

**NATIONAL REPORT OF THE
REPUBLIC OF UZBEKISTAN**

**ON IMPLEMENTATION OF OBLIGATIONS, ARISING
FROM THE JOINT CONVENTION ON THE SAFETY OF
SPENT FUEL MANAGEMENT AND ON THE SAFETY OF
RADIOACTIVE WASTE MANAGEMENT FOR 2017**

Tashkent 2017

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List of Abbreviations

JSC	-	Joint Stock Company
ARMS	-	Automated radiation monitoring system
SE	-	State Enterprise
SUE "RBSRW"	-	State unitary enterprise "Republican Burial Site for Radioactive Waste"
SE "NMMC"	-	State Enterprise "Navoi Mining and Metallurgical Combine"
SUE "Radiopreparat"	-	State unitary enterprise "Radiopreparat"
MCC	-	Mining and Chemical Combine
HEPS	-	Hydroelectric power station
MSP-1	-	Mining and smelting plant -1
USDoE	-	US Department of Energy
LRW	-	Liquid radioactive waste
LRUZ	-	Law of the Republic of Uzbekistan
IDC	-	Individual dosimetric control
SRN MPR JSC "Foton"	-	Scientific Research Neutron Modernized Pulsed Reactor of Joint-Stock Company "Foton"
IAPC	-	Individual advanced photocontrol
INP AS RUz	-	Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan
CS	-	Control sources
CMI	-	Control and measurement instruments
CM RUz	-	Cabinet of Ministers of the Republic of Uzbekistan
LMCC	-	Leninabad Mining and Chemical Combine
CRS	-	Control reference samples
MES	-	Ministry of Emergency Situations
MIA	-	Ministry of Internal Affairs
RSD	-	Radiation Safety Department
SNF	-	Spent nuclear fuel
NSR	-	Nuclear Safety Rules
GW	-	Groundwater
PD	-	President's Decree
PPM	-	Planned preventive maintenance
RW	-	Radioactive waste
MM	-	Mining models
OQCS	-	Ore quality control station
OSF	-	Ore-separation facility
SS	-	Standard samples
USSR	-	Union of Soviet Socialist Republics
CIS	-	Commonwealth of Independent States
RSS	-	Radiation Safety Service
TIPME	-	Tashkent Institute of Postgraduate Medical Education
FRA	-	Fuel-rod array
TLD	-	Thermoluminescent dosimeter
SRW	-	Solid radioactive waste
TP	-	Transport-packing
FS	-	Feasibility study
TPP	-	Thermal Power Plant
REGD	-	Radioactive emission generating device
CCP	-	Central control panel

Foreword

This national report of the Republic of Uzbekistan on the implementation of obligations arising from the Joint Convention on the Safety of spent fuel management and on the safety of radioactive waste management was drawn up in compliance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan from December 31, 2015 No. 379 "On measures to implement the Joint Convention on the Safety of Spent Fuel Management and on the Safety of radioactive waste management" and takes into account the recommendations of the Fourth Meeting of the Contracting Parties on the review, and it was developed in accordance with the Guidelines on the Form and Structure of National Reports (INFCIRC / 604 / Rev.3) of 31 December 2014.

Section A. Introduction

The Republic of Uzbekistan acceded to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management by the Law of the Republic of Uzbekistan "On Accession of the Republic of Uzbekistan to the" Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management "No. LRUz-186 from 11.12.2008.

Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of December 31, 2015 No. 379 "On measures to implement the Joint Convention on the Safety of spent fuel management and on the safety of radioactive waste management" State Inspectorate "Sanoatgeokontekhnazorat" was established as the authorized body to ensure compliance with the obligations of the Republic of Uzbekistan under the Joint Convention on the Safety of Spent Fuel Management and on the safety of radioactive waste management, as well as on the preparation and the submission of national reports on safe management of spent fuel and radioactive waste to the International Atomic Energy Agency (IAEA).

In the Republic of Uzbekistan, radioactive waste (RW) is formed during the operation of nuclear fuel cycle facilities, research reactors and powerful sources of ionizing radiation and other radiation sources, as well as using isotope products in scientific organizations, the national economy and medicine.

The major volumes of radioactive waste are accumulated in the uranium mining process. On the basis of defense facilities, separate elements of the nuclear fuel cycle were created, and as a result, Uzbekistan is one of the few countries in the world that have separate elements of the nuclear fuel cycle, including the extraction and use of nuclear fuel, the production of isotope products and the management of radioactive waste.

A significant part of the total volumes of RWs accumulated in the republic was formed during the development of the nuclear industry, with the main amount of radioactive waste accumulated on the mined-out uranium deposits of the Chatkalo-Kuramin region and in the Kyzyl-Kum region at the facilities of the State Enterprise "Navoi Mining and Metallurgical Combine" (SE "NMMC"). Uzbekistan is on the seventh place in the world on the reserves of uranium (4% of the world uranium reserves) and on the fifth for its mining. The manufacturer of uranium in the Republic is the state enterprise "NMMC". The republic does not have its own nuclear industry, and all the produced low enriched uranium is exported. At present, the main amount of radioactive waste is formed as a result of uranium mining and low enriched uranium.

Historical overview of the country. Uzbekistan is an ancient country that for centuries struggled for independence and recognition. As a result of Russia's expansion in the sixties and in the seventies of the 19th century, most of Central Asia, including a large part of Uzbekistan, was included in the Russian Empire. In 1922-1991, Uzbekistan was one of the fifteen union republics of the Union of Soviet Socialist Republics (USSR).

In August 1991, after the collapse of the USSR, Uzbekistan declared its sovereignty and was recognized as an independent state.

According to the Constitution adopted on December 8, 1992, Uzbekistan is a legal democratic state, where the President is the head of state and elected by popular vote. The highest legislative body is the Oliy Majlis of the Republic of Uzbekistan, which exercises legislative power. The Oliy Majlis consists of two chambers - the Legislative Chamber (lower chamber) and the Senate (upper chamber). Members of the Oliy Majlis are elected by popular vote for a five-year term. The Cabinet of Ministers is the government, is the executive power of the Republic of Uzbekistan, providing guidance on the effective functioning of the economy, social and cultural development, the implementation of laws, decisions of the Oliy Majlis and other tasks set by the President of the Republic of Uzbekistan.

Uzbekistan is a member of the United Nations family (United Nations), joined to the IAEA on January 26, 1994 and is a party to treaties and safeguards agreements with the Agency, as well as a number of conventions.

Geography. The Republic of Uzbekistan, the state in Central Asia. Borders with Kazakhstan in the north and northeast, with Turkmenistan in the southwest, Afghanistan in the south, Tajikistan in the southeast and Kyrgyzstan in the northeast. About 4/5 of the territory of Uzbekistan is occupied by desert plains; the eastern and southeastern regions of the country include the mountains and foothills of the Tien Shan and the Hissar Range. Within the Turan plate, the Ustyurt plateau (in the extreme west), the Amu Darya delta near the southern coast of the Aral Sea and the vast Kyzyl-Kum desert (the Red Sands) stand out. In total about 40% of the territory of the country is occupied by deserts. Mountain ridges in the east and southeast share intermontane depressions and valleys - Ferghana, Kashkadarya, Surkhandarya and Chirchik-Angren. The highest point on the territory of the country is 4643 m (Gissar range).

The largest city of Uzbekistan is Tashkent, the capital of the country, with a population of more than 2.4 million people. In Tashkent, most of the Republic's industrial enterprises are concentrated, the most important roads pass through it, it is the center of the country's economy, education and culture. The second largest city - Samarkand (504 thousand people) is famous for its architectural monuments. A number of major cities are located in the Fergana Valley: Namangan (591 thousand people), Andijan (425 thousand people), Fergana (340.6 thousand people), Kokand (233.5 thousand people). It should also be mentioned Bukhara (272.5 thousand people), an ancient city, which for a long time was the largest cultural and the political center of the Uzbek people. Nukus (199 thousand people) is the capital of the Republic of Karakalpakstan.

Section B. Politics and Practice.

Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan (INP AS RUz). The main activity of INP AS RUz is research and development work using ionizing radiation sources, designing, maintaining and manufacturing technological equipment for them, using, transporting, storing, neutralizing, disposing and burying sources of ionizing radiation and radioactive waste.

The state of the radiation situation on the site today. In the Institute of Nuclear Physics of the Academy of Sciences of Uzbekistan:

all requirements of the legislation, rules and norms of radiation safety, as well as safety rules, labor protection, environmental requirements, state standards are observed;

there are sanitary passports for production premises intended for carrying out the licensed type of activity;

systematic monitoring of the radiation situation in the workplace;

Radiation monitoring is carried out on the territory of the institute, in the sanitary-protective and observed zones;

an annual inventory of sources of ionizing radiation is conducted;

an individual dosimetric photocontrol is conducted at the IDPC and by thermoluminescence method:

exercises on civil protection of personnel during a radiation accident;
annual medical examination of employees directly engaged in work with sources of ionizing radiation;

Annual check of knowledge on radiation safety is conducted according to the results of which an order is issued to admit employees who have passed through a medical commission to work with sources of ionizing radiation;

control levels were established at the reactor;

in each unit in which sources of ionizing radiation are used, there are instructions for radiation safety, instructions on the prevention and elimination of accidents (fire);

neutralization of liquid radioactive waste generated in the institute and its subsidiaries;

the storage of radioactive sources in the territory of INP AS RUz and timely dumping of radioactive waste in SUE "RBSRW";

physical protection was established at the WWR-SM reactor, on a gamma-scale facility, in the Republican Central Radioisotope Laboratory;

Radioactive sources in the units of the Institute are stored in special safes.

Safety system of the facility. The condition and security of the dosimetry control services at the facility (dosimetric instruments, emergency kits) - there is a material and technical base, equipment and other technical means for performing the licensed type of activity. The staff is provided with overalls, individual dosimeters. In sufficient quantities, there are dosimetric, radiometric and gamma spectrometric equipment, which is annually checked by the Agency "Uzstandard". There are emergency kits. A system of emergency safety was developed, a plan of measures to protect personnel in the event of an accident, a safety declaration, an assessment of the consequences of a radiation accident at the WWR-SM research reactor were carried out. Once a year, emergency drills are conducted jointly with representatives of the Ministry of Emergency Situations, the Ministry of Internal Affairs, and the Ministry of Health. On the WWR-SM reactor, emergency drills are conducted on a quarterly basis, in scientific units, emergency drills are conducted according to the plan once a year. Preparedness of personnel to eliminate emergencies (briefing, knowledge testing, training, retraining) - in the course of employment and once in six months, a radiation safety briefing is conducted in all the units of the Institute, the Institute staff is trained and retrained in different countries through the IAEA, Radiation safety services are trained in TIPME.

