The 8th International Symposium

On Environmental and Global Health

Tashkent Medical Academy – Korea University

July 29 2022

Korea University College of Medicine, Seoul

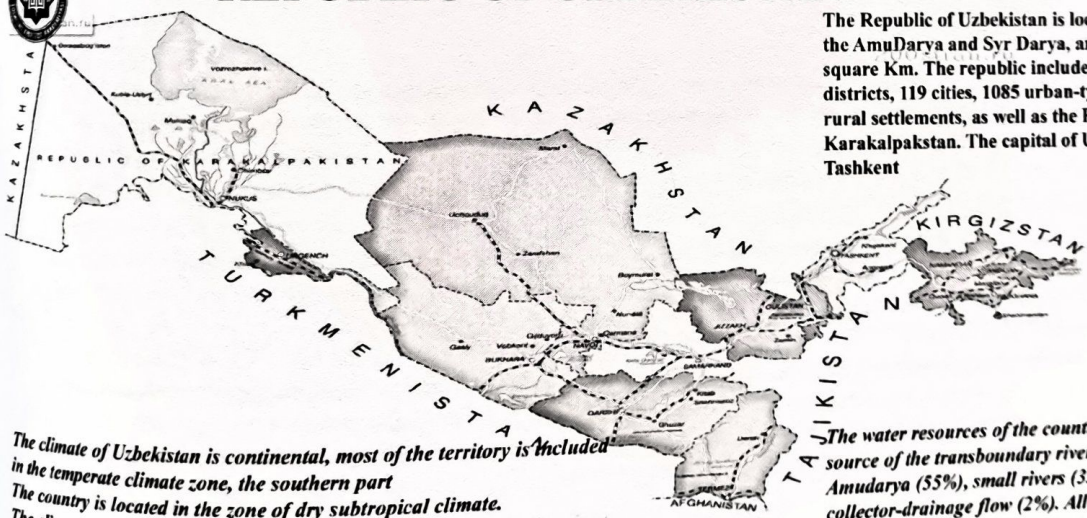
NRF National Research Foundation of Korea
KOREA UNIVERSITY Department of Global Community Health Graduate School of Public Health
Tashkent Medical Academy
Institute for Occupational & Environmental Health Center for Global Health Strategy

MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN
TASHKENT MEDICAL ACADEMY

ENVIRONMENTAL MONITORING IN THE REPUBLIC OF UZBEKISTAN

Salomova Feruza, DSc., Professor, Head of the department
Environmental and human health TMA, fsalomova@mail.ru

REPUBLIC OF UZBEKISTAN



The Republic of Uzbekistan is located in the interfluve of the AmuDarya and Syr Darya, an area of 447.4 thousand square Km. The republic includes 12 regions, 174 districts, 119 cities, 1085 urban-type settlements, 11017 rural settlements, as well as the Republic of Karakalpakstan. The capital of Uzbekistan is the city of Tashkent

It borders with Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Afghanistan. The total length of the state border is 6221 km.

The climate of Uzbekistan is continental, most of the territory is included in the temperate climate zone, the southern part
The country is located in the zone of dry subtropical climate.
The climate of Uzbekistan is characterized by large seasonal and daily fluctuations in air temperature, dry, hot and long summer. Minimal amount atmospheric precipitation, about 100 mm per year, falls in the western desert part of the country. in mountainous area the amount of precipitation increases, reaching maximum values of 800-900 mm per year.

The water resources of the country consist of the surface source of the transboundary rivers of the Syrdarya and Amudarya (55%), small rivers (33%), groundwater (10%) and collector-drainage flow (2%). All watercourses and reservoirs of Uzbekistan belong to the Aral Sea basin. In the river basin 38 km3 of runoff is formed in the Syr Darya, in the basin of the river. Amudarya - 79 km3. The natural regime of river flow in the basins of the river. Amu Darya and r. The Syr Darya is disturbed due to the creation of reservoirs, water intake for irrigation and discharge of collector and drainage water.

The fuel and energy complex *is an important component of the country's economy and includes the electric power industry, thermal power engineering and the oil and gas industry. Natural gas reserves serve as the basis for the creation and development of the oil and gas industry. Uzbekistan is a net exporter of natural gas, with 0.6% of the world's reserves. A significant part of natural gas is consumed domestically, about 15-18% is exported. Natural gas is transported through main and field gas pipelines with a length of more than 13.5 thousand km.*

The oil and gas industry of Uzbekistan has its own processing base. It consists of such large enterprises as the Mubarek Gas Processing Plant, the head facilities of the Shurtan field, the Shurtan Gas Chemical Complex, the Navoi Chemical Plant, and three oil refineries.

