



**Creation Of Scientific-Legal Framework For Protection From Seismal Processes
In Emergencies In The Republic Of Uzbekistan**

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***Abstract:** Scientists and specialists from the Republic of Uzbekistan conducted a number of scientific researches in the field of seismology in Uzbekistan. The state has created the legal basis for protection against seismic processes. The following laboratories have been created within the framework of the Institute of Seismology in the Republic to improve scientific research in the field of seismology: regional seismic and seismic zoning; seismology engineering; geodynamic; seismotektonika; regional engineering geology; variation in geophysical fields; gidrogeoseismologiya; technogenic seismicity; laboratories such as mathematical modeling and automation of seismic research.*

The article draws attention to the fact that, in addition to creating the legal basis for seismology in Uzbekistan, laboratory work is of great scientific importance not only for the country's economy, but also for identifying natural and man-made disasters in countries around the world.

***Key words:** Seismic processes, earth structure, national wealth, construction, historical process, geological reasons, geological study, water level, integrated research, laboratory, scientific activity, Institute of Seismology, seismic hazard, danger, legal aspects, legal documents, earthquakes, Earthquake, consequences earthquakes, natural disaster.*

Various natural phenomena occurring on the territory of our country at different periods in the history of our country have left their mark on the life of our people and have caused widespread destruction.

The study of seismic processes in the regions of Uzbekistan and their preliminary studies began in the second half of the XIX century. However, a strong earthquake in Tashkent in 1966 served as a good reason for conducting comprehensive studies to study the structure of depths in seismic hazard zones and to



identify the geological causes of the earthquake. He began extensive research to identify the dangers of an earthquake in Tashkent and surrounding areas.

After the Tashkent earthquake, one of the largest scientific centers in the Republic of Uzbekistan, which is now recognized and recognized in world seismology not only in Uzbekistan or the CIS, is the Academician Mavlyanov Institute of Seismology.

An important role in the creation of this institute was played by the Decree of the Government of Uzbekistan No. 449 of August 31, 1966 and the order of the Academy of Sciences of Uzbekistan of September 23, 1966.

Also, when studying this topic, Tashkent physics and the Tashkent Geophysical Observatory are worth mentioning.

The Tashkent Physical Observatory was founded in 1868, and in the period 1868-1870. He was led by a military topographer Captain K.V. Director Sharingorst.

This observatory is constantly being improved and is an important basis for the discovery of many scientific discoveries over the years. The first magnetic equipment was brought to Tashkent in 1871, and episodic observations began [1.69.]. In 1876, an independent astronomical observatory was created in Tashkent. The Meteorological Observatory, created in 1867, was included in the Physical Observatory [2.69-70.]

Over the past half century, the Tashkent Physical Observatory has carried out some work on topography and magnetic measurements in the Central Asian region.

An important role in the development of geophysical science in Turkestan is played by the government's decision to establish the Turkestan Meteorological Institute, adopted by the Turkestan Soviet Union in 1921. Later, the Tashkent Meteorological Institute was organized by the Tashkent Meteorological Observatory, which is part of the Tashkent Physical Observatory. The Tashkent Magnetic Meteorological Observatory was founded by a decision of the Main Department of



Hydrometeorology at the USSR of the USSR in 1924, and the Tashkent Geophysical Observatory was created. The institute has a workshop of geophysical equipment, a mathematical computing group (Institute of Mathematics, which is part of the Academy of Sciences of the FA).

The observatory was moved to the village of Keles in the north of the city in 1936 due to man-made reasons associated with the arrival of the tram and the increased noise level [3.70-71.]

The long-term weather forecast was made by the observatory staff on the basis of heliophysical and meteorological data taking into account the solar activity of 1937-1940.

In addition, from 1940 to 1955, the staff of this observatory made great efforts. During this time, the annual scientific reports of the observatory were published. The change in geomagnetic fields has been continuously studied at an elementary level.

During the difficult times of the 1930s and 40s, scientists at the observatory first discovered the composition and structure of a large magnetic and gravitational field in the world, and a generation of scientists in this area began to take shape. During this time, two doctors of sciences and 5 candidates of sciences in geophysics were trained.

