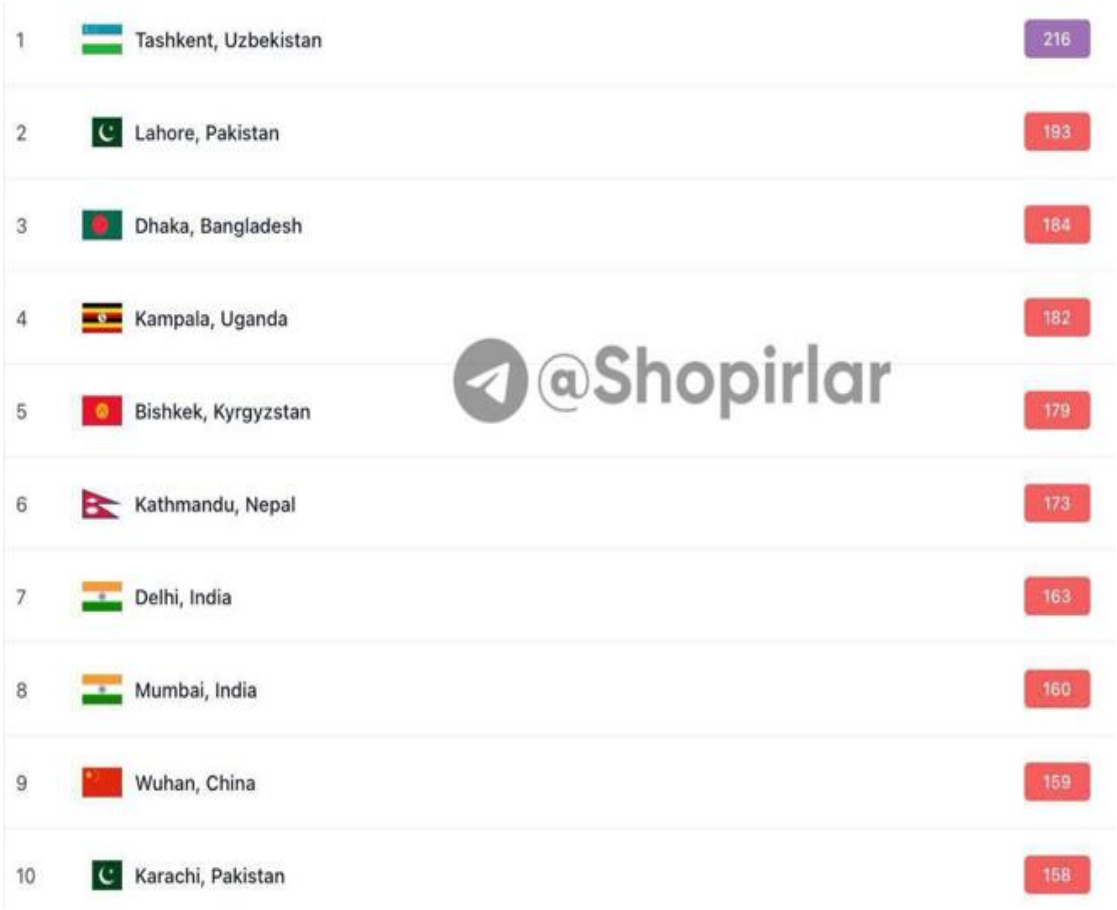

Figure 2. Illustration of the pollution level of the most polluted cities in the world in the world ranking (March 1, 2024).

According to Sarikulov M.Kh. [6] protecting health and combating the most dangerous diseases is one of the global tasks of humanity, since it is central to the preservation of life on Earth. Among the factors shaping population health, a decisive role is played not only by a healthy lifestyle, the state of the environment, heredity and the level of healthcare, but also by the cultural and spiritual potential of society. The core of every civilization is spiritual culture in all its uniqueness. Technogenic civilization creates a real threat not only to the physical, but also to the spiritual and moral degradation of man. It carries serious diseases and has a damaging effect on the human body, especially on the health of the younger generation.

The work of a climatologist [7] gives an example of air pollution. 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,

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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 hydro meteorologist also commented on the message from the Ministry of Innovation that the 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 hydro meteorologist 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 3. Illustration of traces of dirty rain in the city of Tashkent (01/27/2024).

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The materials of the source [8] present a video fact (01/27/2024) of deteriorating air quality in the city of Tashkent. Figure 3 illustrates the situation by showing traces of dirty sediment instead of normal rain. In this regard, doctors recommended wearing masks so as not to expose oneself to diseases such as allergic rhinitis, lung diseases and asthma.

Methodology

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 a rule, 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 affect 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 the problems that arise at every step, which can harm him.

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.

In order to determine the degree of atmospheric air pollution, the average air quality index (AQI) is used. If the WCI values are in the range from 0 to 50, then the air is considered good, and with values from 51 to 100 - satisfactory (average), in cases from 101 to 150 it is considered harmful for vulnerable groups of the population. If the SCI fluctuates between 151-200, the air is considered harmful, with values of 201-300 - very harmful (heavily polluted), and with SCI more than 300 - very harmful (dangerously polluted). If the WCI is more than 400, as experts indicate, this indicates extremely harmful (extremely dangerous) pollution. The histogram below (Fig. 4) shows the level of pollution in the city of Tashkent for the period from August 2023 to March 20024. As we can see, we cannot be proud of the quality of air, because the city of Tashkent did not yield its leading position even to cities from India and China, Pakistan and Bangladesh, which in the world rankings are considered the most polluted cities in the world.