The electric power industry *is the basic industry of Uzbekistan, which fully meets the country's needs for electric energy. The basis of the energy system of Uzbekistan are 10 large thermal power plants (TPPs). There are 36 hydroelectric power stations (HPPs) in the republic, with a total installed capacity of 1.83 GW. The length of the electric networks of the joint-stock company (JSC) "Uzbekenergo" is more than 250 thousand km, which makes it possible to involve almost all consumers of the republic in the zone of centralized power supply.*

The industry includes *a large machine-building complex, metallurgical plants for the production of ferrous and non-ferrous metals, new factories for the production of cars and buses, large chemical enterprises for the production of mineral fertilizers, cement plants, a diversified industrial complex of light industry (cotton ginning, cotton and silk industries), medium and small enterprises for the processing of fruits and vegetables and the production of food products.*

https://unfccc.int/sites/default/files/resource/TNC_Uzbekistan_under_UNFCCC_rus.pdf

- ***Waste management.*** *The main method of disposal of municipal solid waste (MSW) is their burial in the ground. At present, more than 370 million m3 of MSW have been accumulated at operating landfills, while the annual increase in their volumes is estimated at 12-13 million m3. About 100 million m3 of industrial waste is also generated in Uzbekistan annually, of which 14% are classified as toxic, and about 68% are waste from the mining industry. To solve the problem of recycling and recycling of waste, it is necessary to widely introduce modern technologies.*
- ***The institutional and legal basis for the implementation*** *of the UN Framework Convention on Climate Change (UNFCCC) is provided by more than 30 environmental laws and about 100 legal documents. The main institutions in the context of fulfilling the obligations assumed by the country under the UNFCCC are: the Center for Hydrometeorological Service under the Cabinet of Ministers of the Republic of Uzbekistan (Uzhydromet) - responsible for the implementation of the UNFCCC in Uzbekistan; National Authority for the Clean Development Mechanism under the Ministry of Economy of the Republic of Uzbekistan; sectoral ministries responsible for the development and implementation of state policy in the field of adaptation and mitigation of climate change; a number of industry expert groups working on greenhouse gas inventories, climate change mitigation assessments, climate change vulnerability and adaptation assessments, and integration of climate change into national policies and programs, and others.*

https://unfccc.int/sites/default/files/resource/TNC_Uzbekistan_under_UNFCCC_rus.pdf

LAWS OF THE REPUBLIC OF UZBEKISTAN ON PROTECTION ENVIRONMENT

«Law on the protection of nature» https://lex.uz/acts/107115

«Law on Protected Natural Areas» https://lex.uz/docs/415135

«Law on water and water use» https://lex.uz/acts/12328

«Subsoil resources law» https://lex.uz/docs/75839

«Law on the protection and use of flora» https://lex.uz/acts/28070

«Law on the protection and use of the animal world» https://lex.uz/docs/3029502

«Law on environmental control» https://lex.uz/acts/2304953

«Law on sanitary-epidemiological peace of the population» https://lex.uz/docs/2732587

«Law on protection of atmospheric air» https://lex.uz/acts/5556

«Waste law» https://lex.uz/acts/44872

«Law on environmental expertise.» https://lex.uz/acts/9760

«Land Code» https://lex.uz/mobileact/149947

Decree of the President of the Republic of Uzbekistan

1. "On improving the system of public administration in the field of ecology and environmental protection." https://lex.uz/docs/3174498
2. "Decision on measures to organize the activities of state bodies in the field of environmental protection and environmental control". https://lex.uz/docs/5801426
3. "The decision "On the measures of fundamental improvement and development of the system of introduction of the waste management system in 2017-2021". https://lex.uz/docs/3174890

""On approval of the regulation of the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan" Decision No. 29 of the Cabinet of Ministers of the Republic of Uzbekistan dated January 15, 2019. https://lex.uz/docs/4160321

-favorable environmental conditions, protection of ecological systems, natural complexes and individual objects, ***improvement of the ecological situation***;
- protection and use of land, minerals, water, forests, protected natural areas, flora and fauna, ***protection of atmospheric air***

DECISION ON FURTHER IMPROVEMENT OF THE ENVIRONMENTAL POLLUTION ASSESSMENT SYSTEM http://lex.uz//docs/5442999

The decision was developed in order to improve the mechanisms for assessing the level of environmental pollution, monitor the natural environment, predict its level of pollution, provide the state environmental control with constant information, monitor the state of polluting sources and their impact on the environment, and it provides for the following:

- water resources, atmospheric air and soil polluting sources;
- atmospheric air, surface and underground water and land pollution;
- dangerous exogenous geological processes;
- lake ecosystems;
- objects of flora and fauna;
- monitoring of transboundary environmental pollution;
- strengthening the material and technical base of analysis laboratories and modernization of measurement and control equipment;
- implementation of scientific works and innovative activities.