The observatory was transformed into the Republican Radio Center under the Ministry of Communications of the USSR in 1956, the Institute of Mathematics of the Academy of Sciences of the Republic of Uzbekistan in 1959, and the Institute of Nuclear Physics in 1963. During this interim period, its scientific potential increased, technical equipment grew, and scientific research increased.

As soon as the Observatory joined the Institute of Seismology, it was entrusted with the development of new plans, such as new problems and earthquakes.

If we look at the history of earthquakes, we will see that the epizootic observation of seismic processes in Tashkent began in 1881-1900.



The first seismic station in Tashkent began in 1892. In 1910, the first seismic service was created in Uzbekistan. Since then, seven seismic stations in the Holcin system have been in operation. And in 1949 they were filled with seismographs. Later, in 1968–76, there were 14 stations in Uzbekistan, and by 1990 there were 32. By 2005, 22 seismic stations and 12 seismic complexity prediction stations were operating [5,156].

Currently, there are 60 seismic stations in the republic, an average of 4-5 seismically active regions [6.21].

The 1966 earthquake gave impetus to the creation of a special integrated study of seismic hazard zones to study the structure of depths and identify the geological causes of the earthquake. Extensive studies have been conducted to identify the danger of an earthquake in Tashkent and surrounding areas. The need to strengthen geological and geophysical studies of the earth's crust of the seismic furnace, which threatens large cities and buildings, is recognized. The map of general seismic zoning is supplemented by a leveling diagram of the earth's crust in the event of strong earthquakes and is updated based on seismotectonic studies. For this, a government decision was made to create the Institute of Seismology of the Academy of Sciences of Uzbekistan on the basis of the Tashkent seismic station.

The priority areas of scientific activity of this institute are: a comprehensive assessment and zoning of seismic hazard, the creation of an earthquake prediction methodology. The program for the development of seismology in the republic includes geological-tectonic, geophysical, hydrogeological, geodesic, geodynamic studies, mathematical and physical modeling of rock destruction processes, identification of informers in natural variations.

In the course of these tasks, a number of scientific results were obtained that lay the foundation for the development of seismological studies.

The secretariat of the United Nations International Strategy for Disaster Reduction concluded that many of the existing residential buildings in Central Asia were inadequately constructed, and this could lead to many casualties, especially deaths [7.53].

Uzbek scientists and experts in the field of seismology conducted a number of scientific studies in the countries of the region and in Uzbekistan.

It also examines the role of anthropogenic influences in seismic processes and their role in preserving material and cultural values.

The regional laboratory of seismic and seismic zoning was created in 1966 and the first in the USSR to create an automated system of seismometric observations [8.30.].

It is well known that earthquake prediction is important for safety and for preventing various levels of damage. For this reason, laboratory staff developed and patented methods for determining the time and place of their occurrence during seismic activity.

An automatic method has been developed for determining the initial seismic points for various construction sites; A database of seismic processes, i.e. database of seismic processes from ancient times to the present day. This is known as Polessemology and was first created by the Institute [9.33.].

Over the years, the engineering seismology laboratory has done the following:

- Design and seismology of the Ferghana Valley, Central Kyzyl Kum and the suburbs of Tashkent were organized;
- Seismic zoning was carried out in 27 major cities of Uzbekistan, and an SMR map was created. This work was approved by the State Architectural and Construction Committee as a normative document for construction. Such microseismic zoning was carried out twice in the Tashkent, Andijan and Namangan regions.



Prior to the establishment of the Institute of Seismology, seismological studies in Uzbekistan were carried out at the Institute of Mathematics of the Academy of Sciences of Uzbekistan and the Institute of Geology and Geophysics. The creation of a specialized institute combined seismological research and expanded the scientific and material base. In order to expand geophysical research, the complex was included in the Institute of Magnetic Ionospheric Observatory. Since its inception, the Institute has become an additional movement focused on seismic research, seismic research and solving urgent seismological problems. The priority areas of the Institute's scientific activity are the development of a methodology for the integrated assessment of seismic risk and zoning, earthquake prediction. The program developed for the development of seismology in Uzbekistan includes a combination of geological-tectonic, geophysical, hydrogeological, geodesic, geodynamic studies, mathematical and physical modeling of rock disturbance processes and identification of informants in natural variations.

