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PUBLIC HEALTH IN A CHANGING CLIMATE

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✓ ***Resume***

The climate of Central Asia is considered continental and arid. The absence of natural barriers to the north and west of it allows air masses to freely penetrate from the north, northwest and West. It reaches the southern parts of the country and causes severe frosts there. The absence of natural barriers in the north and west allows air masses coming from the north, northwest and West to enter freely.

The winter season is the most important, characteristic of the Central Asian climate: the abundance of sunny days, the heat of the climate, and drought are clearly visible on the plains that occupy the main part of the country. Due to this, the sun illuminates and warms it for a long time. But due to the fact that the territory of Uzbekistan stretches from north to south for 925 km, sunlight does not fall equally in all its parts. If in the northern part of the summer (June 22) the sun falls, forming an angle of 71-72 °, then in the southern part - 76 °. Therefore, if the sun shines in the north for 2500-2800 hours a year, then in the south it shines for 3000-3100 hours. Therefore, Uzbekistan is called a "sunny country" and during the year, for every cm2 of the surface, it receives 130 kcal of radiation (thermal energy) from the sun in the north and 160 kcal in the south.

The volume of solar energy entering the territory of Uzbekistan on average per year is 30 billion tons of coal equivalent. The average annual temperature for heat distribution in the country is +10.8°C in Nukus, +11.9°C in Tashkent and +17.0°C in Termez. Summers in Uzbekistan are dry and hot, in the flat part of it the average temperature in July reaches +26 +30 °C, and in the south reaches +31 +32 °C. The surface of the Sands warms up to +75 +80°With the highest temperature of +44°C in Tashkent and up to +50°C in Termez.

In the winter months, the average temperature moves from the northwest (-10-11°C in Ustyurt) to the southeast (+0.9°C in Tashkent, +0.3°C in Samarkand, +2.8°C in Termez). In Surkhandarya - up to 20 ° C, in Tashkent - up to 30 ° C, in Ustyurt - up to 38 ° C. Meanwhile, dispersed dust particles in the atmosphere have a serious impact on human health. As a result, it was found that dust particles can have a pathogenic effect if patients with an allergic disease - bronchitis, pneumonia -inhale flowing air.

Keywords: Central Asia, climate of Uzbekistan, global changes, droughts, adaptation and origin of diseases.

ОБЩЕСТВЕННОЕ ЗДРАВООХРАНЕНИЕ В МЕНЯЮЩЕМ КЛИМАТЕ

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✓ ***Резюме***

Климат Средней Азии считается континентальным и засушливым. Отсутствие естественных преград на севере и западе от него позволяет воздушным массам беспрепятственно проникать с севера, северо-запада и запада. Он достигает южных частей страны и вызывает там сильные морозы. Отсутствие естественных преград на

севере и западе позволяет беспрепятственно проникать воздушным массам, приходящим с севера, северо-запада и запада.

Зимний сезон — важнейший, характерный для климата Средней Азии: обилие солнечных дней, жара климата, засуха хорошо заметны на равнинах, занимающих основную часть страны. Благодаря этому солнце освещает и долго согревает его. Но из-за того, что территория Узбекистана простирается с севера на юг на 925 км, солнечный свет не попадает одинаково во все ее части. Если в северной части лета (22 июня) солнце падает, образуя угол 71-72°, то в южной части — 76°. Следовательно, если на севере солнце светит 2500-2800 часов в году, то на юге оно светит 3000-3100 часов. Поэтому Узбекистан называют «солнечной страной» и в течение года на каждый см2 поверхности он получает 130 ккал радиации (тепловой энергии) от солнца на севере и 160 ккал на юге.

Объем солнечной энергии, поступающей на территорию Узбекистана в среднем за год, составляет 30 миллиардов тонн угольного эквивалента. Среднегодовая температура распределения тепла по стране составляет +10,8°C в Нукусе, +11,9°C в Ташкенте и +17,0°C в Термезе. Лето в Узбекистане сухое и жаркое, в равнинной его части средняя температура июля достигает +26 +30 °C, а на юге — +31 +32 °C. Поверхность Песков прогревается до +75+80°C, самая высокая температура +44°C в Ташкенте и до +50°C в Термезе.

