

## **On the Eve of Independence: The Ecological Situation in Uzbekistan and its Impact on Human Health**

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**Abstract:** This article discusses the ecological situation in Uzbekistan on the eve of gaining independence and its impact on human health. The article also analyzes, based on concrete evidence, the regions in the republic where the ecological environment has deteriorated and the reasons behind this situation.

**Keywords:** ecology, Aral Sea problem, cotton monopoly, maternal mortality, infant mortality, chemical fertilizers, public health.

### **INTRODUCTION**

From the early years of independence, the government of Uzbekistan has undertaken consistent efforts to strengthen public health, increase the number of healthy individuals, protect maternal and child health, promote a healthy lifestyle among the general population, enhance medical culture within families, and widely promote the idea that every person's health is in their own hands — all in pursuit of building a healthy society.

From the initial stages, legal documents were adopted to develop and strengthen this sector. Furthermore, during the early years of independence, the need to reform the healthcare system arose in order to restore and improve public health. In this regard, a decree by the First President of the Republic of Uzbekistan was adopted.[2]

To develop new approaches in these processes and bring all sectors of the country up to international standards, the President of the Republic of Uzbekistan issued the Decree No. PF-4947 dated February 7, 2017, "On the Strategy of Actions for the Further Development of the Republic of Uzbekistan." This strategy identified improving the healthcare system and enhancing the social protection of the population, along with increasing the socio-political activity of women, as one of the top priorities.[3]

Likewise, within the framework of the New Uzbekistan Development Strategy for 2022–2026, efforts have begun to make medical services more accessible and convenient for the population. For this purpose, medical clusters are being established in various regions of the republic, including Namangan, Fergana, Syrdarya, Kashkadarya, Navoi, Tashkent regions, and the city of Tashkent.[4]

**LITERATURE REVIEW AND RESEARCH METHODOLOGY** Currently, one of the least-studied scientific issues at the regional level in Uzbekistan is the financial support related to the introduction of new types of medical services and the development of various forms of healthcare delivery across different branches of the healthcare system.

The state of Uzbekistan's healthcare system during the years of independence has been studied by foreign scholars such as R.A. Zadorjnaya, Berend Rechel, Sebastian Perouz [5], and others. These researchers have examined the systematic reforms implemented by the government of Uzbekistan in the healthcare sector, the measures taken by medical professionals to improve public health since

independence, the development of the national medical education system, existing problems in this area, and Uzbekistan's position in comparison with other CIS countries, including differences in healthcare indicators and conditions.

Some aspects of state participation in the financing of medical services and reforms in the healthcare system of Uzbekistan have been studied by local scholars such as S. Jumanov, J. Zaynalov, T. Malikov, A. Sultonova, Sh. Iskandarova, and Z. Srojiddinova [6]. However, the restoration and development of the healthcare sector in the Fergana region in accordance with modern requirements, the reforms implemented in the development process of the system, the level of staffing in the field, as well as the specific features of financial support, have not yet been fully explored. This highlights the relevance of the issue and justifies the selection of this topic as a pressing subject for scientific research.

## RESULTS AND DISCUSSION

During the years of independence, Uzbekistan implemented numerous positive changes in the healthcare system, alongside progress in other sectors. With the attainment of state independence, the emerging civil society in Uzbekistan set as its main goal the resolution of the population's social problems, protection of their interests, and improvement of living conditions.

A number of socio-economic and environmental issues inherited from the authoritarian regime that prevailed throughout the 20th century remained unresolved. Addressing the consequences of these problems, preventing emerging disasters, finding effective solutions—especially in terms of protecting maternal and child health and promoting a healthy lifestyle in the newly forming society—became critically important.

On the eve of independence, serious problems had emerged in almost all areas of the country's social and economic life, with the healthcare system being in an especially deplorable state. In particular, the use of agrochemicals in agriculture led to a sharp increase in child mortality in rural areas. The child mortality rate in some regions of the country was 1.5–2 times higher than in the Chernobyl zone, and in certain provinces, even 3–4 times higher. In cotton-producing districts, maternal and child mortality rates were three times higher compared to non-cotton regions. During this period, the incidence of oncological diseases in Uzbekistan was 2–3 times above the average for the Soviet Union. Typhoid fever was 3–4 times more prevalent, and paratyphoid A and B diseases were 9–10 times more frequent. The country also ranked among the highest in terms of hepatitis A prevalence [4].

At the time, several chemical plants operated in Uzbekistan, including those in Samarkand, Kokand, Fergana, Navoi, and Chirchik. The toxic emissions continuously released from these factories posed significant health risks to the local population. It was found that 40% of residents in certain areas suffered from nervous system and liver disorders. One in every ten workers exposed to pesticides at these plants showed signs of serious illness [5].

Due to the lack of sanitary-protective zones and proper filtration systems, 9% of municipal and 35% of departmental water supplies in the republic did not meet sanitary standards. Tests showed that 6.5% of samples from municipal drinking water supplies failed to meet bacteriological standards, while 30% failed to meet chemical standards [6]. This situation posed a serious threat to public health and highlighted the urgent need to improve sanitation compliance and enhance systems for water purification and disinfection.

Research also revealed that in cities such as Tashkent, Fergana, and Almalyk, air pollution levels from nitrogen dioxide and particulate matter exceeded WHO recommendations. In rural areas, agricultural activity contributed to the deterioration of air quality due to increased levels of chemical substances [7]. During this period, numerous problems had accumulated in the healthcare sector, and the structure of the medical system itself did not meet the requirements of the time, being organized based on quantitative indicators rather than qualitative development. For instance, the emergency medical care system alone had turned into a five-tier, low-efficiency structure [8]. This, in turn, limited access to modern medical services, especially for rural populations in the Republic.