The first major scientific generalization of complex research was a monograph on the consequences of the Tashkent earthquake of 1966. The eight chapters of the monograph cover all areas of research in seismology. Similar monographic reports were published to cover Gazli in 1976 and 1984, Tawaksai in 1977, Nazarbek in 1980 and other earthquakes. Along with Uzbek scientists, a number of leading scientists from the institutions of the former Soviet Union participated in these studies.

Scientists at the Institute of Seismology made a significant contribution to the creation of the USSR-1978 map, edited by Academician M. A. Sadovsky. At the same time, a methodology for seismic microarray of cities was developed, maps of some cities (S. M. Mavlonov, S. M. Kasimov, etc.), maps of seismic zones (R. N. Ibragimov) were developed, new seismic-geodynamic directions were developed. I. Ulomov). A number of scientists in this field and a group of scientists from the

Institute were awarded the State Prize. Biruni for his contribution to seismic micro-zoning in 24 cities of Uzbekistan.

The achievements of the Institute of Seismology of the Academy of Sciences of the Republic of Uzbekistan in recent years have become an important milestone in the development of seismology. The first director of the institute, academician G.O. Mavlonov, his research assistants V.I. Ulomov, S.M.Kosimov, academicians A.N. Sultonhodzhaev, K.N. Abdullabekov, leading scientists R.N. Ibragimov, G.A. Abdullaev, D.Kh. Yakubov, V.N. Yakovlev, A.R. Yarmuhamedov, T.U. Artikov, G. Yu. Azizov, L.M. Plotnikova, I.B. Yakovleva, R.P. Radina and a number of other researchers, They carried out 18 research projects at the institute as part of the state emergency forecasting and prevention program, which raised the level of seismological research to a high level. As a result of the implementation of the State Program for the Reconstruction and Development of the Seismic Risk Monitoring System, an automated network of 60 seismic stations was created based on modern digital seismic stations, information and telecommunication technologies. So far, it has been possible to record earthquakes of 1.5-2.0 million. Across Uzbekistan. Network software for seismic monitoring allows you to quickly determine the critical parameters of an earthquake in a few minutes, which greatly increases the efficiency of rescue units.

The earthquake in Rishtan district of the Ferghana region in March 2011 caused serious damage. In particular, the inability to act properly during an earthquake was the main cause of victims before the earthquake.

Therefore, the decision of the Ministry of Justice of the Republic of Uzbekistan dated July 19, 2011 No. 208 “On approval of a comprehensive program for preparing the population for emergency situations caused by earthquakes” was adopted.

The main objectives of the program were as follows:

- increasing the efficiency of the system of preparing the entire population to respond to an earthquake (natural and man-made) caused by the earthquake;
- expanding the coverage of the population by training,
- the formation and organization of voluntary rescue teams;
- reduction of seismic risk of earthquake consequences,
- development of skills for seismic assessment of the population and the creation of conditions for an adequate response to earthquakes;
- development of an integrated system for preparing students and students for emergency response [10.3.].

The program consists of 24 points, which should be implemented in cooperation with a number of ministries. The resolution says that the heads of state bodies, the chairman of the Council of Ministers of the Republic of Karakalpakstan, the governors of the regions and the city of Tashkent, as well as other interested organizations will ensure the development of mechanisms for the timely and full implementation of measures provided for by the approved program, monitoring and control over its implementation. ,

14 points of the program are related to educational institutions, namely, the process of teaching and learning, which should be carried out jointly with the Ministry of Public Education and the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan.

To introduce a life safety course in the curriculum for students of secondary specialized and vocational educational institutions and students.

The publication of proven training courses "Fundamentals of labor protection" and "Fundamentals of life safety" and the provision of all secondary educational institutions of the republic.

Development of training courses "Life Safety", "Fundamentals of Health and Vital Activities", "Fundamentals of Life Safety", their inclusion in the curriculum of



the Republican Institute for Continuing Education of Teachers. Improving the master's program in "Seismology and Seismometry" taking into account modern requirements.

Improve and publish visual aids for preschool children, high school students, university students and people involved in the production and provision of services in the event of earthquakes and emergency situations.

Publication of a school safety data sheet and a handbook for schoolchildren in Uzbek, Karakalpak, Russian and other languages, indicating the rules for responding to emergency situations after an earthquake.

