

## **Air Pollution in Central Asia**

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**Abstract:** This article examines the issues of air pollution in the Central Asia region, which is becoming increasingly problematic. This problem is common to all humanity because all countries and populations living in all countries of the world are involved in air pollution. The article also discusses issues of air pollution in the Central Asian region.

**Keywords:** Polluted air, black rain, black snow, sandstorm, particulate matter, dust storms, aerosols, energy industry, air quality.

### **INTRODUCTION**

As is known, 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, digestive, and excretory diseases. The sad thing is that the number of cancers (malignant tumors) is growing.

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 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.

Over the past half century, a huge number of local environmental disasters have occurred that have negatively affected the environment. 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.

### **LITERARY RESEARCH**

Atmospheric air pollution at the present stage is one of the global problems of humanity, which affects the problem of the relationship of the human race to nature. The process of air pollution has no boundaries or boundaries. Since even the most powerful state is not able to solve such a problem alone, therefore, broad international cooperation is necessary to solve the problem. At the present stage, people are increasingly interfering with the natural environment, thereby disturbing the natural balance and forgetting about the need to maintain biological balance in it. Therefore, at this stage, the issue of maintaining ecological balance is very acute and requires immediate solutions. The deterioration of the environment is most influenced by: destruction of forests, lack of clean fresh water, destruction of the ozone layer, pollution of the waters of the World Ocean, more and more desert areas are appearing, deterioration of living conditions of the population in huge megacities.

As is known, humanity is faced with ever-increasing contradictions between its growing needs and the inability of the biosphere to provide them without collapsing. As a result, socio-economic development has taken on the character of an accelerated movement towards a global environmental catastrophe, which threatens not only the satisfaction of the vital needs and interests of future generations of people, but also the very possibility of their existence. At the same time, air pollution at the present stage, along with other environmental disasters, imposes a huge burden on the livelihoods of the human population.

In the modern world, there is hardly a state that has avoided the problems of air pollution. This problem also applies to the Central Asian republics. Moreover, statements that in some places these problems are more significant and in others less significant will be completely incorrect. And if trouble comes knocking, it knocks on everyone in the region.

According to the authors [1], at the present stage of human development, we are faced with 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. 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 chemicals. All this constitutes a real threat to the entire civilization. What could be the conclusion? Another Chernobyl or Fukushima, or maybe even worse. So maybe we should think about this. Every person must realize that the entire civilization is on the verge of destruction, and whether we survive or not is the merit of each of us. There is no doubt that the inventive human mind will eventually find a replacement for them.

The authors' work [2] provides an example of air pollution caused by military conflict that occurred in Kuwait and nearby areas of the Persian Gulf after Operation Desert Storm in early 1991. Retreating from Kuwait, the Iraqi occupiers blew up over 500 oil rigs with explosives wells. A significant part of them flared up and burned for six months, poisoning a large area with harmful gases and soot. From wells that were not inflamed, oil flowed in fountains, forming large lakes and flowing into the Persian Gulf. A large amount of oil spilled here from damaged terminals and tankers. As a result, oil covered nearly 1,554 km<sup>2</sup> of the sea surface, 450 km of the coastline, where most birds, sea turtles, dugongs and other animals died. The fire flares burned 7.3 million liters of oil every day, which is equal to the volume of oil that the United States imports daily. Clouds of soot from the fires rose to a height of up to 3 km and were carried by winds far beyond the borders of Kuwait - black rain fell in Saudi Arabia and Iran, black snow in Kashmir (2,000 km from Kuwait). Air polluted with oil soot had a harmful effect on people's health, since the air contained many carcinogens.

According to materials [3] in Uzbekistan, monitoring of the main industrial pollutants of atmospheric air is carried out: nitrogen oxide, sulfur dioxide (sulfur dioxide SO<sub>2</sub>), carbon monoxide (carbon monoxide CO), nitrogen dioxide (NO<sub>2</sub>), dust (solid suspended particles), as well as specific pollutants - ammonia, phenols, heavy metals, hydrogen sulfide, organic solvents and others. According to the results of instrumental monitoring for 2014–2019, excesses of established standards for emissions of pollutants into the atmosphere were detected at the following enterprises:

“Navoiyazot” – for nitrogen oxides up to 2.84 times and ammonia up to 1.17 times;

- “Akhangaran-cement” – up to 40.7 times for dust and up to 1.2 times for nitrogen oxides;
- Almylk MMC – up to 20 times for dust, up to 7.7 times for sulfur dioxide and up to 2.7 times for nitrogen oxides.
- “Uzmetkombinat” – for dust up to 3.7 times, nitrogen oxides up to 1.6 times and sulfur dioxide up to 3.1 times;

- “Bekabadcement” – up to 12.2 times for dust, up to 2.2 times for nitrogen oxides and up to 5.9 times for sulfur dioxide;
- “Maksam-Chirchik” – up to 2.6 times for ammonia and up to 4.7 times for nitrogen oxides;
- “Fargonazot” – up to 1.3 times for acetone.

According to the source [4], an emergency was registered (Fig. 1) in the form of a sandstorm in the southwest of Kazakhstan (April 18, 2023).