The state of individual dosimetric control. Individual dosimetric control covers all employees working with sources of ionizing radiation. The received doses for the personnel of the reactor, gamma unit, SUE "Radiopreparat", and "Tezlatgich" (Ltd.) are checked by the method of photocontrol on a monthly basis, for scientific laboratories - once a quarter. Measurements are made of the radiation doses of personnel working on the work permit. Critical groups of personnel have been singled out, the control of their irradiation is carried out more carefully. Individual dosimetric control data are entered in the radiation dose register, in dosimetric charts of dose accounting for each employee, there is an electronic version of the database. Work carried out to improve the state of environmental protection and radiation safety of the facility - An automatic monitoring system for the radiation situation at the WWR-SM reactor and on the territory of the whole institute is established. At the expense of donor funds, an automatic air control system SRK-AT2337 was purchased and installed on the territory of the SUE "Radiopreparat".

Practice of radioactive waste management. INP AS RUz has the license of the Academy of Sciences No. 0222 of August 18, 2014, for the right to conduct research and development work in the field of handling ionizing radiation sources, as well as to use, store, service, transport, neutralize, dispose sources of ionizing radiation.

Control over personnel exposure. Measurement of monthly doses of personnel exposure is carried out by the method of individual photocontrol with the help of IAPC by the density of the

blackening of films packed in special cassettes. The IAPC method allows to determine the radiation dose in the range 0.5÷20.0 mSv (0.05 ÷2.0 rem) at an energy γ - quanta from 0.1 to 3 MeV. The exchange of ICD cassettes is carried out monthly.

When carrying out work in extremely hazardous radiation conditions, according to the order-tolerances of measurements, it is carried out by the method of thermoluminescent dosimeters (TLD). According to the order of admission, additional dosimeters of the IDC type DPG-03 are issued to register the dose received during the work shift. The TLD method makes it possible to determine the dose of γ -radiation in the range 0.1÷10.0 mSv (0.01÷10.0 rem) at the γ -quantum energy of 0.05÷3.0 MeV. The convergence of the results of measuring the monthly doses and doses obtained in work on the work-permits is good. The discrepancy does not exceed 10%. The results are entered in the database of individual dosimetric monitoring, the results of measuring individual doses are recorded in individual cards of accounting doses of each employee. Control of population exposure caused by the facility is carried out by measuring the dose rate in the observation zone, which is located within a radius of 6 km from the reactor tube. During the entire operation of the research reactor, there was no excess of dose rate.

Storage of highly active solid waste. The storehouse is located in a separate two-story building, the area of which is 252 m², there are 12 wells with a diameter of 0.8 m and 6 wells with a diameter of 0.35 m, a depth of 4.8 m. The vault is a concrete room with a wall thickness of 0.4 m. storage from the inside is insulated with cement mortar with subsequent ferrugination, double waterproofing with hot bitumen is made twice from the outside. The first floor is intended for driving in and out of the vehicles. The project's storage facility was intended for disposal of high-level waste, since at that time there was no Republican Burial Site for Radioactive Waste. In this storehouse in the 1950-70s the radioactive equipment from the reactor (rods, pipes) were placed. Highly active solid wastes formed in the wells of this storage, and low-level waste (rags, paper, glass, etc.) were stored in a low-level waste storage facility. Since the mid-1970s, all radioactive waste began to be disposed at the Republican Burial Site for Radioactive Waste (SUE "RBSRW"). However, large-scale equipment was not accepted by SUE "RBSRW" and they placed it in the solid radioactive waste storage. Pulling out buried equipment from the wells is not possible, in the long term. It will be in storage for at least 50 years with mandatory radiation monitoring. Subsequently, highly active solid wastes were maintained until the activity was reduced and then surrendered to the SUE "RBSRW". The storage of solid high-level waste is currently used as temporary storage until the level of SRW activity is lowered, acceptable for delivery to SUE RBSRW. Storing of high-level waste in the wells is not carried out. Since 1976, a subsidiary of the Institute SUE "Radiopreparat" uses a storage facility for filter aging (36 pcs.), block-containers (15 pcs.), and other contaminated equipment. Currently there is also the broke-down installation for obtaining the radioactive isotope iodine-125. Between the buildings of the solid waste storage facility and a liquid waste storage facility, there is a well, where the groundwater level is analyzed on monthly basis. The results show that the specific activity does not exceed 0.4 Bq / l with an allowable value for drinking water of 2.0 Bq / l.

Storage of low-level SRW. The storage of low-level SRW was exploited until the 1980s, and now it is conserved. The storehouse is made of reinforced concrete, the storage area is 60 m², the depth is 2 m, the thickness of the walls is 0.2 m, there are three compartments, each of which is covered with a concrete slab with thickness of 0.2 m and from the top all the storage is closed with a single concrete slab 0.2 m thick. Above, the storage is additionally covered with a metal lid. Dose rate on the storage surface 5-6 μ Sv/h (the permissible dose rate is 12 μ Sv/h). It contains low-level SRW - rags, paper, glass, etc. In 2016, the work began on the release of the storage of low-level SRW and the disposal of SRW to SUE RBSRW.

System safety assessment of the reactor, special water treatment station and SRW storage facilities is carried out by the Nuclear and Radiation Safety Service of the Institute, representatives of the State Inspectorate "Sanoatgeokontekhnazorat" and representatives of the IAEA. Maintenance

and operation of divisions for circulation with RW is normal. After the closure of the facility, both departmental control and control by the state sanitary and epidemiological supervision and the State Inspectorate "Sanoatgeokontekhnazorat" will be implemented. Extraction of highly active SRW from the storage facility was not provided for in the original project; at the moment it is not possible to extract them from the storage facility. Consultation is required with IAEA experts on possible ways to resolve the issue with this repository.

The storage of liquid radioactive waste (LRW) has been functioning at the Institute since the 1960s. The storage area is 600 m². The storage facility has four tanks with a volume of 300 m³ each and two tanks for storage of LRW near the reactor with a volume of 300 m³ each. At the moment, the storage tanks contain 1200 m³ of LRW. LRW activity is within $n \cdot 10^{-7}$ - $n \cdot 10^{-8}$ Ki / l. To accelerate the purification of existing LRW, the project "Purification of Liquid Radioactive Wastes from Nuclear Physics Objects of the Institute" is presented in the scientific program of NATO "Science for Peace and Security" for the purchase of equipment.

Spent fuel management at the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan. The Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan has a research nuclear reactor WWR-SM, a water-cooled reactor with a capacity of 10 MW. FRA IRT-4M containing low-enriched uranium is used (the total weight of the loading is 7.5 kg). The reactor is used for scientific research in nuclear physics and nuclear engineering, neutron activation analysis, solid state physics, production of isotopes, provision of services for irradiating materials, and development of nuclear technologies. The commissioning date for the reactor was September 10, 1959 and the designated lifetime of the reactor is until 2022.

The reactor operates on thermal neutrons. Distilled water is used as a retarder, reflector, coolant and protection.

The reactor is loaded with uranium enriched to 19.7% with the U235 isotope. The workload for the U235 isotope at the beginning of the campaign is ~ 6.6 kg. Reactor reactivity reserve and the total effectiveness of the reactivity compensation bodies ensure the possibility of its operation without stopping for 3 to 4 weeks.

The reactor is mainly used for the generation and use of radiation for research and other purposes, such as the production of radioisotopes. The use of the reactor for the production of electricity, desalination of water and district heating is excluded.

The operating mode of the reactor is determined according to the requirements of the experimental program.

Table 1. The main characteristic of the research reactor WWR-SM

№	Name of the parameter	Norm
1	Nominal heat output, MW	10
2	The density of the thermal neutron flux, $n / \text{cm}^2 \cdot \text{s}$: in the core in a beryllium reflector	$1,5 \cdot 10^{14}$ $1,0 \cdot 10^{14}$
3	Maximum density of heat flow, kW / m ²	740
4	Volume of nuclear reactor core	83,0
5	Moderator and reactor coolant	H ₂ O
6	Reflector	Beryllium
7	Number of FRA, loaded into nuclear reactor core, pc.	from 16 to 24
8	Type of fuel	IRT-4M
9	Fuel material	UO ₂ -Al
10	Shell material of nuclear fuel element	CAB-1
11	The lifetime of fast neutrons, μs	56
12	Step of the core grating, mm	71,5

13	The effective fraction of delayed neutrons, β_{eff}	0,0076
14	Number of control members (CM) CPS, pc.:	
	CM for reactor protection system (RPS)	3
	CM for compensation of reactivity margin (RM)	6
	CM automatic systems for maintaining a given power level (ACR)	1
15	Total time of introduction of the control members of RPS into the nuclear reactor core, s	0,5
16	Delay after having of the stop signal, no more than, s	0,1
17	The maximum power at which the reactor protection system activates, MW	12
18	Total weight of RPS control members, β_{eff}	7,37
19	Number of vertical channels, pc.	39
20	Number of horizontal channels, pc.	10
21	Distillate consumption in the primary circuit, m ³ / h	1200÷1300
22	Distillate pressure in the discharge line of the primary circuit, kgf/cm ²	1,40÷1,70
23	Differential pressure of the distillate on the reactor core, cm	370÷450
24	The temperature of the distillate at the entrance to the reactor core at nominal power, 0C	45÷55
25	The maximum allowable surface temperature of the nuclear fuel element, 0C	91÷101
26	Cooling system of the reactor core	double-circuit

To date, the reactor is in operation according to the approved schedule in the normal mode at a thermal power of 8 MW.

Radiation conditions on the reactor and the surrounding area are in accordance with the requirements specified in the current document "Norms of Radiation Safety (NRS-2006) and the Basic Sanitary Rules for Radiation Safety (BSRRS-2006)" SanPiN No. 0193-06.

Monitoring of the radiation situation is carried out with the help of two independent stationary systems. Accumulated statistics show that the systems work reliably in a continuous round-the-clock mode.

Over the past 15 years, the operation of the emergency reactor has not been recorded.

Safety system of the facility. At the reactor, radiation monitoring is carried out by the Radiation Safety Service (RSS).

Currently, there are two independent stationary systems in operation of the RSS:
dosimetric installation "System8004-01";

Automated radiation monitoring system ARMS "Pelican" with an additional channel UDKS-01 "Pelican".

Detectors from the systems are installed in the reactor room and in the technical rooms of the reactor. At the installation site of the detectors, light and sound alarms are installed, warning personnel in case of exceeding the specified level of radiation.

The dosimeter system "System8004-01" was put into operation in 1971.

With its help the following measurements are made:

dose rate of gamma radiation;

the flux density of fast and thermal neutrons and particles;

specific radioactivity of air and aerosols.

Since 2005, in several stages, a new system for radiation monitoring of the reactor has been introduced.

With the technical support of the IAEA, the project UZB 9004-85840J was continued.

In the period from 15.05.2008 to 26.09.2008. Six sets of NEDD-100 (a neutron emission detection device), 2 sets of UDG-1B (measuring facility of the volumic activity of radioactive gases

in air), and a set of UDA-1AB (a device for measuring the volumetric activity of radioactive aerosols in the air).

