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CURRENT PROBLEMS OF MODERN ECOLOGY OF UZBEKISTAN AND MEASURES TO STABILIZE ENVIRONMENTAL EMISSIONS

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Abstract: This article discusses environmental problems in different regions of Uzbekistan and their solutions
Key words: Ecology, Uzbekistan, population, environment, pollution, radiation, drinking water.

The nature of society's interaction with the environment has recently caused concern among the general public. The human environment is becoming increasingly polluted, and its ability to self-regulate is falling catastrophically. Diseases that were previously either not observed at all or were local in nature are spreading widely. They are called “diseases of civilization.”
Both the natural and social environments need to be protected and improved. A person experiences a feeling of discomfort and becomes ill both from a violation of the ecological balance in nature and from contamination of the social environment.
The ecological state of the Republic of Uzbekistan is extremely worrying. The soil, air and water are polluted. The extraction of minerals is carried out irrationally, and nature is becoming scarcer. Nature also suffers from the intensive collection of fodder, medicinal and edible herbs and shrubs. Intensive collection of raw materials, unregulated grazing, and recreational pressure on landscapes lead to a reduction in the country's biomass reserves.
To preserve the natural environment and solve environmental problems, the level of environmental culture of the entire society plays an important role. In order to form and develop an environmental culture among the population, it is necessary to create a special methodology for environmental education, based on which and with the help of which people could control their actions and actively form an environmental culture.
An analysis of the real environmental situation in Uzbekistan shows that in the medium term - 10-15 years - a set of new environmental problems may arise here in connection with this; the existing ones - the Aral crisis, water shortage, land degradation, deflation and soil erosion, the consequences of irrational use of natural resources and others - will worsen.
In the current economic conditions in the Republic, there has been a tendency towards an “anti-ecological” nature of the development of the national economy. Intensive development of natural resources, oil, gas, non-ferrous and rare earth metals in the regions has led to the degradation of land and water resources and air pollution.
Let's look at the most polluted places in the Republic of Uzbekistan today.

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The main polluter of the air in the Tashkent region is the Almalyk Mining and Metallurgical Combine (AMMC). Not to mention the mountains of slag polluting the surroundings of this enterprise - the content of selenium, cadmium, and phosphates in groundwater at a distance of 5 km from the dam of the AGMK tailings dump exceeds the maximum permissible concentration (MPC) by 8.3 times. In Almalyk there is a large lead aureole near the Kalmakyr deposit (600-800 mg/kg). In the valley of the Akhangaran River, 3 km from the Angren coal deposit, an aureole of soils contaminated with heavy metals (Cu, Pb, Zn, Fe, Ni) has formed. High concentrations of lead and cadmium were noted in the soil horizon. For example, in the cities of Akhangaran and Angren they are 350-500 mg/kg, which exceeds the MPC tens of times.

Contamination with radionuclides has been established at uranium mining sites in Zafarabad (Kyzylkum), where the intensity of gamma radiation ranges from 200 to 1500 μR/hour, in some places reaching 2500-3000 μR/hour.

The source of radiation hazard is the tailings of the Navoi Mining and Metallurgical Plant (GMZ-1), located on the left bank of the Zarafshan River. The area of the tailings dump is 630 hectares, the height of the dam is 15 m. The radioactivity of the tailings reaches 90 kBq/kg, and the gamma field level on the tailings dams ranges from 300 to 500 μR/hour. An increase in the mineralization of groundwater was recorded with an increase in the concentration of SO4, chlorine, iron, selenium and manganese ions.

In the area of Uchkuduk there is a warehouse for balance uranium ores with a volume of more than 3 million tons. The exposure dose rate is 10-400 μR/hour.

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Summarizing all that has been said, the environmental situation in the Navai region can be called critical.

Intensive development of gas and oil fields has led to large-scale land subsidence, which can affect not only changes in the landscape, the nature of the plasticity of the terrain, but also the dynamics of new and modern structures. The main environmental problem of the area is the water supply of the population with high-quality drinking water. There are facts of groundwater contamination with phenols and petroleum products. The Kashkadarya River is polluted by the municipal services of Karshi and Shakhrisabz, the water mineralization is up to 1220 mg/l, which exceeds the maximum permissible concentration by 1.2 times, and the content of petroleum products in it reaches 0.41 mg/l. There has been an increase in the incidence of gallstone and urolithiasis in the population.

The Bukhara oil refinery is the main polluter of the area's water resources. The content of phenols and petroleum products in water exceeds the maximum permissible concentration by 2-3 times. A high content of petroleum products in the soil is observed in the area of the village of Mubarek and in the territory of the Karaulbazar station. Fresh groundwater reserves are depleted, and the region experiences a shortage of drinking water. Water mineralization is up to 1.5 g/l, and its hardness is 11-12 mEq.

Sources of environmental threats are also abandoned agricultural airfields, where organochlorine pesticides are still stored, including magnesium chlorate, which was used as a cotton defoliant.