**Figure 1. Illustration of a sandstorm in southwestern Kazakhstan.**

According to information from the website [5], we can give an example of air pollution in the city of Tashkent in the Republic of Uzbekistan (Fig. 2). According to this website, the city of Tashkent took first place among the dirtiest cities in the world (October 29, 2023), and the level of air pollution is ahead of such countries as India and China. Tashkent very often finds itself at the top of the list of cities where air pollution exceeds permissible standards.



**Figure 2. Illustration of pollution in the city of Tashkent.**

The source [6] 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.

According to the source [7], almost 2 million people in the western part of Uzbekistan (the Republic of Karakalpakstan and the 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.

In the mid-1990s, industrial production in Uzbekistan accounted for about 60 percent of the total for Central Asian countries, excluding Kazakhstan, and contributed about 60 percent of total air emissions in Central Asia. Since there are relatively few cars, car exhaust is a problem only in Tashkent and Fergana. It should be noted that Uzbekistan and Kazakhstan are characterized by dust storms, which also contribute to air pollution with suspended particles.

## **METHODOLOGY**

The cause of global air pollution is the increasing conquest of nature by man and the development of new technologies that have almost completely transformed the appearance of the

globe. This was also influenced by the increase in population, unevenly distributed across continents. Overpopulation as a result of the population explosion in underdeveloped Asian and South American countries is forcing the expansion of spaces taken from nature.

It is no secret that clean air around populated areas is almost completely disappearing, rivers are turning into sewers, there are piles of garbage, landfills, and mutilated nature 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, about 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.

It should be noted that some scientists characterize the current crisis of civilization, focusing on the inevitability of its collapse if development and environmental problems are not addressed in the 21st century. a qualitatively new solution. There is hope that it may be associated with the transfer of transport to environmentally friendly hydrogen fuel and the mastery of thermonuclear fusion energy. Hypothetically, such a decision may also be associated with the expansion of the development resource base through the development of other planets in the solar system. It cannot be ruled out that recognition of the reality of the crisis of civilization will lead to a change in the criteria for progress that emerged at the dawn of the industrial era. They assumed that constant growth in living standards and consumption was the highest value. The most important indicator in this case will be the safe state of human habitat and the ability to breathe environmentally friendly air.

As a rule, 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 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.

The energy industry, where coal is burned, contributes to air pollution. The clearest example is the Dushanbe CHPP-2, which runs on coal, which annually "gives" residents and guests of the Tajik capital over 14 thousand tons of carbon dioxide. Cement factories located in the city and again using coal as fuel also make their contribution. In addition, at the Bishkek thermal power plant, about 1.5 million tons of coal are burned annually, while the entire population of the country uses a little more than 1 million tons for domestic needs. There are no reliable data on the volume of greenhouse gases emitted in Uzbekistan. However, the decree of the President of Uzbekistan Shavkat Mirziyoyev notes "despite the measures taken, the energy intensity of the domestic economy remains high, the level of diversification of the fuel and energy balance due to the involvement of renewable energy sources in industrial production does not meet global trends. In the production of electrical and thermal energy, almost the existing sufficiently high potential of renewable energy sources is not used."

The cities of Central Asia have repeatedly been included in the lists of the most polluted cities in the world in terms of air quality. The most critical pollution situation is in Tashkent, Almaty, Dushanbe and Bishkek. In general, the situation with air pollution in Central Asia is quite



similar. Mainly, responsibility for air quality falls on transport - this is an outdated fleet of cars and transport in general, and for the autumn-winter heating period - these are thermal power plants, boiler houses, private non-gas households, small businesses (for example, bathhouses, waste processing shops). It is only possible to estimate the potential damage from the effects of air pollution on the health of the population of the Central Asian countries 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 countries of Central Asia.

## **CONCLUSION**

Over the past half century, a huge number of local environmental disasters have occurred that have negatively affected the environment. People return the benefits they receive from nature back to it in waste form, which results in pollution of the planet. And this process is growing every year. For several generations, residents have been sounding the alarm, trying to draw attention to these issues.

As you can see, the growing trend of atmospheric air pollution at the present stage has a growing trend and this negative factor has a negative impact on the health of the population and, above all, on the health of the younger generation. All this can lead to the fact that the day may come when it will become difficult, and perhaps impossible, for a person 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 chemicals. As we see, air pollution poses a huge threat to humanity and not many people realize it.

From all of the above it follows that the time has come to sound the alarm loudly in order to warn the peoples of all countries about the impending danger threatening humanity and civilization. The peoples of Central Asia today have no more serious concern than finding the strength, finding the means, finding the intelligence to get along with nature and solve the problem of air pollution.

## **REFERENCES**

1. Adilov T.T., Sarikulov M.Kh. THREATS POSING A DANGER TO CIVILIZATION AND HUMANITY. European Scholar Journal (ESJ) Available Online at: <https://www.scholarzest.com> Vol. 2 No. 4, April 2021, ISSN: 2660-5562., Pp. 181-184.
2. "One Hundred Great Disasters". Ionina N., Kubeev M. Moscow/Veche 1999
3. © 2008-2022 "Gazeta.uz" 18+.
4. @Sara\_Xabarlar 2023
5. <https://telegram.me/joinchat/AAAAAFLFhcM5cmyyjC4AnA>.
6. Source: [evolvelium.com](http://evolvelium.com).
7. UN Economic Commission for Europe ENVIRONMENTAL PERFORMANCE REVIEW, UZEKISTAN Third Review Geneva, 2020. P.174.