In February 2015, an additional channel of the Neutron emission detecting device (NEDD)-01 "Pelican" was put into operation in accordance with the contract №266 from 15.07.14. The new system of the ARMS "Pelican" allows to conduct continuous control over:

volumic activity of alpha and beta radioactive aerosols in the air of working premises and in the ventilation system;

volumic activity of beta-emitting gases (argon, krypton, xenon) in controlled places;

radiation situation in the reactor hall and adjacent premises by the equivalent dose rate of gamma radiation;

the equivalent dose rate of neutron radiation;

ejected air into the atmosphere from the gas cleaning system of the reactor.

In the operation of the RSS of the WWR-SM facility, there are a number of portable instruments for measuring the volumetric activity of radioactive gases and aerosols installed in the ventilation center.

The following personal protective equipment is available on the reactor:

means of protection from radioactive contamination of the body;

means of protection from external exposure;

means of protection against ingress of radionuclides into the body through respiratory organs.

The kit used depends on the place and conditions of work.

Visitors to the reactor use shoe covers that are worn on personal shoes, and bathrobes.

Also, additional personal protective equipment is available at the reactor to eliminate the radiation accident. The emergency kit of additional protective equipment, according to the list approved by the chief engineer of the reactor, is on the Control Panel of the reactor at the disposal of the shift supervisor. Also, there is a supply of respirators "Petal", which refers to the means of single use, and a stock of rubber gloves.

Emergency training. Large-scale exercises are held annually at the Institute of Nuclear Physics in which personnel from the Ministry of Emergency Situations, the Ministry of Internal Affairs, employees of the departmental civil defense, firefighters, doctors, personnel of the Institute participate. At the reactor there is a plan of emergency exercises. The plan contains scenarios where different situations are envisaged that may arise as a result of reactor operation or storage and handling of nuclear fuel. According to the plan, emergency training exercises are held quarterly, in which the management and operational personnel of the reactor participate.

Personnel training. For personnel of the reactor there is a training program. The employee is obliged to pass training with the subsequent passing of examinations in the service of radiation safety. If an employee is preparing to become an engineer-operator, then he passes a three-month training with the following certification procedure in the following order: three weeks in the service of radiation safety; two weeks in the service of electricians; two weeks in the service of mechanics; one week in the service of radiochemistry; one month in the service of the management and protection system.

Accounting for individual doses. Dose loads of all reactor staff (for all types of radiation) are recorded in dosimetric cards that ensure the functioning of a single information system for monitoring and recording individual doses to personnel of INP AS RUz in accordance with the requirements of the regulations of the Unified State System for Monitoring and Accounting for Individual Doses of Irradiation of Citizens of Uzbekistan. For the personnel of the reactor, data on individual dosimetry control are annually recorded in the "Card for recording individual effective doses of industrial exposure to persons working with technogenic sources of ionizing radiation at the reactor. The cards are stored in the service of the radiation safety department of INP AS RUz.

Some employees are given additional control dosimeters DDG-01D. As a rule, these employees are the replacement staff of the reactor, working in the reactor hall. For immediate monitoring of external photon radiation doses, direct-showing individual dosimeters DDG-01D are used that allow monitoring the dose by the performer during the work, as well as the dosimeter attendant on duty immediately after the end of work. When the reactor is operating the individual gamma-neutron dosimeter DPG-03 is used in addition to the IAPC dosimeter at the capacity and during the work in the Reactor Hall. The dosimetrist on duty records the readings of the operational dosimeters and records the doses on them in the journals of operational control of individual doses of photon and neutron irradiation.

Providing radiation safety at the facility. In order to ensure radiation safety and environmental protection at the expense of budgetary funds:

systematically monitoring the radiation situation on the territory of the institute, in the sanitary-protective and observational zones, at workplaces;

an annual inventory of sources of ionizing radiation is conducted;

exercises on civil protection of personnel during a radiation accident;

an annual test of knowledge of radiation safety technology according to the results of which an order is issued to admit employees who have passed through a medical commission to work with sources of ionizing radiation;

control levels were established at the reactor;

in each unit in which sources of ionizing radiation are used, there are instructions for radiation safety, instructions on the prevention and elimination of accidents (fire);

neutralization of liquid radioactive waste generated in the institute and its subsidiaries;

Radioactive sources in the units of the Institute are stored in special safes and warehouses. In 2016, the modernization of the exhaust ventilation system was completed and gas cleaning of the reactor. A new air filtration system was installed into the atmosphere through the reactor tube, air quality control equipment, and energy-saving exhaust fan motors. Until the end of 2017, the modernization of the reactor radiochemical laboratory will be completed at the expense of donor funds, which is morally and physically obsolete.

Practice of spent fuel management. Radiation exposure of personnel during the transshipment, transportation and storage of spent fuel is strictly controlled in accordance with the established basic dose limits. Statistics show that over the past 15 years, the reactor personnel's over-radiation and its removal from works with source of ionizing radiation have not been recorded.

Site selection. When choosing a site for the construction of the WWR-SM reactor, the relevant features were taken into account that could affect the safety of the reactor, or which the reactor might affect, as well as the feasibility of implementing emergency plans. As the long experience of operating the reactor has shown, the project has ensured the suitability of the reactor for reliable, stable and easy operation. At the reactor, the principle of defense in depth is applied, i.e. several levels of protection and several barriers to prevent the release of radioactive materials, in which failures or a combination of failures that could lead to significant radiological consequences, would be highly unlikely. Reactor site removed from the nearest large settlement of the village of Ulugbek to a distance of 1.2 km, the radius of the sanitary protection zone of the reactor is 1 km, the distance from the border of the city of Tashkent is 15 km. To assess all relevant site-related factors that may affect the safety of the reactor when handling spent fuel throughout its life, a safety analysis was made, in which all possible cases are considered, namely:

earthquakes (including discharges and landslides of seismic origin);

floods (including the breakthrough of an upstream dam and congestion on the river);

tornado (dust whirl) and associated flying objects;

sandstorms; hurricanes, storms and lightning;

explosions;

aircraft accidents;

fires;
spills of toxic substances;
accidents on transport routes;
the impact of neighboring facilities (e.g. nuclear facilities, chemical plants and waste management facilities);
biological hazards, such as microbial corrosion, structural damage or damage to equipment by rodents or insects;
extreme meteorological phenomena.

Waste generation and control. As a result of the operation of the reactor, gaseous, liquid and solid radioactive waste naturally form, which can adversely affect both individuals and society as a whole, and on the environment. In this regard, to ensure security, the following measures are envisaged:

formation of gaseous waste. The air of technological ventilation systems containing radioactive gases and aerosols is disinfected with special filters followed by removal through the ventilation center tube. Control for the release is carried out by the automatic system "Pelican";

formation of liquid radioactive waste (LRW). LRWs are neutralized at the special chemical water treatment station (SCWT) at the Aqua-Express unit by the sorption method on inorganic sorbents up to permissible by sanitary standards. Reception and storage of liquid radioactive waste in the storage facility is carried out via lines of specialization in two tanks, with a volume of 300 m³. LRW in groundwater

from the LRW storage facility is controlled by selecting the latter from the well located between the LRW storage and the solid radioactive waste storage facility;

formation of solid radioactive waste (SRW). The disposal of SRW is carried out in the SUE "RBSRW" according to the approved schedule. Special premises are equipped for temporary storage of solid radioactive waste. Before the disposal of SRW, they are concreted in casks (ion exchange resins, contaminated equipment, etc.) and storage in kraft bags (low-level SRW). There are two SRW storage facilities on the territory of the Institute.

The spent nuclear fuel (SNF) is stored in the reactor storage facilities no less than 3 years (cooling of fuel), after which it is sent for processing to Russia.

Access to SNF storage facilities is limited and is monitored by the physical protection system.

The fuel is stored under a layer of water, which eliminates the release of radiation into the atmosphere.

Vaults are equipped with appropriate sensors, through which are monitored such parameters as: water level; water temperature; leakage of storage; rarefaction of air in storage.

If necessary, fission products are removed from the storage water by running water through an ion exchange filter.

The formation of a critical mass in the repository is excluded, since the cells in which the SNF are stored are built with a certain step.

Emission of radiation into the environment during transportation of SNF for processing is excluded. Transportation SNF is carried out in a special container TP (Russia), which are certified according to international standards and have the highest degree of protection. World experience confirms this.

System safety assessment and environmental assessment. Security management encompasses all principles relevant to general management, including human resources management, which form the basis of the measures necessary to ensure that an acceptable level of safety is maintained throughout the lifetime of the reactor facility, including decommissioning.

The principles of safety management are:

the policy of the Institute of Nuclear Physics, in which security issues are given paramount importance and this policy is implemented within the framework of a management structure that has a clear division of responsibilities and clear lines of communication;

the development and implementation of appropriate quality assurance programs that operate throughout the lifecycle of the reactor from site selection and design to decommissioning;

Ensure that there are sufficient numbers of appropriately trained and certified personnel working in accordance with approved and justified regulations;

restrictions related to human activities;

preparation of emergency plans in case of emergency situations, within which the relevant exercises are conducted.

Institute of Nuclear Physics with the help of analysis, observation, testing and inspection checks that the physical state of the reactor and its operation are consistent with the operational limits and conditions, and with the requirements of the Nuclear Safety Policy (ABY-02-12). Periodic evaluations are conducted to confirm that individual documents (for example, work instructions, maintenance and training documents) remain valid; or, if necessary, with a view to making improvements. Such considerations take into account the cumulative effects of upgrades, changes in procedures, aging of components, feedback from years of operational experience and technical improvements.

Maintenance, control, inspection. Maintenance of reactor systems and equipment is carried out systematically according to approved schedules. Interim preventive works are carried out at a stopped reactor on a monthly basis. In summer (July), during the month, the basic planned preventive works (BPPW) are carried out. In due time, the Agency "Uzstandard" calibrates and verifies the standard instrumentation (I & C) of the reactor protection and control system, the measurement detectors of the radiation monitoring of the reactor, and the issuance of verification certificates. Quarterly employees of the State Inspectorate "Sanoatgeokontekhnazorat" inspect the reactor and check the storage of nuclear materials. A quarterly meeting with IAEA inspectors and submission of reports on the availability of documentation (operating manuals, instructions, diagrams, magazines, Acts, etc.) related to nuclear and radiation safety in the operation of the reactor, accounting for and control of nuclear materials. Every year inspectors of the State Inspection "Sanoatgeocontechnazorat" carry out planned inspections at the reactor.

Currently, the reactor is used for scientific research in the field of nuclear physics, radiation chemistry, biology, medicine, as well as for obtaining radioactive isotopes and refining semiprecious stones TOPAZ. The Institute of Nuclear Physics is responsible for all aspects of security in communication with the preparation and implementation of upgrades or experiments.

Physical protection of the installation. In accordance with national laws and regulatory provisions before the closure of the reactor, appropriate measures have been taken to prevent unauthorized actions, including acts of sabotage, that could jeopardize safety at the reactor, as well as to respond to such actions if they do happen. In cooperation with the Argon and Sandia National Laboratory (USA) and with the support of the United States Department of Energy in 1995, a modernization project was developed to strengthen the physical protection of the reactor building. The project envisaged two stages.