Despite necessary measures being taken in the field of healthcare, mass medical screenings revealed that a significant portion of the population suffered from various diseases caused by environmental degradation, ecological crisis, and socio-economic hardships. Among them were individuals with serious health issues requiring urgent treatment, surgery, or physiotherapy.

The supply of pharmacies across the Republic was also inadequate to provide quality medical care to patients. Approximately 80% of healthcare facilities were located in outdated and makeshift buildings that failed to meet even basic sanitary and hygiene standards. About 70% lacked sewage and hot water systems, and only 40% were connected to drinking water supply networks. There was also a significant shortage of modern equipment and medical technologies [9].

The roots of the high incidence of infectious diseases in Uzbekistan can largely be traced back to poor living conditions during the Soviet era. For decades, many areas—especially the fertile Fergana Valley—were converted into cotton fields. Between 1970 and 1990, chemical methods were widely used to treat cotton crops to increase productivity. As a result, disease rates among the local population sharply increased, as chemical fertilizers not only polluted the air but also contaminated drinking water, negatively affecting public health.

Regions with already difficult socio-economic conditions—such as Karakalpakstan, Tashkent Province and city, and many cities of the Fergana Valley—saw a rise in disease rates. Therefore, in 1988, the “Aral-88” expedition was organized [10]. According to its reports, in Bozatov District of Karakalpakstan, 260 out of every 1,000 infants died. Around 80% of Uzbek women were diagnosed with anemia, and one in every three young Uzbek men was declared unfit for military service due to health issues [11]. Among conscripts, over 20% were assigned to construction units instead of combat units because of poor health. This situation was even more severe in regions like the Fergana Valley, where the ecological and social environment was particularly difficult [12]. This was attributed to the region being developed primarily as an industrial zone. For instance, in the 1980s, Uzbekistan had 1,821 operating industrial enterprises [13], among which heavy industries—chemicals, construction materials, machinery, metallurgy, fuel, energy, and agro-industrial sectors—played leading roles.

At that time, industrial development in Uzbekistan was driven by the exploitation of the country’s abundant resources and cheap labor force. Consequently, environmental factors and everyday lifestyle errors had a significant negative impact on public health. Moreover, not only were preventive healthcare measures nearly nonexistent, but even emergency medical services were far from adequate. For example, in the 1980s, in Namangan Region alone, the infant mortality rate was alarmingly high, with a significant number of children dying before reaching their first birthday [14]. This can be attributed to the poor state of maternal and child healthcare or to extremely adverse ecological and social conditions.

These points are also confirmed by the research of D.A. Alimova, who emphasized that the totalitarian regime fostered a monopoly on cotton production, and that mismanagement in agricultural and industrial production, as well as the reckless exploitation of water and natural resources, led to numerous socio-economic problems, including the emergence of various diseases. The author also noted that the central government’s ideology of “Great Power” always took precedence over public interests and population health [15].

Although the number of stillbirths and infant deaths in Uzbekistan continued to rise, the central authorities failed to take these problems seriously. The lifestyle and health of the population were largely neglected. The release of toxic substances and radioactive waste from heavy and chemical industries had a severely detrimental and often irreversible impact on the environment. The mortality rate among otherwise healthy children also increased due to various diseases.

In the 1960s–1980s, aviation was widely used in Uzbekistan’s agriculture to combat harmful insects and protect cotton fields from weeds. These chemical treatments were conducted in open areas, often flying over residential zones. Highly toxic chemicals such as butiphos and other defoliants were used excessively, beyond prescribed limits. Although the use of defoliants like butiphos and DDT was banned in many countries as early as the 1960s, under central Soviet directives, large-scale use of such

hazardous substances continued in Uzbekistan between 1965 and 1970. In 1975, 484,000 children were born in Uzbekistan, and 25,700 of them died before reaching the age of one. This figure marked the highest infant mortality rate recorded over the following 25 years. The situation was particularly severe in the Fergana Valley. For example, in Andijan region, the child mortality rate in 1972 was 2.2 times higher than in 1971 [16]. In Namangan, due to poor organization of childbirth services—especially the lack of preventive and sanitary measures—maternal mortality continued to rise annually. In 1978, 0.13% of new mothers died, and by 1980, this figure had reached 0.22% [17].

One of the main contributors to environmental degradation in Uzbekistan was the widespread use of chemicals in agriculture. In particular, in Andijan region, efforts to expand cotton production led to a 20–50-fold increase in the application of fertilizers and toxic chemicals. Between 1970 and 1975, highly dangerous compounds like butiphos were sprayed on fields using aviation, and the volume of chemical fertilizers applied to the soil increased by 1.5 times [17]. As a result, Andijan became the most ecologically damaged city in the Republic [18], and the incidence of severe diseases among the population reached the highest levels. During the 1960s, uncontrolled and excessive use of pesticides in cotton farming led to soil pollution that was three times higher than normal. In fact, more than 100 instances of extreme soil contamination were recorded in the region [19]. Toxic chemicals accumulated in certain areas, resulting in a sharp rise in serious illnesses among the population and widespread contamination of soil, water, and air.

In conclusion, on the eve of independence, Uzbekistan faced a dire socio-economic and ecological situation. This was largely due to the Soviet government's failure to take adequate measures to improve the living conditions of the local population. Even when some efforts were made, they proved ineffective against the backdrop of severe environmental degradation.

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