В зимние месяцы средняя температура перемещается с северо-запада (-10-11°C на Устюрте) на юго-восток (+0,9°C в Ташкенте, +0,3°C в Самарканде, +2,8°C в Термезе). В Сурхандарьинской области - до 20°C, в Ташкенте - до 30°C, на Устюрте - до 38°C. Между тем, рассеянные частицы пыли в атмосфере оказывают серьезное влияние на здоровье человека. В результате было установлено, что частицы пыли могут оказывать патогенное действие, если больные с аллергическим заболеванием - бронхитом, пневмонией - вдыхают проточный воздух.

Ключевые слова: Центральная Азия, климат Узбекистана, глобальные изменения, засухи, адаптация и происхождение болезней.

Relevance

The climate of Central Asia differs slightly from each other in its characteristics by region. In the northern parts, the climate of Chalachuli prevails, and in the rest-the climate of the desert. The deserts of Central Asia have a sharply continental climate due to the fact that they are a closed country inside the mainland. At the same time, the air mass reaches the southern parts of Central Asia, and debilitating frosts are coming in these areas. [1. 210].

In the summer months, the air gets incredibly hot, creating low pressure. In particular, in Kyzylkum and Karakum, the lowest temperatures in winter range from -25 °C to -33 °C. In mountainous areas, the climate is somewhat different from the plains, with a large number of cloudy days, prolonged snowfall, abundance of precipitation, and lower temperatures. It blocks wet winds from the Mediterranean Sea, causing torrential rains. In the Tien Shan Mountains at an altitude of 3500-4000 meters above sea level, the average temperature in January reaches 170-180, and the lowest is 480. In the Pamirs, on the coast of Karakol, the lowest temperatures reach - 500. [5. 350].

In the mountains located in the east, southeast and south of Central Asia, under the influence of such features as their height, the location of the slopes relative to the Sun, the main winds, the narrowness and breadth of mountain valleys, location on the outskirts or in the depths of the mountain, climatic conditions have distinctive features from the plains. With increasing altitude, the clarity of the air increases, the air pressure decreases, the radiant energy of the Sun increases, and the air temperature decreases, humidity and precipitation increase. The formation of the climate in Uzbekistan is directly influenced by its geographical location and the associated solar radiation; atmospheric circulation; relief: the state of the earth's surface (what covers the surface of the earth) and human economic activity (anthropogenic). To have an idea of the heat distribution in Uzbekistan, it is necessary to know the average annual temperature.

Precipitation distribution The amount of precipitation is mainly a source of water and is unevenly distributed across the territory and seasons of the year. This largely depends on the nature of the air masses, the structure of the earth's surface, the orientation and height of the mountains. The lowest annual rainfall in Uzbekistan falls in Ustyurt. It corresponds to the lower Amu Darya and Kyzylkum, about 100 mm. The amount of precipitation increases in the East and south-east direction due to the

elevation of the terrain. On average, Adyr and the foothills of Uzbekistan receive 300-550 mm of precipitation per year, on the southwestern slopes of the Hissar-Zarafshan mountains-800-900 mm of precipitation, with the bulk falling in winter (30% of annual precipitation) and in spring (40%). [3. 324].

And in the flat part there are 35-40 days a year with precipitation, whereas in the mountains this figure is 70-90 days. Some of the precipitation falls in the form of snow. But in the flat part of the territory, the snow cover remains without stagnation, in the northwest for 40-50 days, in the southeast for 10-15 days, in the mountains - 90-100 days. The average snow thickness in the flat part is 1-8 cm (the thickest is 30 cm). in the foothills 10-20 cm (the greatest thickness is 60 cm), in the mountains 60 cm (the greatest thickness is 1.5-2.0 m).).

Too warm air in summer causes abundant evaporation of moisture from the Earth's surface. As a result, it is in this area that the possible evaporation relative to annual precipitation is several times greater (in Tashkent by 3.5 times, in Nukus by 27 times). 80-85% of evaporation occurs in May-October.

Throughout the year, winds blow from the northwest, north and West on the territory of Uzbekistan. In winter, their direction is influenced by the Siberian anticyclone and cyclones south of the Turonian plain. Therefore, in the north of Uzbekistan, the winds blow in the North-West, North and north-east directions. However, in the southern part, cyclones are moving in a more southwesterly direction. At this moment, the Bekabad wind, the pressure in the Ferghana Valley in winter, when the pressure in the upper westerly direction is low, can lead to a wind speed of 30-40 m/s in the direction of Mirzachul through the Khojent gate. The Kokand wind in spring and autumn, when the pressure in the Ferghana Valley is low, blows from the West towards the valley, reaching a speed of 15-25 m / s. A dusty and dry Afghan wind blows from the southwest into the Surkhan-Sherabad valley, the speed of which reaches 15-20 m / s.