The first stage of the project was carried out in 1996. A new "fresh fuel" storage facility has been built, which is equipped with a modern monitoring and detection system. The reactor building was equipped with access control and detection devices. The central control panel (CCP) is equipped with a computer monitoring system and observation. The system of code passes is introduced.

The second stage of the project was completed in 2002. At this stage works were included on the creation of a second line of physical protection and on the expansion of the CCP. The perimeter of the reactor was cleared of trees, shrubs and equipped with two boundary fences. The fence is equipped with surveillance cameras and shaking sensors. A checkpoint was constructed, which provides additional enhanced access control to the reactor site. The CCP equipment was updated and expanded. Established station for the manufacture of passes. The wooden doors of the reactor building, which are important for safety, have been replaced by metal ones. The gates of the Reactor Hall were also replaced and reinforced. The windows of the Reactor Hall that were made of

glass, replaced by sheets of metal. To ensure reliable power supply physical protection equipment was installed uninterruptible power supply and diesel generator.

As a result: the control zone has significantly expanded and the number of control objects has increased; the perimeter protection was additionally carried out by involving independent forces of the Ministry of Interior Affairs; Access to the Reactor Hall is fully equipped with metal doors with combination locks and surveillance cameras.

The increase in the number of control objects required the upgrading of the staff of the physical protection system and the level of maintenance of the system.

To improve qualification, technical training for physical protection personnel is carried out monthly. In addition, staff are sent to various courses organized by the IAEA and the United States of America.

Plans for decommissioning the installation for the day of handling spent fuel. When designing the reactor, the need for its final removal from operation was not taken into account. However, all reactor operations, including inspections, periodic testing and maintenance, upgrades and experiments, are performed to facilitate the removal of the reactor from operation. The documentation of the reactor is updated in a timely manner and information on the experience of handling contaminated or irradiated CRSS in the course of maintenance or modernization of the reactor is recorded in order to facilitate the planning of decommissioning operations. The decommissioning of the reactor will be carried out in accordance with the developed "Program for the decommissioning of the WWR-SM reactor". Prior to the decommissioning of the reactor, a commission with the participation of representatives of the State Inspectorate "Sanoatgeokontekhnazorat" will conduct a comprehensive reactor survey and, based on the results of this survey, a decision is made to remove the reactor from operation in accordance with the established procedure. Procedures for handling, dismantling and disposal applied to experimental devices and other irradiated equipment that require storage and final burial, shall be established in advance or as early as possible. Responsibility from the Institute of Nuclear Physics is removed only with the approval of the regulatory body of the State Inspection "Sanoatgeocontechnazorat".

Plans for emergency measures at WWR-SM. The reactor has an emergency plan covering all actions planned in the event of an emergency. Personnel actions in the event of the emergence of a nuclear-hazardous regime or in the event of a nuclear accident are stipulated in the "Instruction on the actions of reactor personnel in the event of emergency situations", Inv. №1 / 31-5.

The emergency plan and the package of measures include:

definition of organizations responsible for emergency response (for readiness and response), including the authority and responsibilities of key personnel;

definition and classification of emergency situations;

the conditions under which an emergency situation should be announced, the list of persons authorized to declare an emergency, and the description of appropriate procedures or means of notification;

activities for initial and subsequent assessments, including radiation monitoring of the environment;

arrangements with off-site agencies that will provide assistance in the event of an emergency, including relevant supporting letters and detailed information about points of contact;

protective measures for maximum reduction of exposure to people and measures to provide medical assistance to any affected persons;

Guidance materials on the limits of radiation doses to personnel carrying out rescue operations or operations to mitigate the consequences of an emergency situation;

provisions related to providing of reliable communication between the emergency management center and internal and external facilities;

description of installations, equipment and procedures in case of emergencies;

The list of emergency equipment, which must be in a state of readiness in designated locations;

notification requirements for informing the competent authorities;

notification requirements for obtaining additional resources;

measures to be taken by individuals and organizations participating in the in implementing the plan;

provisions for informing the public;

provisions concerning the training of personnel, including an indication of the frequency and extent of the exercises;

provisions regarding the termination of an emergency situation and activities on restoration.

The emergency response plan is implemented in accordance with the emergency procedures set out in the documents and instructions detailing the actions and measures required to mitigate the consequences of an emergency.

The emergency response team includes the duty officer, who is well-versed in the operation of the reactor, and the Chief Engineer of the reactor is at the head of this group. All personnel participating in the emergency response activities, as required, periodically receive briefings, training and retraining on the performance of duties in the event of an emergency. All persons on the reactor site receive instructions on the actions that they must take in the event of an emergency.

On the site of the reactor, training is conducted on a quarterly basis, and all those involved in these exercises are responsible for responding to the emergency situation. The results of the training are analyzed and, if necessary, the lessons learned are taken into account when revising the emergency plan.

Radiation protection program. At the Institute of Nuclear Physics, the radiation protection program was established in accordance with regulatory requirements. This program includes a general policy statement of the Institute, which indicates the purpose of radiation protection, and a statement of the Institute's commitment to the principle of optimizing protection. Regarding the radiation protection program, the requirements of the International Basic Safety Standards for Protection against Ionizing Radiation and safe handling of radiation sources, and it is approved by the regulatory body. The radiation protection program is subject to the requirements for radiation protection of personnel, and in particular, it includes measures for:

cooperation between radiation protection personnel and operational personnel in the development of operational procedures (regulations) and maintenance procedures (regulations) if there is a possible occurrence of radiation hazards, if necessary, direct assistance;

decontamination of personnel, equipment and structures;

monitoring compliance with the relevant regulatory rules for the transport of radioactive material;

detection and recording of any releases of radioactive material;

registration of the inventory of radiation sources;

the organization of appropriate training in radiation protection practice;

Ensure consideration and updating of the program in the light of the accumulated.

The radiation protection program calls for the involvement of qualified specialists responsible for radiation protection who are well versed in the radiological aspects associated with the design and operation of the reactor. These specialists work in cooperation with the reactor operation team.

The chief of RSD advises the Chief Engineer of the reactor on compliance with the radiation protection program and has the opportunity to apply directly

to the leaders of the Institute of Nuclear Physics, who have the authority to introduce operational procedures (regulations) and ensure their implementation.

All personnel at the reactor are individually responsible for the implementation, within the limits of their competence, of radiation control measures that are specifically spelled out in the program of radiation protection. Accordingly, special attention is paid to the training of all reactor

personnel in order to ensure that the personnel fully understand both the radiation hazards and the available protective measures. Particular attention is paid to the possibility that personnel in the reactor may include persons who do not work at the reactor permanently (for example, experimenters, trainees, invited persons and contractors).

Problems in the field of spent fuel management. To store the spent fuel at the reactor, there are three repositories equipped according to the requirements of nuclear safety rules. Storage of fuel in storage facilities is possible for a long time. To ensure the physical protection of spent fuel, there is all the necessary equipment, but it is necessary at the expense of budgetary funds to maintain a staff of service personnel and a large staff of paramilitary guards.

Processing of spent fuel in the territory of Uzbekistan is not envisaged. Burial of nuclear materials in the territory of Uzbekistan is currently excluded (the absence of national legislation, the lack of long-term storage facilities with adequate physical protection and guarding).

Possible proposed solutions to problems in the field of spent fuel management. There are two ways to solve problems in the field of spent fuel management:

After a three-year endurance (cooling) of spent fuel in the basins of the reactor storage facility, send it for processing and storage.

Construct a long-term storage facility on the territory of Uzbekistan. Equip the storage facility with all necessary equipment (reliable power supply, exhaust ventilation with filtration system, radiation detectors, instrumentation detectors, physical security system). Ensure that the storage is guarded for a period of at least 30 years (partial reduction of radiation).

Perspective plans in the field of spent fuel management. Continue, according to the developed schedules and plans, to carry out preventive maintenance work for equipment and systems responsible for the safe operation of the reactor and storage of spent fuel. Timely upgrade the operational personnel of the reactor (participation in international seminars, exchange of experience with colleagues from Russia and Europe). Continue the modernization of morally and physically obsolete systems. Develop a project to build a long-term storage of spent fuel.

State enterprise Navoi Mining and Metallurgical Combine. SE "NMMC" is engaged in mining and primary processing of uranium ores in the republic. State Enterprise "NMMC" is known in Uzbekistan as a diversified enterprise that produces the most diverse products for the country's economy. Its subdivisions are located in seven regions of the republic.

Our country is among the top ten states in the world according to confirmed reserves and forecasted resources of gold, uranium, copper, tungsten, potassium salts, phosphorites, kaolin, etc. The main deposits of gold and uranium are concentrated in the Central Kyzyl-Kum region, and are subject to the activities of the State Enterprise "NMMC".

Given the breadth of the assortment of products, the priority direction of the SE NMMC is the commercial development of mineral resources, and the main products are gold and uranium. They build the entire life of the plant as a mining and metallurgical enterprise that carries out the completed production cycle from pre-exploration work, ore mining, processing, to obtaining gold and nitrous oxide of uranium.

In addition to the production of basic products, SE "NMMC" is engaged in production and processing of phosphate raw materials, produces sulfuric acid. Production of liquid glass, emulsion explosives, polyvinylchloride and polyethylene pipes. Based on local raw materials, production of construction materials: crushed stone, concrete, asphalt concrete, molding sand, limestone, facing products from gabbro, marble and granite is established.

Combine provides services for the repair of industrial equipment. It produces metal cutting machines, construction metal structures, welding electrodes, household appliances, food products, knitted garments and other consumer goods.

The innovative policy of the State Enterprise "NGMK" is aimed at updating the existing production base, technical re-equipment, introduction of advanced scientific developments.

With the release of the Resolution of the President of the Republic of Uzbekistan dated July 15, 2008 No. PP-916 "On additional measures to stimulate the introduction of innovative projects and technologies in production," innovation activity in the plant received a new impetus. Thanks to active support and tireless attention from the Government and personally the President of the Republic of Uzbekistan, the plant for years of independence managed not only to stay in the top ten of the world's leading companies, but also to secure the title of a powerful industrial giant, a unique state enterprise.

High qualification of the specialists of the combine allows to solve: the tasks of subsoil development; technological problems of mining, transportation and processing of ores.

Strong ties have been established with the largest industry research and academic institutions. Intersectoral cooperation is intensively developing.

SE "NMMC" is one of the initiators and founders of the US-Uzbek Chamber of Commerce. Established in September 1993, it is a non-profit organization of companies interested in developing and improving bilateral trade and investment between the United States and Uzbekistan. In 1996, presentations were made in the US and Japan of the mineral resource base of Uzbekistan, which showed great interest in the plant of foreign companies. State Enterprise "NGMK" constantly cooperates with international organizations dealing with problems of environmental protection.