Based on the histogram, we can state that during this period the level of atmospheric air pollution in the city of Tashkent was constantly in a harmful and heavily polluted state. Experts recommend not going outside and, if necessary, advise using personal protective equipment.

The capital of Uzbekistan has repeatedly been included in the lists of the most polluted cities in the world in terms of air quality. The most critical situation with air pollution developed in the city of Tashkent. Mainly, responsibility for air quality falls on transport - this is an outdated

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fleet of cars and transport in general, and for the autumn-winter heating period - this is the Tashkent State District Power Plant, private non-gasified households, small businesses (for example, waste processing shops, bathhouses). It is only possible to estimate the potential damage from the effects of air pollution on the health of the population of the city of Tashkent only very approximately. Nevertheless, the World Health Organization predicts that if current rates of economic growth and medical development are maintained, the complex deterioration of the environmental situation in the period from 2030 to 2050 will cause more than 250 thousand additional deaths in the world annually. This is a forecast; in fact, there are always deviations, and taking into account the current rate of pollution, we can assume a not rosy situation. It is difficult to guess how much of this number will fall to the city of Tashkent.

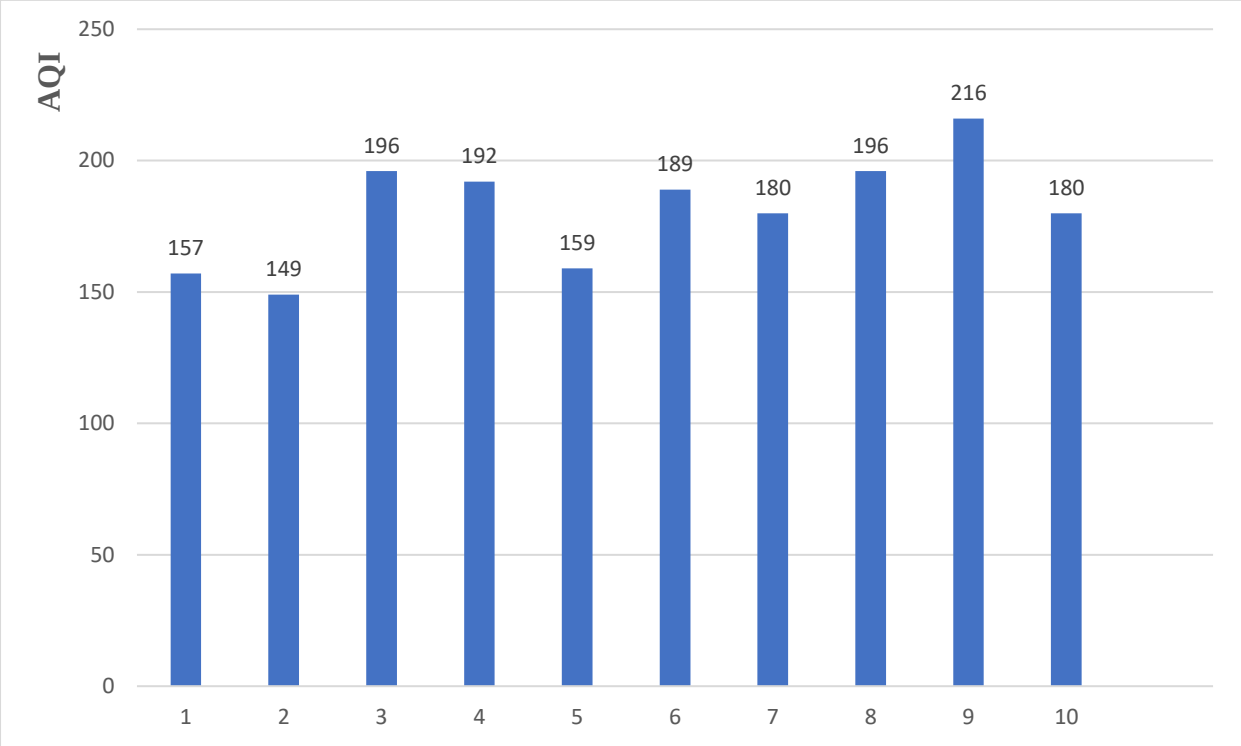

Figure 4. Histogram illustrating the change in the WCI in the city of Tashkent from August 2023 to March 2024.
The numbers on the abscissa correspond respectively to: 1-23/09/2023; 2-18/10/2023; 3-27/10./023;
4-29/10/2023; 5-01/03/2024; 6-06/01/2024; 7-27/01/2024; 8-21/02/2024; 9-01/03/2024; 10-06/03/2024.

It should be noted that new diseases have appeared. Facts are accumulating about the increased impact of harmful emissions and 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 dangerous to public health. It would be naive to hope that this can continue indefinitely:

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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.

Conclusions

From all of the above, it is clear that due to the deterioration of air quality in the city of Tashkent, the current stage has a negative impact on the health of the population and, above all, on the health of the younger generation. 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 the ground, since the air is polluted, the water is poisoned, the soil is contaminated with radiation or other chemical elements. These factors pose a real threat to all of humanity, and not many people realize this.

Thus, it can be stated that the threat that this or that problem poses to human civilization, including a decrease in air quality, will ultimately negatively affect the health of large sections of the population. Based on the above, it follows that a decrease in air quality in the city of Tashkent can lead to an increase in the number of various types of diseases and the emergence of new types of diseases. As we see, the deterioration of air quality poses a huge threat to humanity and not many people realize it.

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