Western European Journal of Historical Events and Social Science
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The water resources of the Zarafshan region are contaminated with heavy metals - waste from the uranium and gold mining industries. An increased content of strontium, lead and zinc in water and soil was noted. In some places, there is an increased content of nitrates and pesticides in water and soil, exceeding the MPC by 4-6 times. The supply of quality drinking water to the population is unsatisfactory.

Shortage of quality drinking water, problems with water supply to the population of rural areas. Land degradation as a result of waterlogging, soil pollution with nitrates and pesticides. The population uses mainly surface water for domestic needs, which contributes to the spread of acute gastrointestinal diseases.

Drinking water shortage is an acute problem in the Bakhmal district of Jizzakh region. In the vicinity of the village of Egizbulok, Farish district, on an area of 5 hectares, there is a tailings dump of extremely toxic pesticides and pesticides.

The most complex area from an ecological point of view, where a number of problems are concentrated. The “leader” in terms of the amount of damage caused to the environment is the oil and gas production and mining industries. Gas and oil leaks that occur due to outdated infrastructure lead to air pollution with methane, of which, on average, approximately 1 million tons are burned and released into the atmosphere per year. Burning “torches” over the Fergana Valley are a clear symbol of mismanagement and mediocre attitude towards nature.

Water and land resources contaminated with heavy metals in the Tashlak region, in the area of the Fergana chemical plant, the Kokand superphosphate plant, near the tailings dump of the UzOlmosOltin enterprise, in the area of oil wells of the Mingbulak oil field are sources of increased danger to the environment and public health. This is rightly pointed out in the article by S. Jabbarov, Deputy State Committee for Nature Protection of the Fergana Region, “We will recycle oil waste.”

In the northwestern part of the mountainous frame of the Fergana Valley, in the area of such deposits of rare metals as Chadak, Cherkisar, Pap, Uygursay, there is local soil contamination with arsenic, lead, strontium, manganese, and beryllium. The intensity of the gamma field on the surface of the dumps is 300-450 μR/hour.

Sources of environmental threats here, as in the Bukhara region, are also abandoned agricultural airfields, where organochlorine pesticides are still stored. The soils in the Fergana region are the most contaminated with DDT and other pesticides: in some areas the level of pollution exceeds 38-39 MAC. The use of a new method of cultivating cotton under film aggravates the degradation of land resources, since a huge amount of film is buried in the ground every year, despite the fact that the decomposition period of plastic film is at least 100 years.

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Much has been written and said about how significant the scale of environmental problems in the Aral Sea is and their impact on the environment and public health. These problems must be solved today: tomorrow may be too late. Could anyone have imagined twenty years ago that the drying up of the Aral Sea would be so rapid and irreversible? Meanwhile, the associated global warming in the Central Asian region is a bitter reality today

In nature, as we know, everything is interconnected. The loss of just one link in the chain pulls others along with it, leading to the emergence of a whole series of new problems. The Aral crisis and its consequences in terms of the scale of impact on the environment and climate are an unprecedented phenomenon that has no analogues in the world. This is a problem not only for the countries of Central Asia: it needs to be solved by the entire world community.

It is obvious that to overcome the degradation of the Aral Sea, fundamental research is needed by leading experts who will assess the size of the disaster on a quantitative basis and propose priority areas of action aimed at solving the problem.

Timely resolution of environmental problems helps to identify and prevent possible social, economic, and political conflicts that can lead to tension in society or conflicts between states. At the Dushanbe Water Forum, held in August 2003, the president of the NGO Perzent, Oral Ataniyazova, raised the issue of the social and economic impact of the drying up of the Aral Sea on the population. Indeed, environmental degradation in these areas is known to have led to a sharp decline in public health. In this regard, I would like to propose introducing a unified standard for assessing the level of public health in zones of environmental stress. Obviously, it would be reasonable to take the average life expectancy and mortality rate (differentiated by sex and age) as parameters for characterizing the health of the population. Other indicators can be determined and compared only through a comprehensive survey of the population using a

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unified methodology. In the absence of this, very often the real picture of the impact of a polluted environment on public health remains unknown.

During his economic activities, man influences nature, adapting it to his interests and needs. At the same time, it processes natural elements, concentrates them, redistributes them throughout the territory, and sometimes directly consumes them as finished products.

The relationship between society and nature during human economic activity lies in the interdependent action of three components of the economy - the natural environment, means of production and labor resources.

The protection of the natural environment means the protection of the nature around us: air, water, soil, vegetation and wildlife from the destructive influence of humans on it.

Today, the pollution of nature with waste from both industrial and non-productive human activities continues to grow.

In almost all sectors of the national economy, in the sphere of household consumption and recreation, by-products are formed, which are generally referred to as waste. Sometimes waste emissions exceed certain threshold values so much that they slow down or prevent the use of natural resources, pollute the atmosphere, water, soil, and through them food products, and also reduce aesthetic values.

A person breathes air, drinks water, eats food of plant and animal origin, walks on the earth - all this is a vital necessity. But if the earth's lithosphere, atmosphere, hydrosphere and biosphere are subject to intense uncontrolled anthropogenic impact, then all of the above actions will become the road not to life, but to death. Since polluted air, water, and food saturated with harmful substances are poison for the human body.