Winters in Uzbekistan are cold compared to the areas around the Mediterranean Sea located in these latitudes, and change frequently. About 20-40 percent of annual precipitation falls in winter, and the winter season begins in the second half of December. The coldest days fall on the “winter cold” (from December 26 to February 5, 40 days).

Although spring is considered March, April and May according to the calendar, it actually begins in February, when the average daily temperature exceeds +5°C. In spring, the weather often changes, sometimes it gets warmer and sometimes colder, and there is a lot of precipitation (40% of the average annual precipitation). In spring, at the end of April, in May, the temperature rises, the air opens, precipitation becomes less, and real summer begins. In the spring of March 21, the day is equal to the night, and this day is celebrated in Uzbekistan as the Navruz holiday. Summer in Uzbekistan, although considered by the calendar to be June, July, and August, actually begins when the average daily temperature exceeds 20 °C and ends when it falls below 20°C. Therefore, summer lasts a long time, five months. In summer, the weather changes very little, it is clear, dry, and hot. Hot summer days last from June 25 to August 5 (40 days), they are called “Summer Chiller". In summer, in the flat part of the territory, the average temperature in July ranged from +26 +32 °C, sometimes warming occurred, the hottest temperatures reached 41-48 ° C, and in Termez-up to 50 ° C. Summer lasts up to 110 days in the north of the lowland part of Uzbekistan and up to 160 days in the south. Summers in the mountains are relatively cool and short. [2. 285].

Although September is considered the autumn season, the weather is clear, hot, and relatively dry. That's why climate scientists believe that autumn begins when the average daytime temperature drops below 20°C and ends when it drops below 5°C. Therefore, the real autumn in Uzbekistan begins in October. The first half of autumn is considered the best season in Uzbekistan. Because during this period, the days are hot and dry, and melons and fruits ripen that way.

Due to climate change, the formation of the catchment area is changing dramatically. Simulated calculations of mountain snow and ice have shown their overall reduction in various climatic scenarios. It is expected that the contribution of snowmelt will decrease, and the contribution of rainwater will increase. For rivers belonging to the snow-rain nutrient type, the spring flood time is postponed by about 1 month. Today, the Amu Darya is an ideal river in terms of the distribution of water supply according to the seasons for irrigated arable land, the peak of floods falls in July. This new distribution of water inflow is the result of melting mountain glaciers and increased precipitation. It is expected that along with an increase in precipitation, there will be an overall increase in precipitation intensity, which, in turn, will cause flash floods, soil erosion and an increase in the level of siltation of water inflow.

Global climate change is causing a number of environmental problems. The Earth's climate depends

on the complex interaction of the Sun, oceans, land cover and the biosphere. The main driving force of weather and climate is the sun. Until now, changes in the Earth's climate have occurred naturally as a result of the influence of major factors. The rate of global warming and its consequences in individual areas depend on greenhouse gas emissions into the Earth's atmosphere in the near and distant future.

Based on them, estimates of changes in temperature, precipitation and catchment that may occur over the next 100 years are variants of the climate system's response to the intensification of the greenhouse effect, that is, the climate scenario. The quality of the development of climate models of the levels of air temperature change on the scale of hemispheres and continents is higher than in individual regions. However, all models show the highest amounts of warming in the high latitudes of the northern hemisphere.

Naturally, this means that global climate change is not only a negative impact on the environment, but also threatens human health to a certain extent. According to our data over the past 3-5 years, in Uzbekistan, especially in the Zarafshan district, frequent diseases of the population are the cause of local diseases, and in some cases chronic and severe forms.