Create volunteer clubs for young lifeguards in secondary and secondary special educational institutions [11.4.]

Organization of a three-stage competition between the clubs "Young Salvation" (city, region, republic).

Development and implementation of measures to supplement academic lyceums and professional colleges with qualified teachers in life safety courses.

Coordination and methodological improvement of the training courses "Fundamentals of Health and Safety", "Fundamentals of Life Safety" and "Safety" in the central offices of the Cabinet of Ministers, the Ministry of Public Education and the Center for Secondary Professional Education, as well as their territorial units in the Republic of Karakalpakstan on the advisability of introducing the position of one specialist to provide assistance.

Organization of practical training at the Institute of Civil Protection of the Ministry of Emergency Situations to train the heads of educational institutions to act in case of earthquakes.

Support of existing information and educational internet portals of the Academy of Sciences of the Republic of Uzbekistan on the mitigation of the negative effects of earthquakes and establishment of new ones. Establishment of e-learning



methodological manuals on the basics of health and life activities, basics of life and basics of life and education in the local network of educational institutions is related to the educational process, and a number of activities are planned to be implemented among all segments of the population. propaganda is about safe construction and so on.

The analysis of recent earthquakes in the world shows that there are a number of fundamental and practical issues of protection against seismic hazards.

The Seismology Institute has been actively involved in three major state programs to strengthen protection against earthquakes. Of these, Target 1, "Earthquake Reduction", was implemented in 2007-2012 under a government program. Emergency Forecasting and Warning, Goal 2: "State Program for Reconstruction and Development of Seismic Risk Monitoring System" (2011-2014). Target 3 Program "State emergency preparedness program for earthquakes".

The scientific staff of the institute implemented 18 research projects based on the first state program. During the implementation of state programs, 15 doctoral and 32 master's theses were defended. On the basis of these works were published more than 500 scientific articles and 28 monographs.

So far, it is not possible to predict earthquakes with a 100% guarantee.

According to scientists, the human impact on the escalation of natural disasters is also increasing. In particular, the formation of greenhouse gases around only one planet does not allow sunlight to absorb them back into space. That is, the rays that must be absorbed in the universe will return to Earth and cause global warming at some distance. This affects the hydrosphere layer of the Earth and causes the evaporation of excess water. In the atmosphere, steam water returns to the earth in the form of precipitation for up to 10-12 days. In addition to weather conditions, floods and floods, groundwater causes softening, precipitation, sedimentation and earthquakes.



Scientists at the Institute of Seismology conducted scientific observation to study the gravitational effects of the moon and the sun on the deformation of the globe. According to him, it was more obvious that the possibility of earthquakes and other movements on the ground could be shocked [12.128].

The study of the movement of water in a 300-meter pit dug in the courtyard of the Institute of Seismology is strictly controlled by the speed and composition of its rise [13,128–129].

The 35-day observations, which were carried out from May 3 to June 7, 2004, allowed the following conclusions to be made by seismologists. According to him, the cyclic interval between the Moon and the Sun is 29.5 days. For the first time in the world, the influence of the gravitational influence of the Moon and the Sun on the movement of tectonic plates of the Earth has been proved. It was shown that the gravitational effect of the Moon and the Sun affects the deforestation of the earth's crust [14, p.133].

It was shown that most of the earthquakes at night and in the morning also depend on the gravitational effects of the moon and the sun [15.133-134].

There are also human factors that can cause the effects of earthquakes in the Central Asian republics, that is, an increase in their negative effects or an increase in the number of victims. This increases the likelihood of floods and other hazards [16].

A study of the causes of the occurrence of ancient landslides in the districts of the Tashkent region shows that their occurrence is due to an increase in precipitation due to earthquakes.

During the years of independence, the creation of seismic maps of the republics of Central Asia and Uzbekistan and the degree of earthquake in them became an important scientific basis for the world and the stable functioning of economic objects. It is no secret that the scientific analysis of seismic processes in Uzbekistan and the definition of measures to protect them play an important role in the economic



development of the country. Seismic processes will be one of the key factors in the development of urban development in Uzbekistan, the construction and operation of important facilities, as well as the design of seismic protection measures.

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