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The activities of industrial enterprises have the strongest negative impact on nature. The state regulates their work in the environmental sphere with the help of relevant regulations. But businessmen themselves must be responsible about environmental issues and worry about the future. One of the effective means in the fight to preserve natural resources is to conduct an environmental assessment of the state of the environment, as well as industries and enterprises. Having become an independent state, the Republic of Uzbekistan pays great attention to environmental protection, rational use of natural resources, as well as urban planning problems of the country.

Tashkent is located in the subtropical continental climate zone. Due to the proximity of the mountains, the city receives an average of 400 mm of precipitation per year, which is significantly more than in the lowland semi-deserts and deserts of western Uzbekistan. Over the past century, the annual amount of precipitation has increased by more than 60 mm, which is associated both with fluctuations in atmospheric circulation and with changes in measurement techniques (in the 1960s, rain gauges were replaced by precipitation gauges at weather stations in the USSR, and corrections for precipitation gauge wetting began to be introduced). The maximum amount of precipitation (802 mm) was recorded in 1969, the minimum (141 mm) in 1917. The driest months are July (4 mm of precipitation) and August (1 mm), the wettest is March (69 mm).

Precipitation usually falls in the form of rain (98 days a year), less often in the form of snow (27 days) and sleet (14 days).

The snow cover in Tashkent is unstable and remains for a total of 32 days during the winter. Its height is usually several cm, but in some years it reaches 30 - 40 cm, and in January even 50 cm. Fogs are observed 17 days a year, mainly from November to March (maximum in December, 6 days), thunderstorms also 17 days a year (from March to August, maximum in May, 5 days).

From the north, the city is covered by mountain ranges, so frosts due to the invasion of cold masses of northern air here are very short-lived, although when it clears, the temperature sometimes drops to -20 °C and below. In summer, dry air over the foothills quickly heats up and the temperature often reaches +35+40 °C.

The minimum temperature in the history of the city was -29.5 °C (December 20, 1930), the maximum was +44.6 °C (July 18, 1997). The 40-day period of calm summer heat, known as chilla, is an integral part of the urban culture of Tashkent

Spring and autumn come early. This is mainly due to the fact that the air warms up and cools down quickly in the city due to the absence of seas and oceans nearby. But low air humidity allows it to cool faster in the shade and at night, which allows you to better tolerate the heat. This makes it significantly different from Sochi, despite the fact that the average annual temperatures in Sochi (+14.2 C°) and Tashkent (+14.8 C°) are almost the same.

The average annual temperature is +14.8 C°, wind speed is 1.4 m/s, air humidity is 56%. Days with fogs, thunderstorms and dust storms have been taken into account in Tashkent since 1940. At the same time, due to general climate warming, the annual number of days with fogs on average has decreased from forty to fifteen. It fell especially sharply between 1970 and 1988

Over 107 years of meteorological observations, the average annual temperature within the city increased by an average of +0.018 degrees per year, and this warming was most noticeable in winter, when temperatures increased by an average of +0.024 degrees per year. At the same time, the city stopped experiencing 20-degree frosts: the absolute minimum temperature by the

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end of the 20th century immediately rose by +9 degrees: from 20 to 11 degrees below zero. Moreover, the date of the first frost has shifted towards the end of the year by almost a month. The date of the last frost shifted to the beginning of the year by 13 days. As a result, the duration of the frost-free period in Tashkent has increased by more than forty days over the past 100 years.

A comparison of the climatic data of the city and the region obtained from the Dalverzin weather station, located approximately one hundred kilometers south of Tashkent, shows that in addition to global warming, the climate of Tashkent has also warmed due to the growth of the city itself and, as a consequence, the strengthening of the warming effect of the metropolis' infrastructure. From 1933 to 2006, the warming effect of the growth of Tashkent itself on its own climate was more than +0.4 degrees. However, here the warming effect was more noticeable in the summer, when the temperature increase was +0.6 degrees

Tashkent (Uzbek Toshkent, Toshkent) is the capital and largest city of Uzbekistan, a city of republican subordination. The largest city in Central Asia by population (2,766,400 people[4]), the center of the Tashkent urban agglomeration, the most important political, economic, cultural and scientific center of the country, as well as an aviation, railway and road junction. Located in the northeast of the country, near the border with Kazakhstan.

Tashkent is the 3rd city in the CIS[5] in terms of population. It is one of the oldest cities in Central Asia - the 2200th anniversary of the city was celebrated in 2009.

State authorities, foreign embassies, and the headquarters of most of the largest Uzbek commercial organizations and public associations are located in Tashkent. Sometimes an unfavorable environmental situation develops in Tashkent, when there is heavy smoke in the city, as a result of which visibility reaches no more than 1.5-3 km[15]. In these cases, the Tien

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Shan mountains, visible on the horizon when the air in the city is clean, are not visible or are extremely poorly visible

Thus, the content of harmful substances in exhaust gases depends on a number of conditions: vehicle traffic patterns, road topography, technical condition of the vehicle, etc.

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