Specialists and technical experts of the IAEA repeatedly visited enterprises of the State Enterprise "NMMC", got acquainted with the environmental situation and have full information on all issues of interest to them. SE "NMMC" participates in the European Union's "TACIS" program of environmental protection, closely cooperates with foreign firms, which the European Commission commissioned to implement this program. In the autumn of 1996 the plant was visited by the delegation of the IAEA with the participation of entrepreneurs - users of uranium and radiation protection specialists of Sweden. The delegation highly appreciated the measures taken to protect the environment at the plant's uranium facilities.

The state of the radiation situation at the facilities of the State Enterprise "NMMC". State Enterprise "NMMC" have the license of the Academy of Sciences No. 102 dated February 8, 2010 for the right to carry out activities in the sphere of the IRI turnover in the following areas:

research and development in the field of circulation with sources of ionizing radiation, design, construction and maintenance of sources of ionizing radiation, design and manufacture of technological equipment, radiation protection equipment for them;

extraction, production, processing, use, storage, maintenance, transportation, neutralization, utilization and disposal of sources of ionizing radiation.

Use of ionizing radiation sources in the field, their condition, accounting and control. The state enterprise "NMMC" uses closed sources of ionizing radiation (NII) intended:

for the calibration of dosimeters, borehole and field radiometers;

for the control of technological processes of ore preparation and transportation of ore mass on conveyor lines of mining production (concentrators, densitometers, signaling devices for filling technological tanks, etc.);

for control of pulp density at the processing lines of gold-containing ore processing plants (MMP-1, MMP-2, MMP-Z) and phosphorites (CFCs).

In addition, the SE NMMC uses: radioisotope smoke detectors, control sources (CS), standard samples (SS), mining models (MM) and radiation emission detecting devices (REDD). The latter are used on ore-quality control station (OQCS) and ore-separation facility (OSF) used for sorting gold-bearing ores of the Kokpatas field, as well as in downhole geophysical equipment used in exploration of uranium deposits.

The state of the radioactive waste disposal site. NMMC has its own landfill for solid radioactive waste, located on map No. 6A of the tailing dump of RU "MMP-1".

As of 01/01/2017. on the map No.6A there are 7105.27 tons of solid radioactive waste received from the mines of the State Enterprise "NMMC" and third-party organizations.

These wastes include solid waste from uranium production, with a specific total alpha activity of more than 10,000 Bq / kg, in the form of articles made of ferrous and non-ferrous metals that have worked their end, polyethylene pipes, building materials, decommissioned process equipment, etc. The system for handling these wastes includes the collection, accounting, sorting, temporary storage, transportation and disposal of solid radioactive waste at the landfill. The capacity of the landfill will allow to bury at least 100 000 tons of solid radioactive waste of uranium production of the State Enterprise "NMMC". For the entire period of uranium production with mining of ore by mining method (from 1964 to 1995), radioactive waste in the form of a solid pulp phase in the amount of 57 059 270 tons was accumulated at the tailings pond.

Work carried out in the field of radiation safety at the facilities of SE "NMMC". In the course of 2017, work in the field of radiation safety at the facilities of the State Enterprise "NGMK" continued to be carried out, in accordance with the approved leadership of SE "NMMC", "Program of Action on environmental protection of Navoi Mining and Metallurgical Combine for 2013-2017". The source of financing is the own funds of the State Enterprise "NMMC". The Action Plan developed for the implementation of this Program includes the following items regarding the provision of radiation and nuclear safety:

Introduction of mini-reagent PV technology. The expected environmental effect is a decrease in the chemical agent's effect on the chemical composition of groundwater productive horizons.

Construction of an anti-radiation shield at the MMP-1 tailings pond on an area of 600 hectares. Annually it is planned to lay in the screen not less than 1200-1300 thousand tons of soil. The expected environmental effect is the disposal of radioactive waste from past activities of the RM "MMP-1".

Radioecological monitoring of settlements, adjacent to hydrometallurgical complex of RU "MMP-1" and its tailing dump. It is carried out by measuring radiation-hazardous factors at observation points in accordance with the current regulations.

Development and implementation of annual schedules of regulated works on environmental monitoring, control of working conditions, conduct radiation-dosimetric studies at production facilities of the State Enterprise "NMMC", sanitary protection zones, observation zones and territories exposed to the production facilities of the State Enterprise "NMMC".

For 100% provision of personal dosimeters with personnel categories "A" NMMC in 2017 purchased "Automated complex of individual dosimetric control" (ACIDC-302). From 01.09.2017 this complex is introduced in operation and all employees of SE NMMC related to personnel of the category "A" are provided with individual dosimeters.

Conducted reclamation works at the tailing dump of GMZ-1.

To date, more than 18 million tons of waste produced during processing at the hydrometallurgical complex of the RU "MMP-1" of gold-bearing ores have been deposited in the body of the radiation shield over radioactive waste from uranium production in the tailing dump of RU "MMP-1". The tailing pond No.5 map (area 100 ha) is covered by a screen with an average capacity of 2.1 m; map №6A (the area of 80 hectares) is covered by a screen with a capacity of 3,6 meters; map number 3 (area 110ha) is covered by a screen with an average capacity 0.55 m. Rehabilitation work on maps No. 4 and No. 7 is under way, Map No. 8 is being prepared.

Prospective plans in the field of ensuring radiation and nuclear safety for 2018. In the field of radiation safety at the facilities related to the sphere of activity of the State Enterprise "NMMC", the following activities will be performed:

radioecological monitoring of settlements, adjacent to hydrometallurgical complex of RU "MMP-1" and its tailing dump, by measuring radiation-hazardous factors at observation points according to the current regulations. Based on the results of the monitoring, annual total effective

doses will be calculated for critical population groups and reports on the results of the studies will be compiled (the frequency of the reports every two years).

development of environmental control schedules on the territory of the impact of SE NMMC facilities, their coordination with the Goskomekologia bodies, preparation of reports on the execution of graphs and the results of observations;

In order to implement the "Comprehensive measures to improve the environmental situation at the facilities of the State Enterprise" Navoi Mining and Metallurgical Combine" and near the regions located nearby the following are performed:

monitoring of sources of environmental pollution at all production facilities of the State Enterprise "NMMC";

monitoring in the territories of sanitary protection zones of industrial objects of the State Enterprise "NMMC";

Assessment of the state of the environment in the settlements located in the zone of influence of the State Enterprise "NMMC".

Area of deposits of Yangiabad ore field. Since Uzbekistan was one of the main suppliers of uranium in the USSR, large-scale uranium mining and uranium processing activities led to the formation of a significant amount of radioactive waste left in the form of mountain dumps and the remains of industrial structures in the mining industry. In the Yangiabad area, in total, seven former uranium industrial zones were identified: the former Alatanga mine, the former Razvedachystok mine, the former Kattasai mine, the former Jekindek mine, the ore-processing plant - the Ore yard, the central mountain dump of the Ore yard and the central blast furnace for poor ore.

Yangiabad ore field is located several kilometers north-west of Angren in the middle part of the Kattasay valley between the Djekindek river and the river Dukent. The main pro-objects are concentrated in a row in the north-western direction, crossing the river valleys. The ore-processing plant is located in the valley just south-east of Yangiabad. The remaining six former promobjects extend beyond the valleys to higher points. The Yangiabad ore field was formed in 1949. when, the uranium deposits of Alatanga, Kattasai, Razvedochastok and Mazarjon were discovered. Later, in 1956, In the middle reaches of the Jekindek River, the Jekindek deposit was discovered. The ore field is located north of Angren (Tashkent region) in the middle of the valleys of the Kattasay, Jekindek and Dukent rivers. All ore objects are localized in the north-west direction, crossing the river valleys. The village is located in the center of the district. Yangiabad, and at its southern border - pos. Sayagi. Deposits Yangiabad ore field were reconnoitered and worked out in the period from 1949 to 1983. Ore management of the Leninabad Mining and Chemical Combine,

Deposits are close to each other, as a result of their development, numerous dumps have been formed on an area of about 68 hectares near the mine workings, as well as the Central Blast off-balance (poor) uranium ores and the Central Blade of Overburden. In general, on the territory of Yangiabad there are four closed uranium mines and twenty-nine dumps of empty rocks near the shafts. The total amount of contaminated material accumulated here is about 500 thousand m³.

Based on the results of the monitoring, annual total effective doses for critical groups of the population are calculated, and annual reports on the results of the studies are compiled.

Project works on the improvement of Yangiabad were carried out from 2006 to April 2015 in stages, on the basis of the Cabinet of Ministers Ordinance No. 221-F of 1994.

To date, the following activities have been implemented:

land reclamation and decontamination;

a concrete fence for the contaminated area was built;

moved contaminated soil;

construction of a sarcophagus;

The device of a drainage from a sarcophagus stacking of pipes is executed.

In general, the technical and architectural and construction solutions for Yangiabad are characterized by the following data: the construction is a polygon bounded by concrete with signs of radiation hazard "sarcophagus" inside an area of 21.3 thousand m³, where the soil is

contaminated with radionuclides from the entire territory of the railroad base. As a result, the object is an isolated area with a closed fencing contour to prevent penetration of unauthorized persons and equipped with radiation safety signs.

Four mining areas are left without conservation measures, a high level of gamma radiation in the environment - which affects the recreation areas and the riverbed. The enrichment plant in Yangiabad is left without conservation and remediation measures, but is accompanied by the destruction of ground production facilities. A high level of gamma radiation emitted by buried wastes and ore remains. These materials affect neighboring residential areas through waterways. A large number of mine waters and infiltrates of buried waste emanate from the neighboring gallery. Warehousing and low-grade ore storage site from an ore beneficiation plant with a large volume of radioactive waste and high potentials for radon extraction; The corresponding impact on the population living in the valley below the dumps should be assumed. In four shaft galleries, a large number of mine waters are filtered, which, without purification, enter the surface runoff. Around the mines left piles of waste rock, which have not yet been reclaimed. The ore loading and storage zone is located on the eastern outskirts of Yangiabad village. Sewage from the passage of an abandoned mine flows directly through the site and mine waste. Many of the aisles are not closed, which allows illegal entry into the underground premises.

Potential hazards in the former mines of Yangiabad are as follows:

mines (open, closed, covered);

galleries (open, closed);

dumps of empty rocks (from small to large, mostly with high and steep slopes);

remains of ore structures (obsolete storage and enrichment facilities, destroyed buildings);

underground ore workings and voids.

Many ore mines (mines, tunnels, dips) pose a high risk for the population as a whole. Only some of the galleries and dips were assessed with medium or low risk due to their remote location. Single waste heaps represent an increased risk to the environment due to leaking filtration water, which can lead to the spread of pollution and erosion. Dumps of gangue on river banks may have an average risk due to possible erosion processes, and most of the waste rock dumps in the mountainous terrain have only a low geomechanically risk. Obsolete ore-dressing products represent a high risk for the population. As a result of a special risk assessment, a set of remediation measures is proposed for different groups of facilities.

Deposits of uranium mines of the Charkesar ore field. Deposits of Charkesar-1 and Charkesar-2 were discovered in 1953 on the south-eastern slopes of the Kuramin range. They are in the Pap District of the Namangan region near the village. Charkesar at a distance of 3-4 km apart.