The understanding of the role of the environment as the most important determinant of public health has increased significantly in recent years. All environmental risk factors can be divided into 2 groups: controlled and uncontrolled. Controlled risk factors include air pollution from stationary and mobile sources; organized and unorganized discharge of polluted waters, changes in the quality of drinking water as a result of the addition of reagents in the process of purification and disinfection of water; soil contamination with liquid and solid waste, the introduction of chemicals to increase crop yields. Uncontrolled factors are global in nature and affect the hydrosphere, atmosphere, lithosphere, flora and fauna, as well as the human population. The importance of global risk factors (climate warming, thinning of the background atmosphere, activation of the solar, especially ultraviolet spectrum, changes in the Earth's magnetic field and aeroion composition of the air, transboundary transport of pollutants, etc.) increases from year to year. The relationship between adverse environmental factors and human diseases.

The disease is malignant neoplasms

1. Air pollution by carcinogens.
2. Contamination of food and drinking water with nitrates and nitrites, pesticides and other carcinogens.
3. The endemicity of the territory by trace elements.
4. Unfavorable composition and hardness of drinking water.
5. Ionizing radiation

Mental disorders

1. The general level of atmospheric pollution by chemicals.
2. Noise.
3. Electromagnetic fields.
4. Pesticide contamination

Pathology of pregnancy and congenital anomalies

1. Air pollution by chemicals.
2. Electromagnetic fields.
3. Environmental pollution.
4. Noise.
5. Ionizing radiation

Diseases of the circulatory system (heart, blood vessels)

1. The general index of chemical air pollution.
2. Noise.
3. Electromagnetic fields.
4. The composition of drinking water (excess chlorides, nitrates, increased hardness).
5. Endemicity of the territory by trace elements (ca, MD, CU, etc.).
6. Contamination of food products by pesticides.
7. Climate: the rate of weather change, the number of days with precipitation, and changes in atmospheric pressure.

Respiratory diseases

1. Air pollution by chemicals (especially carbon monoxide and sulfur) and dust.

2. Climate: the rate of change in weather, humidity, and wind. The disease is the influence of an unfavorable factor.

3. Social conditions: housing, the material level of the family.

4. Air pollution by pesticides

Diseases of the digestive system

1. Contamination of food and drinking water with pesticides.
2. The endemicity of the territory by trace elements.
3. Social conditions, material level, living conditions.
4. Air pollution by chemicals (especially sulfur dioxide).
5. The inconvenience of the salt composition of drinking water, increased hardness.
6. Noise

Diseases of the endocrine system

1. Noise.
2. Air pollution, especially carbon monoxide.
3. The endemicity of the territory in terms of trace elements, pollution by salts of heavy metals.
4. The degree of insolation.
5. Electromagnetic fields.
6. Excessive hardness of drinking water

Blood diseases

1. The endemic nature of the area for trace elements, in particular chromium, cobalt, iron.
2. Electromagnetic fields.
3. Contamination of drinking water with nitrates and nitrites, pesticides urination.

The composition and hardness of drinking water atmospheric air as a natural resource is in the public domain. The constancy (purity) of its composition is the most important condition for the existence of mankind. Therefore, any changes in composition are considered atmospheric pollution. Atmospheric air plays an important role in the daily metabolism in the human body, therefore, the most important condition for a healthy environment is the availability of fresh and comfortable air. The growth of cities, an increase in the number of motor vehicles, and the development of industry lead to an increase in the content of various pollutants in the atmospheric air.

The risks of exposure to polluted air on health depend on: various pollutants (in addition, combined exposure to harmful substances can lead to increased toxic effects that they cause); a high probability of exposure, since respiratory movement is constant; direct entry of pollutants into the internal environment of the body (when inhaling air into the blood, almost all dissolve substances are almost direct contact). In addition, gases, aerosols and dust entering the air basin from stationary and portable sources cause phenomena such as the greenhouse effect, acid rain, smog, and ozone layer disturbance. The effect of atmospheric air on humans has its own characteristics and is characterized by:

- alveolar lung tissue has a huge absorption capacity, so xenobiotics, even in trace amounts, can easily penetrate into the internal environment of the body;
- xenobiotics absorbed by the lungs immediately enter the systemic circulatory system, thereby bypassing a powerful filter-the liver, where they are neutralized;
- do not use personal protective equipment. The degree of danger of atmospheric air pollution are two main classics of substances.
- it is estimated by carcinogenic and non-carcinogenic substances that cause malignant tumors.