In the Republic of Uzbekistan, information on the state of the atmospheric air is compiled on the basis of the results of state monitoring conducted

- State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection(http://www.uznature.uz/),
- Center of Hydrometeorological Service under the Cabinet of Ministers of the Republic of Uzbekistan(http://www.meteo.uz/rus/index.php),
- Ministry of Health of the Republic of Uzbekistan(http://www.minzdrav.uz/).

The State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection coordinates the activities of all other state bodies in the field of state environmental monitoring in accordance with the "Regulations on State Environmental Monitoring in the Republic of Uzbekistan", approved by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of April 3, 2002 (No. 111) .

Monitoring of air pollution in the Republic of Uzbekistan includes:

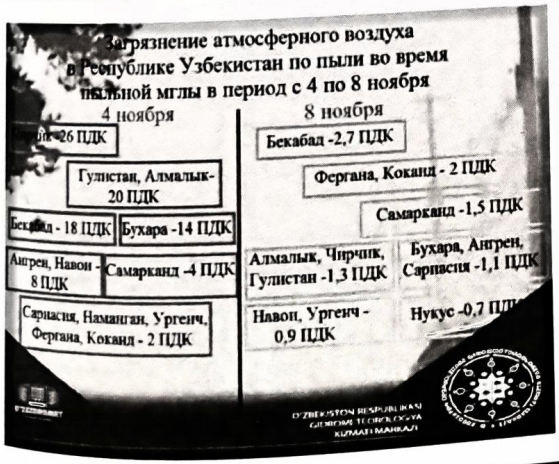
- air monitoring;
- monitoring of air pollution sources.

"Uzgidromet" published the list of cities with the highest amount of dust https://hydromet.uz/uz/node/1065

On November 4, 2021, the cold wind from the Ural and Volga rivers passed from the regions of Bukhara, Samarkand, Navoi and Jizzakh to the territory of Kazakhstan, added the sandy dust storms there, brought them back to our regions and stayed in the sky of Tashkent.

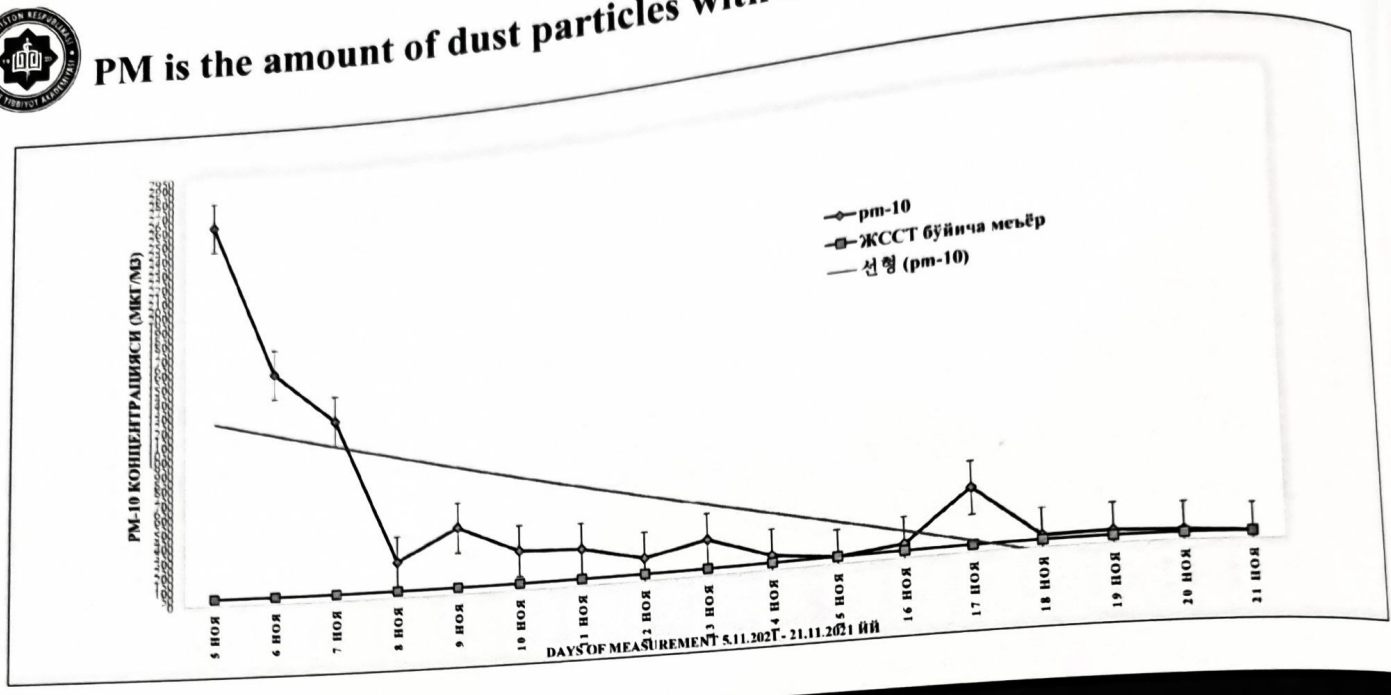
Such a dust storm was caused by the lack of dust trapping conditions in the areas where it was formed, including the fact that the area consists mainly of hills and there is little vegetation.