Deposits of Charkesar-1 and Charkesar-2 are located on the border of rocky mid-low mountains and hilly foothills. As a consequence, the terrain of the region and working sites of mines is characterized by a significant difference in altitude, the presence of rocky outcrops of granitoid rocks.

Currently, the mine water is drained through a pipe into a storage basin and are filtered into loose sediments of the cone of removal. The mine's working sites are located on the outskirts of the village of Charkesar, built by the mining enterprise for the mine workers. The deposits were processed by the Leninabad Mining and Chemical Combine (LGKhK) (currently the State Enterprise Vostokredmet, Chkalovsk, Sughd Region of the Republic of Tajikistan) with two mines and a series of tunnels to a depth of 140-280 m. For the miners of both mines Charkesar settlement was built.

The extracted uranium ores were sorted, crushed, enriched at the ore-dressing factory and transported to the city of Pap, where they were loaded onto railway platforms and transported to the mining and metallurgical plant in the city of Chkalovsk. The deposited dumps of off-balance (poor) ores were leached with acid solutions. The mining method of mining stopped in 1972. In 1988, both mines were finally liquidated due to the mining of all uranium reserves, the mines were flooded.

In 1988-1991 at the Charkesar-2 mine, a complex of remediation works was performed, and a monitoring service for the radiation and environmental situation functioned.

The Charkesar-1 mine. The mine's working platform stretched along a mountainous, waterless, small valley for 1.5 km. According to the specified data, underground mining works are located at the site - mine No. 1 and tunnel No. 0, 1 and 2, as well as 7 dumps of overburden and off-balance uranium ore, remnants of stone production buildings and roads. After completion of the field operation by the PV method, washing of ore-bearing rocks with fresh water was performed, drainage of the mine, carried out through the tunnel 2, was taken to the absorption well, the surface of the middle and lower dumps was covered with a thin layer of neutral soil, the mouths of the mine workings were encased and blown up, this place is far from settlement.

Currently, the state of the mine facilities without access to underground mine workings.

The Charkesar mine - 2. The Charkesar-2 mine had two working platforms. The first was on the mountainous slopes of the starboard side of the valley of the river. Inghichka, the second - in the hills of the left side of the valley, 0.7-1.3 km downstream. According to the specified data, uranium ore deposits were opened by mine No. 2, galleries No. 3 and 4 by Order of the Cabinet of Ministers of 29.12.2000. No. 707 was approved by the feasibility study and the State Ecological Committee has carried out a number of works on reclamation of the former uranium mine.

From 2002 to the present, the whole territory of contaminated land from the side of the village and the houses built were fenced with a stone fence, and from the opposite side - wire. A dirt road was built along the territory of the site. Drainage water was drained through a special underground system. The latter is organized to the south of the dumps on the lower narrow river terrace and is equipped with two evaporating ponds. This area was surrounded by a wire fence. In 2004-2005 they were blocked by a neutral material (gravelly-loess) dumps 1 and 2, located at the top of the site. In 2008 site reclamation was continued; across the site from its upper edge to the riverbed. Inghichka laid a tray for a runoff of seasonal waters and the descent of possible mudslides.

The next stage of reclamation began in September 2012. Goskomekologia carried out full reclamation of the southern part of the first site of the mine and the adjacent absorption zone. All this territory, including dumps №№ 4, 5 and partly 3) were covered with a layer of neutral soil with a capacity of up to 1.2 m, its compaction and layout were carried out. The drainage underground system is restored, an underground drainage pipeline is laid. The fencing of the mine site is repaired, its protection is ensured. Complex reclamation of the site was carried out already on 80% of the territory of Charkesar-2.

Potential hazards in the former mines of Charkesar are as follows:

mines (open, closed, covered);

galleries (open, closed);

dumps of empty rocks (from small to large, mostly with high and steep slopes);

remains of ore structures (obsolete storage and enrichment facilities, destroyed buildings);

underground ore workings and voids.

Implemented reclamation work on the site of Charkesar-1:

after the completion of the underground leaching in the mines, the ore-bearing rock was washed out with water and drained through the tunnel No. 2, after which the water was removed into the absorption well for subsidence;

the largest dumps, for example No. 1 and 2, were coated with a thin layer of inert soil (sandy loam material);

all entrances to underground mine workings are blocked and piled up under a blow;

all ground structures are broken.

The current situation in the Charkesar-2 area after reclamation:

The ore was washed with water for about 20 months, and the water was discharged into the absorption well;

on the mountain dumps, a covering was made, which neutralizes the waste with a layer of soil in several cases;

all entrances to underground workings were blocked and undermined;

all industrial facilities and structures were dismantled;

The ore-dressing combine together with the mountain dump was fenced with a stone wall from the side of the village and surrounded by barbed wire from the side of the mountains;

water from mine No. 2 (main and ventilation) was diverted to a new well, a ditch was constructed through the area from its upper edge to the Inghichka river bed to divert surface runoff and possible mudflows;

the buildings of the plant were dismantled/broken, and other production facilities were buried in the dump where the coating was subsequently constructed.

Many ore mines (mines, tunnels, dips) pose a high risk for the population as a whole. Only some of the galleries and dips were assessed with medium or low risk due to their remote location. Single waste heaps represent an increased risk to the environment due to leaking filtration water, which can lead to the spread of pollution and erosion. Dumps of gangue on river banks may have an average risk due to possible erosion processes, and most of the waste rock dumps in the mountainous terrain have only a low geo-mechanical risk. Obsolete ore-dressing products represent a high risk for the population. As a result of a special risk assessment, a set of remediation measures is proposed for different groups of facilities.

Section C. Scope of application

Joint Convention on the Safety of Spent Fuel Management and on the safety of radioactive waste management in the Republic of Uzbekistan applies to the following issues:

safe management of spent fuel, as a result of the work of the WWR-SM research reactor of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan;

safe handling of waste as a result of the use of radioactive materials in industry, medicine, scientific research, education and other spheres of economy in the territory of the Republic of Uzbekistan, if the level of contamination with radionuclides of these materials is higher than specified in SanPiN 0193-06;

the safe handling of radioactive waste generated by former uranium mining operations.

Section D. Inventory Lists and checklists

Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan is located in the village of Ulugbek, Mirzo Ulugbek district, the city of Tashkent. It has 3 storage facilities for long-term storage of spent fuel from the WWR-SM research reactor.

There are only 80 pieces in storage facilities. spent fuel assemblies (SFA) with low enriched uranium (LEU) with a total aggregate weight of 355.68 kg.

The total weight of LEU is 104.41 kg, including 8.5 kg of uranium-235

The state enterprise "Republican enterprise of radioactive waste disposal" of the Academy of Sciences of the Republic of Uzbekistan has storage facilities for radioactive waste. The facility is located 60 km to the Northeast from Tashkent (in the foothills at an altitude of 800 m above sea level) and 10 km to the South-East from the town of Chirchik.

The nearest settlement (Aydarali settlement) is 5 km away. The nearest canal Parkent main canal is at a distance of 3 kilometers from the object at an altitude of 670 meters above sea level.

The following radioactive waste storage facilities are available:

№	Name of storage facility	No of storage facility	Storage capacity, m³	State of storage	filled, %
1	solid radioactive waste storage facility	1	740	functioning	92
2	Storage facility for spent gamma radiation	2	0,18	Sealed off	100
3	Storage for spent	3	0,18	functioning	50

№	Name of storage facility	No of storage facility	Storage capacity, m ³	State of storage	filled, %
	neutron sources				
4	Solid radioactive waste storage	4	920	Sealed off	100
5	Storage for biological radioactive waste	5	30	functioning	5
6	Storage for liquid radioactive waste	6	200	functioning (no disposal was carried out)	empty
7	Storage for liquid radioactive waste	7	200	functioning (no disposal was carried out)	empty
8	Solid radioactive waste storage	8	670	Sealed off	100
9	Repository for used gamma sources	9	1	functioning	1
10	Repository for used gamma sources	10	1	functioning	50
11	Storage for high-level radioactive waste WwR-SM INP	11	3,5	functioning (no disposal was carried out)	empty
12	Storage for high-level radioactive waste WWR-SM INP	12	3,5	functioning (no disposal was carried out)	empty
13	Storage for high-level radioactive waste WWR-SM INP	13	3,5	functioning	60
14	Storage for high-level radioactive waste WWR-SM INP	14	3,5	functioning	90
15	Solid radioactive waste storage for Photon	15	1000	functioning	4
16	Solid radioactive waste storage for IGBE	16	2000	functioning	empty

The objects of the State Enterprise "Navoi Mining and Metallurgical Combine" (State Enterprise "NMMC") because of their unprofitability during the conversion of the uranium industry were completely closed (1990-1994). Extraction of uranium from the Uchkuduk deposit was produced in various ways: underground mining (mine), open-pit mining (quarrying) and underground leaching at the site of ore deposits through a system of technological wells.

In the process of uranium mining, 23 excavated off-balance deposits totaling 1400 thousand m³ or 2.25 million tons were formed on the industrial site of the Uchkuduk field.

The area of pollution of the territory due to dust emissions from the surface of the dumps is observed at a distance of 20-30 m.

Step-by-step reclamation is carried out at the expense of the facilities of the State Enterprise "NMMC" in certain sections of the former uranium mines in the Central Kyzyl-Kum region (Uchkuduk, Zarafshan, Zafarabad).

Objects of the former uranium production/Uranium heritage of Uzbekistan.

The Charkesar mine is located in the foothills of the Kuramin mountain range, in the Pap district of the Namangan region of the Republic of Uzbekistan, in the northwestern part of the densely populated Ferghana valley. This deposit was exploited in two mines - Charkesar-1 and Charkesar-2. The deposit was developed by mining and the method of underground (mine) leaching to a depth of 280 m. On the surface 12 sites of radioactive contamination are noted - industrial sites of mine workings, heap and underground leaching, dumps of off-balance ores. The total waste of the Charkesar mine is 482 thousand cubic meters, while the waste is located on an area of 20.6 hectares.

The Yangiabad uranium ore field is located in the valley of the right tributary of the Akhangaran River - the Dukent-Say Stream, 10 km north of Angren (population of about 10 thousand people). Deposits of the ore field - Alatanga, Jekindek, Kattasai and Razvedochastok were worked from 1950 to 1980. As a result of the operation of the mines, an area of about 50 km² formed radioactive waste. They are represented by dumps of off-balance ores, used by fixing material and equipment, stored on mine sites. The main radioactive material refers to low radioactive waste. The total amount of contaminated material accumulated here is about 500 thousand cubic meters.

Section E. Legislative and Regulatory System

Over the past decade, legislative acts of a general nature aimed at ensuring nuclear and radiation safety have been adopted in the Republic of Uzbekistan and the safe handling of radioactive and nuclear waste. Also, norms and rules have been developed to prevent the harmful effects of economic and other activities, but also certain provisions relating to security when dealing with nuclear materials, radioactive substances and, in particular, with radioactive waste [1,2,3, ...].