A number of carcinogens also affect heredity, which manifests itself in an increase in the number of genetically determined diseases. Non-carcinogenic substances cause a wide range of human health disorders, which can be considered as various forms of toxic effects recorded at the molecular, cellular, tissue, organismal and population levels. The latter effects are manifested in the form of increased morbidity and mortality. First of all, this is an increase in the number of chronic respiratory diseases and mortality associated with these diseases, as well as an increase in mortality as a result of diseases of the circulatory system. Vehicles contribute significantly to air pollution.

Over the past years, the number of vehicles in Russia has increased significantly, which, in turn, leads to an increase in emissions of pollutants into the atmosphere. Gaseous products of car exhaust gases enter the surface layer of the air practically without purification. The level of air pollution near congestion and traffic jams, even under the most favorable weather conditions, exceeds acceptable

standards and poses a real threat to human health and the environment. Toxic substances contained in exhaust gases can remain in the atmosphere for a long time and be transported over long distances. The main pollutants entering the air basin from vehicles include: carbon dioxide (CO2), carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxide (NOx), volatile hydrocarbons and particles derived from them, including matter. Hazard class 1-benzopyrine, etc. All of them have a negative effect on the human body: they affect the nervous, cardiovascular system; irritate the mucous membranes of the respiratory tract; they cause dizziness, headache, poisoning and the development of cancer.

Effects of exposure to certain atmospheric pollutants on human health effects of exposure to pollutants on the human body suspended solids increased cough, exacerbation of bronchial asthma, bronchitis; increased mortality from diseases of the respiratory and cardiovascular systems nitrogen oxides increased susceptibility of the body to viral diseases (for example, influenza); lung irritation, bronchitis, pneumonia sulfur dioxide scratches specific effect, damage to the respiratory system, central nervous system, skin, eyes; increased mortality from diseases of the cardiovascular and respiratory systems carbon monoxide increased content of carboxyhemoglobin in the blood, changes in psychomotor reactions in children; increased attendance for heart diseases; under the influence of high concentrations - acute poisoning irritation of the mucous membrane of the respiratory system, cough, lung disorders; reduced frost resistance; exacerbation of bronchitis, asthma, chronic heart diseases hydrocarbons, including benzopyrine, cause irritation of the respiratory tract, dizziness, drowsiness, decreased immunological activity of the body, malignant neoplasms affect the circulatory, nervous and genitourinary systems; increased blood pressure; violations of psychological parameters and behavior in the atmospheric air of a number of cities. There are certain inorganic substances such as copper, mercury, lead, cadmium, hydrogen sulfide, carbon disulfide, fluorine and some other substances.

Conclusion

Thus, the above environmental problems related to global climate change allow us to draw the following main conclusions.

1. Central Asia in particular, abnormal changes in air temperature (dry frosts with hot summers), a decrease in precipitation and relative humidity compared to long-term conditions caused by a sharp change in the climate of Uzbekistan are unusual factors. The fact that the northern part of Uzbekistan is practically open and not surrounded by mountains is the reason that the air masses of the North also conduct their judgment for a certain period of time, and this applies to the winter seasons. This significantly reduces the likelihood of cold or warm air masses entering the valley. It differs from the desert regions of Uzbekistan. The air temperature in Uzbekistan from east to West becomes warmer in summer and colder in winter.

2. The Zeravshan oasis, which is the central territory of the Republic of Uzbekistan, has been forming the culture of agriculture for a long time, and therefore its favorable geographical location allows obtaining a rich and high-quality harvest of grain crops in the agro-cenosis. Therefore, with relatively stable weather indicators, according to data for the next 100 years, the average annual air humidity level is 59-65% in the summer months and 80-85% in the winter months, and the level of solar radiation is 3129 mm of precipitation per 1 cm2 area, which averages 350-355 mm at the onset of a favorable year up to 410 mm. Since the city of Samarkand is located at an altitude of 674 meters above sea level, abnormal changes in this region occur less frequently than in other regions.

3. Abnormal climatic changes to one degree or another observed in the last 3-5 years, due to the emergence of environmental problems and related environmental protection, providing the population with stocks of material goods during the year, first of all, require measures to protect the health of the manufacturer of products, the prevention of possible diseases. According to our research, in the regions of the Samarkand region, as a result of climate change and dust drifts caused by wind, chronic colds, mild allergic diseases, low blood pressure, dizziness occur, and in some cases the gastrointestinal tract even causes diseases such as colds, kidney inflammation.

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