The closing of the dust storm in the air of Tashkent city and region was an unusual event that happened for the first time in the 150-year history. Unfavorable weather conditions have affected the health of many people in addition to confusing the population.

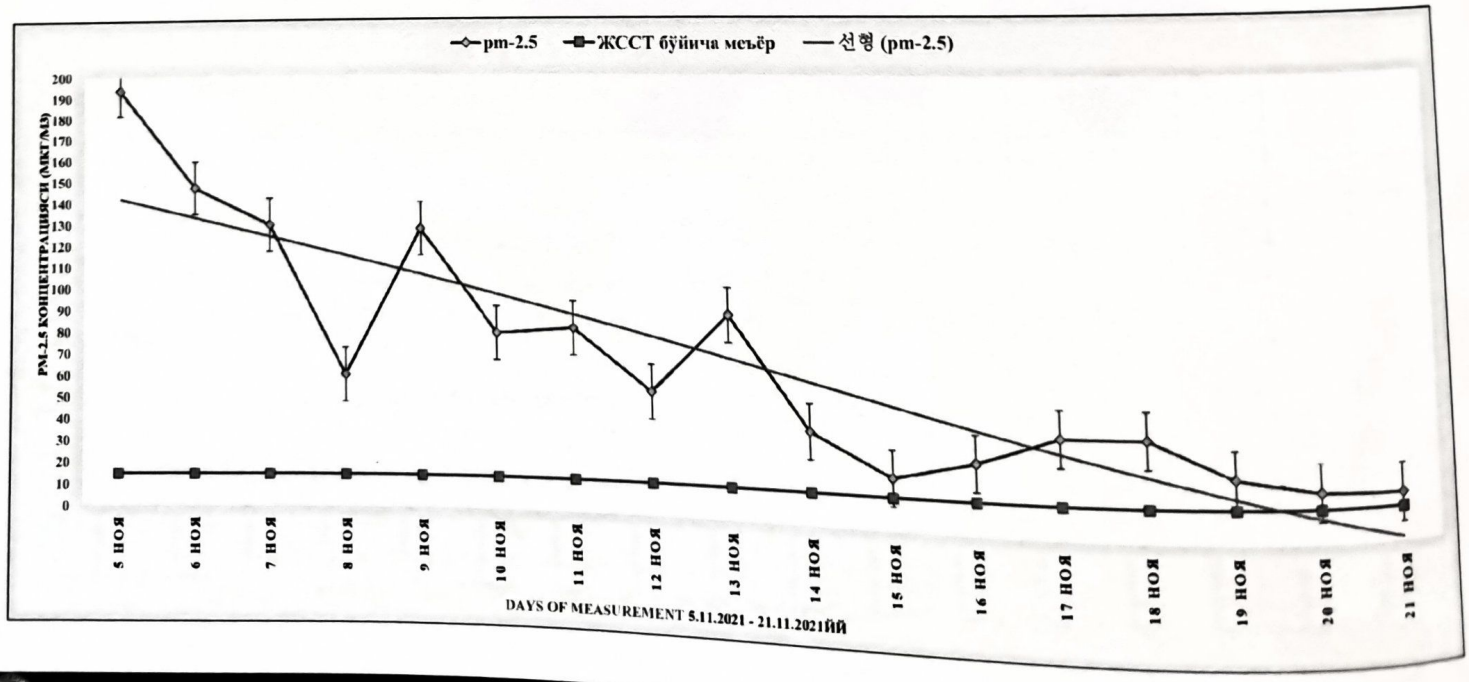


- **Tashkent - 33 times;**
- **Chirchik - 26 times;**
- **Gulistan and Almalik - 20 times;**
- **Bekobad - 18 times;**
- **Bukhara - 14 times;**
- **Angren and Navoi - 8 times;**
- **Samarkand - 4 times;**
- **Sariosia, Namangan, Urganch, Fergana, Kokan - about 2 times.**