Law of the Republic of Uzbekistan "On Radiation Safety". The purpose of this Law is to regulate relations related to ensuring radiation safety, protection of life, health and property of citizens, as well as the environment from harmful effects of ionizing radiation.

Article 7. State regulation in the field of radiation safety. State regulation in the field of ensuring radiation safety is carried out by the Cabinet of Ministers of the Republic of Uzbekistan and the state bodies authorized by it.

State regulation in the field of radiation safety includes:

State supervision and control over compliance with radiation safety requirements;

licensing of activities in the field of handling sources of ionizing radiation, certification of agricultural, food products, feed, drinking and technical waters, building materials and products from them for radiation pollution;

determination of radiation contamination in the coordination of allotments of land plots for all types of construction.

Article 8. Control and coordination in the field of radiation safety. The state control in the field of radiation safety is carried out by the The State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan, the Ministry of Health of the Republic of Uzbekistan, the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection and the State Customs Committee of the Republic of Uzbekistan.

The State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan coordinates the activities of state control bodies in the field of ensuring radiation safety, with the exception of coordination of the activities of specially authorized state bodies in the field of waste management.

Production control in the field of radiation safety is carried out by users of ionizing radiation sources, as well as by producers of raw materials, construction materials and mineral fertilizers containing natural radioactive elements.

Public control in the field of radiation safety is carried out by self-government bodies of citizens, non-governmental non-profit organizations and citizens.

The procedure for monitoring and coordination in the field of radiation safety is established by law.

Article 9. State Expertise of the Objects of Use of Ionizing Radiation Sources. Objects of use of sources of ionizing radiation are subject to state environmental, radiation-hygienic and technical expertise in accordance with the procedure established by law.

Article 10. Licensing of activities in the field of handling sources of ionizing radiation. Research and development work in the field of handling sources of ionizing radiation, designing, constructing sources of ionizing radiation, designing and manufacturing technological equipment for them, radiation protection equipment, as well as work

production, processing, use, storage, maintenance, transportation, radiation are carried out on the basis of a license issued in accordance with the established procedure.

Article 11. Rationing in the field of radiation safety. Rationing in the field of radiation safety is carried out by establishing sanitary standards, rules and hygienic standards for radiation safety, state standards, construction norms and rules, labor protection rules, instructional, methodological and other documents on radiation safety, approved and registered in the manner determined by law.

Article 12. Ensuring radiation safety. Radiation safety is provided by:
development and implementation of programs to ensure radiation safety;
functioning of a unified state system of control and accounting of individual radiation doses received by citizens when using sources of ionizing radiation;

establishing the types and amounts of compensation for the increased risk of harm to the health of citizens due to radiation exposure:

compensation of damage to health of citizens and losses to their property as a result of a radiation accident;

definitions of activities associated with the use of sources of ionizing radiation;

state regulation of export and import of sources of ionizing radiation;

medical and preventive measures;

informing citizens about the radiation situation and measures to ensure radiation safety;

training citizens to radiation safety measures;

assistance to citizens exposed to radiation as a result of radiation accidents;

introduction of special regimes of citizens' residence in zones of radioactive contamination;

elimination of the consequences of radiation accidents in the relevant territory;

organization and conduct of operational activities in the event of a threat of a radiation accident.

Radiation safety can be provided by other measures in accordance with the law.

Article 13. Assessment of the state of radiation safety. The assessment of the state of radiation safety is carried out in the planning and implementation of activities to ensure radiation safety, the analysis of the effectiveness of these measures by state authorities in the field, government agencies that carry out regulation in the field of radiation safety, as well as users of sources of ionizing radiation.

Assessment of the state of radiation safety includes the following main indicators:

characterization of radioactive contamination of the environment;

analysis of the provision of radiation safety measures and the implementation of norms, rules and hygienic standards for radiation safety;

probability of radiation accidents and their scale;

the degree of readiness to eliminate radiation accidents and their consequences;

analysis of radiation doses received, and expected to be received by workers (staff) and the population from all sources of ionizing radiation;

the number of persons exposed to radiation above the established basic dose limits.

Article 14. Radiation-hygienic passport. Radiation-hygienic passport - a document characterizing the state of radiation safety of a legal person - a user of sources of ionizing radiation.

The radiation-hygienic passport is annually recorded the results of an assessment of the state of radiation safety.

The procedure for conducting radiation and hygienic passports is determined by law.

Article 21. Storage or disposal of radioactive waste. When storing or dumping radioactive waste, their isolation from the environment must be ensured.

The procedure for organizing the collection and disposal of radioactive waste is established by law.

Article 22. Ensuring the safety of radioactive and nuclear materials. Ensuring the safety of radioactive and nuclear materials in all types of circulation with them is mandatory.

The safety of radioactive and nuclear materials is provided by users of sources of ionizing radiation.

Ensuring the safety of radioactive and nuclear materials provides for a unified system for planning and implementing a set of technical and organizational measures aimed at: prevention of unauthorized entry into the territory of the placement of radioactive and nuclear materials, as well as their theft or damage;

identification and return of lost or stolen radioactive and nuclear materials.

Supervision of the safety of radioactive and nuclear materials is carried out by the State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan. The procedure for ensuring the safety of radioactive and nuclear materials is established by law.

Article 23. Protection of citizens and the environment from radiation accidents.

Organizations in which radiation accidents may occur are required to have:

list of potential radiation emergencies with a forecast their consequences and the forecast of the radiation situation;

criteria for decision-making in the event of a radiation accident;

a plan of measures to protect citizens and the environment from a radiation accident and its consequences, coordinated with state authorities in the field, government agencies that carry out regulation in the field of radiation safety;

means for warning and ensuring the elimination of the consequences of a radiation accident;

medical means for the prevention of radiation damage and means of medical care for victims of a radiation accident;

rescue units created from the number of employees (personnel).

Article 24. Obligations of the user of sources of ionizing radiation during a radiation accident. In the event of a radiation accident, the user of sources of ionizing radiation is required to: ensure the implementation of measures to protect workers (staff) and the public from a radiation accident and its consequences;

to inform the state bodies that carry out regulation in the field of ensuring radiation safety, as well as bodies of state power in the localities and self-governing bodies of citizens;

take measures to provide medical assistance to the victims;

localize the source of radioactive contamination and prevent the spread of radioactive substances in the environment;

to analyze and prepare a forecast for the development of a radiation accident and changes in the radiation situation during a radiation accident;

take measures to normalize the radiation situation after the elimination of the radiation accident.

In accordance with the Law of the Republic of Uzbekistan "On Radiation Safety", a number of normatively legal by-laws in the field of radiation and nuclear safety, as well as norms and rules for protecting the life, health and property of citizens, as well as the environment from harmful effects, have been developed jointly by the ministries and departments concerned ionizing radiation (6,12, 13, 14, 15,18, 19, 20).

The Law of the Republic of Uzbekistan "On Waste". The purpose of this Law is to regulate relations in the field of waste management.

The main objectives of this Law are to prevent the harmful impact of waste on the life and health of citizens, the environment, reduce waste generation and ensure their rational use in economic activities.

Article 4. Ownership of waste. Ownership of waste belongs to the owner of raw materials, semi-finished products, other products or products, as well as goods (products), as a result of which these wastes were generated.

Ownership of waste can be acquired by another person on the basis of a contract of sale, exchange, gift or other transaction not prohibited by law on the alienation of waste.

The owners of the waste own, use and dispose of the waste within the limits of the powers established by the legislation.

The transfer of ownership rights to waste and liability for harmful consequences when the owner of a land plot on which waste is placed is being resolved in accordance with the law.

Article 5. Powers of the Cabinet of Ministers of the Republic of Uzbekistan in the field of waste management. Cabinet of Ministers of the Republic of Uzbekistan:

approves state programs for waste management and provides their implementation;

establishes the procedure for the implementation of state accounting and control in the field of waste management;

establishes the procedure for maintaining the state cadastre of burial sites and waste management;

establishes the procedure for the development and approval of standards in the field of waste treatment;

establishes the order of import, export and transit of waste;

establishes the procedure for the certification of waste;

approves the list of hazardous wastes and wastes, the transboundary movement of which is subject to state regulation;

resolves the issues of providing land for hazardous waste disposal;

establishes the procedure for circulation of non-deposit containers and containers;

establishes the size of compensation payments for waste disposal; (Paragraph in the wording of the Law of the RUz of 30.08.2003 N 535-II)

exercises other powers in accordance with the law.

Article 6. Specially authorized state bodies in the field of waste management. Specially authorized state bodies in the field of waste management are:

State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection;

Ministry of Health of the Republic of Uzbekistan;

Ministry of housing and communal services of the Republic of Uzbekistan;

The State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan (State Inspectorate "Sanoatgeokontekhnazorat").

Article 7. Powers of the State Committee of the Republic of Uzbekistan on ecology and environmental protection in the field of waste management. State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection:

carries out state control over compliance with the requirements of the legislation on waste management;

coordinates the activities of specially authorized state bodies in the field of waste management;

maintains the state cadaster of burial and waste disposal sites;

conducts state environmental review of research and technological development and design estimates in the field of circulation with waste;

gives consent to the established standards for waste generation and waste disposal facilities;

approves the limits of waste disposal;

exercises other powers in accordance with the law.

Article 8. Powers of the Ministry of Health of the Republic of Uzbekistan in the field of waste management. Ministry of Health of the Republic of Uzbekistan:

implements the state sanitary and epidemiological supervision, compliance with the established sanitary norms and rules when handling waste;

determines the measures to protect the life and health of citizens from the harmful impact of waste;

issues conclusions of the state sanitary and hygienic examination on the objects of waste management;

establishes the sanitary and hygienic requirements for the goods (products) produced from waste products and issues a hygienic certificate for them;

carries out methodological support in determining the degree of danger of waste for life and health of citizens;

exercises other powers in accordance with the law.

Article 9. Powers of the Ministry of housing and communal services of the Republic of Uzbekistan; in the field of waste management. The Ministry of housing and communal services:

develops and submits for approval in the established manner to the Cabinet of Ministers of the Republic of Uzbekistan state programs for handling domestic waste;

monitors the state of collection, transportation, processing and disposal of domestic waste;

exercises other powers in accordance with the law.

Article 10. Powers of the State Inspectorate "Sanoatgeokontekhnazorat" in the field of waste management. The State Inspectorate "Sanoatgeokontekhnazorat" carries out:

state control and supervision over the accounting, storage and utilization of waste from mining and processing industries;

state control over radiation safety during storage, transport, utilization and disposal of radioactive waste;

other powers in accordance with the law.

Article 11. Powers of public authorities in the field of waste management. State authorities:

participate in the implementation of national programs for waste management;

approve local waste management programs;

create conditions for the development of entrepreneurial activities in the field of waste management;

solve the issues of location of waste treatment facilities in the corresponding territory;

control compliance with the legislation on waste management;

promote the establishment of enterprises for the collection and disposal of waste;

exercise other powers in accordance with the law.