PM is the amount of dust particles with a diameter of 10 in the air



PM is the amount of dust particles with a diameter of 2.5 in the air



Studying the chemical composition of dust

Tested substances	Results
Lead (Pb)	Not identified
Copper (Cu)	Not identified
Cadmium (Cd)	Not identified
pH indicator	slightly alkaline

In order to study the chemical composition of atmospheric air dust, a high volume air area sampler was used for 6 hours at a rheometer reading of 10 l/min (total air volume 3600 l). The sample was tested in the laboratory for 4 different chemical composition (lead, cadmium, copper and pH indicators). The international method called "Analysis of metals in atomic absorption spectrometer" recommended by the international Occupational Safety and Health Administration (OSHA), National Institute of Occupational Safety Health (NIOSH) was used for analysis. 5 standard solutions with the same content and 1 background sample were initially prepared for the investigation of the unknown substance. Standard solutions, background sample, and unknown solutions were prepared based on the recommendations given in the standard methods above.

The research work was carried out at the TMA-KU research center

Air pollution with fine particulate dust

On November 17, 2021, at 6:10 in the morning, dirty snow began to fall in Tashkent. At 10:30, the thickness of the snow cover was 12 cm. Snow samples were taken to determine the pH (acidity), electrical conductivity and ion content of the snow. When taking snow samples, it was observed that the snow layers were well contaminated (red mud).

Dust storms observed in southern Kazakhstan on November 4 and in Bukhara region on November 16 caused contaminated snowfall. On November 14, there was rain in Tashkent and the weather was clear, but there was no rain in Bukhara region.

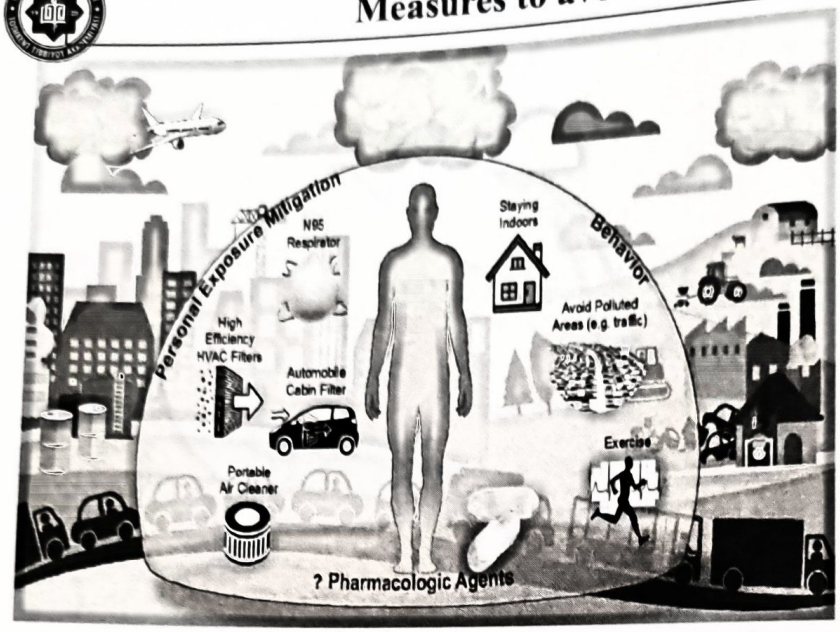
On November 17, a cold wet air mass entered the entire territory of the republic, the wind increased, and a dust storm was observed in some places.

When the wind blows, the dust rises up and settles in Tashkent, coloring the precipitation in the color of soil and sand.

The results of the analysis of atmospheric precipitation showed that the pH level of snow is 9.6 - an alkaline environment. Normally, the pH value of normal precipitation is -7. The electrical conductivity was 73.2, which indicates a low concentration of anions and cations and does not pose a health risk.

https://hydromet.uz/ru/node/1118

Measures to avoid fine dispersed dust:



1- Use of portable air cleaners
2- Installation of highly efficient room air cleaning filtration systems
3- Conducting regular wet cleaning
4-Using Personal Respirators for Air Purification
5-Using Car Air Filters and Air Conditioners
6-Behavioral Strategies
7-Preventing air pollution (closing windows and doors)
8-Staying at home
9-Exercise and changing activities
10-Pharmacotherapy (prescribing vitamin C and fish oil to the patient)

Thank you for attention!!!