Article 12. Powers of self-governing bodies of citizens in the sphere of circulation with waste. Self-governing bodies of citizens:

participate in the decision of questions of placing of objects of the reference with a waste in the relevant territory;

promote sanitary cleaning of settlements and timely payment of fees for the collection of domestic waste;

carry out public control over the sanitary and ecological condition of waste treatment facilities;

exercise other powers in accordance with the law.

Article 13. Rights and duties of citizens in the field of waste management. Citizens have the right to:

safe conditions for their life and health when handling waste;

obtaining in the established order full and reliable information on the availability in the places where they live hazardous waste, the safety of projected, under construction, as well as operating facilities for waste management;

participation in the discussion of draft decisions on the construction of objects of waste management;

compensation for harm caused to their life, health and property as a result of violation of the legislation on waste management;

participation in the implementation of public control over the sanitary and environmental condition of waste management facilities.

Citizens are obliged:

to observe the established sanitary norms and rules, other requirements when handling waste; to pay in due course a payment for the use of services of enterprises and organizations that collect household waste.

Citizens may have other rights and bear other responsibilities in the area of waste treatment in accordance with the law.

Article 14. Rights of legal entities in the field of waste management. Legal entities are entitled to:

receipt from specially authorized state bodies in the field of waste management in accordance with the established procedure information on sanitary standards and rules, environmental standards in the field of waste management;

storage of waste at waste disposal sites in accordance with sanitary norms and rules for the maintenance of territories;

the introduction of proposals specifically to authorized state bodies in the field of waste management, public authorities on the ground in connection with the placement, design, construction and operation of objects of waste management;

participation in the development of state programs for waste management;

compensation for harm caused by other persons as a result of waste management.

Legal entities may have other rights in the field of waste management in accordance with the law.

Article 15. Obligations of legal entities in the field of waste management. Legal entities shall:

observe the established sanitary norms and rules, ecological standards in the field of waste management;

keep records of waste, report on them in accordance with the procedure established by law;

to determine in accordance with the established procedure the degree of danger of waste for life and health of citizens, the environment;

develop draft standards for waste generation and disposal limits;
to ensure the collection, proper storage and prevention of destruction and damage of waste having a resource value and subject to disposal;
take measures to develop and implement technologies for their own waste management;
do not allow mixing of waste, except in cases stipulated by the production technology;
do not allow storage, processing, utilization and disposal of wastes in unauthorized places or objects;
to control the sanitary and ecological condition of own waste disposal facilities;
to carry out works on reclamation of disturbed land plots while handling waste;
implement a set of measures for the maximum utilization of waste, the implementation of or transfer them to other legal entities and individuals involved in collecting, storing and disposing of waste, as well as ensuring environmentally safe disposal of waste that is not subject to disposal;
in the established procedure, to notify authorities, specially authorized state bodies in the field of waste management, information on cases of unauthorized release of waste into the environment and measures taken;
to pay compensatory payments for waste disposal in accordance with the established procedure; (Paragraph as amended by the Law of the Republic of Uzbekistan of 30.08.2003, N 535-II) compensate for harm caused to life, health and property of citizens, the environment, legal entities as a result of handling waste.

Legal entities may also bear other duties in the field of waste management in accordance with the legislation.

Article 16. Rights and duties of individual entrepreneurs in the field of waste management. Individual entrepreneurs in the field of waste management have the rights and bear the responsibilities provided for in this Law for legal entities.

Article 17. Ensuring safety in the management of waste. The activities of legal entities in the field of waste management should ensure the safety of life and health of citizens and the environment.

The activities of legal entities may be limited, suspended or terminated in accordance with the established procedure in case of violation of the requirements of legislation on the management of waste, entailing damage to life and health of citizens or the environment, as well as in the case of the formation of hazardous wastes in the absence of technical or other opportunities to ensure safety for life and health of citizens and the environment.

In accordance with the Law of the Republic of Uzbekistan "On Waste", a number of normative legal acts in the field of the safe management of radioactive waste have been developed jointly by the ministries and departments concerned, which prevent the harmful impact of waste on the life and health of citizens, the environment, contribute to the reduction of waste generation (12.13 , 23, 24, 28, 29).

The Law of the Republic of Uzbekistan "On Environmental Control". The purpose of this Law is to regulate relations in the field of environmental control.

Article 6. The main directions of state policy in the field of environmental control. The main directions of state policy in the field of environmental control are:

formation and development of the environmental control system;
creation of a favorable environment for life and health of citizens;
improvement of the organizational and legal mechanisms for interaction between specially authorized state bodies in the field of environmental control (hereinafter - specially authorized state bodies), state authorities in the regions, state and economic management bodies, economic entities with citizens' self-government bodies, non-state non-profit organizations and citizens in providing security environment and rational use of natural resources;

development of international cooperation in the field of environmental control.

Article 7. Objects of environmental control. The objects of environmental control are:
the earth, its bowels, waters, flora and fauna, atmospheric air;
natural and man-made sources of environmental impact;
activities, actions or omissions that could lead to environmental pollution and the irrational use of natural resources, and pose a threat to the life and health of citizens.

Article 8. Subjects of environmental control. The subjects of environmental control are:
The Cabinet of Ministers of the Republic of Uzbekistan;
specially authorized state bodies;
public authorities in the field;
bodies of state and economic management;
business entities;
self-governing bodies of citizens;
non-governmental non-profit organizations;
citizens.

Article 10. Powers of the Cabinet of Ministers of the Republic of Uzbekistan in the field of environmental control. Cabinet of Ministers of the Republic of Uzbekistan:
ensures the implementation of a unified state policy in the field of environmental control;
approves state environmental programs and controls for their implementation;
determines the procedure for the implementation of state environmental control, as well as state environmental monitoring;
approves model provisions on the implementation of departmental, industrial, public environmental control, on environmental services, as well as on the public inspector of environmental control;
carries out international cooperation in the field of environmental control.
The Cabinet of Ministers of the Republic of Uzbekistan may exercise other powers in accordance with the law.

Article 11. Specially authorized state bodies in the field of environmental control, their powers. Specially authorized state bodies are the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection, the Ministry of Health of the Republic of Uzbekistan, the State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan, the Ministry of Internal Affairs of the Republic of Uzbekistan, the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan, the State Committee of the Republic of Uzbekistan for Land Resources, Geodesy, Cartography and State Cadaster.

The State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection coordinates the activities of other specially authorized state bodies in the field of state environmental control.

Specially authorized state bodies:
participate in the implementation of a unified state policy in the field of environmental control;
carry out state environmental control;
participate in the development of state and other environmental programs, including the program of state environmental monitoring, and ensure their implementation;
in the prescribed manner participate in the development of regulations in the field of environmental control, and also develop and approve regulatory and legal acts in the field of environmental control;

interact with other subjects of environmental control and the media on issues of state environmental control;

involve departmental, production environmental services for participation in the state environmental control;

provide methodological assistance and assistance in the implementation of departmental, industrial and public environmental control.

Specially authorized state bodies carry out state environmental control in the following areas:

The State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection - in the field of environmental protection and rational use of natural resources, with the exception of the control areas provided for in paragraphs three to seven of this part;

Ministry of Health of the Republic of Uzbekistan - for pollution of the environment with radioactive, chemical, biological substances, drinking water supply, harmful influence of physical factors on the atmospheric air;

The State Inspectorate "Sanoatgeokontekhnazorat" - for observance of industrial and radiation safety, use and protection of subsurface resources during their geological study, extraction of minerals, raw materials, as well as for geological and mine surveying support of mining operations;

Ministry of Internal Affairs of the Republic of Uzbekistan - for pollution of atmospheric air during the operation of motor vehicles;

Ministry of Agriculture and Water Resources of the Republic of Uzbekistan - for water use and water consumption from artificial water bodies, implementation of state quarantine regulations for the protection of flora and fauna;

The State Committee of the Republic of Uzbekistan for Land Resources, Geodesy, Cartography and the State Cadaster - for the rational use and protection of lands, with the exception of land contamination with industrial and other wastes, radioactive, chemical, biological substances and wastewater.

Specially authorized state bodies may exercise other powers in accordance with the law.

Article 12. Powers of state authorities in the field in the field of environmental control. State authorities in the field:

participate in the implementation of state and other environmental programs;

territorial environmental programs and provide their implementation;

carry out state environmental control in the relevant territory;

interact with other subjects of environmental control and the media on issues of state environmental control.

The bodies of state power on the ground may exercise other powers in accordance with the law.

Article 13. Powers of state and economic management bodies in the field of environmental control. Bodies of state and economic management within their powers:

participate in the implementation of a unified state policy in the field of environmental control;

carry out departmental environmental control;

participate in the development and implementation of state and other environmental programs, including the program of state environmental monitoring;

in the prescribed manner participate in the development of regulations in the field of environmental control, and also develop and approve regulatory and legal acts in the field of environmental control;

Ensure the operation of an environmental monitoring system and natural resources in subordinate organizations of government bodies, as well as in organizations that are part of the bodies of economic management;

interact with other subjects of environmental control and the media on issues of departmental environmental control;

provide methodological assistance and assistance in carrying out industrial environmental control in subordinate organizations of government bodies, as well as in organizations that are members of economic management bodies.

The bodies of state and economic management may exercise other powers in accordance with the legislation.

Article 14. Rights and obligations of economic entities in the field of environmental control.

Economic entities within their competence have the right:

to carry out industrial ecological control;

participate in the development and implementation of state and other environmental programs, including the program of state environmental monitoring;

participate in the development of regulatory and legal acts in the field of environmental control;

contact the relevant government bodies and receive information on the state of the environment and the rational use of natural resources;

interact with other subjects of environmental control and the media on issues of industrial environmental control.

Business entities are required to:

comply with the requirements of legislation on environmental control;

to develop and implement measures for the protection of the environment and rational use of natural resources;

to monitor the state of the environment and situations that can lead to environmental pollution and the irrational use of natural resources, create a threat to life and health of citizens;

to develop and comply with environmental regulations that regulate the maximum permissible impact on the environment;

to eliminate the fact of violation of legislation in the field of environmental protection and rational use of natural resources, revealed in the course of environmental monitoring;

to assist other subjects of environmental control in the implementation of environmental control.

Business entities may have other rights and bear other duties in accordance with the law.

Article 15. Powers of self-governing bodies of citizens in the field of environmental control.

Self-governing bodies of citizens:

participate in the preparation and adoption of decisions on environmental protection, rational use of natural resources, and in the development and implementation of state and other environmental programs;

carry out public environmental control in the relevant territory;

monitor the state of the environment and situations that can lead to environmental pollution and the irrational use of natural resources, create a threat to life and health of citizens;

participate in the development of regulatory and legal acts in the field of environmental control;

make specially authorized state bodies, state authorities on the ground, state and economic management bodies, economic entities proposals for the participation of their representative as an observer in the implementation of state, departmental and industrial environmental control;

inform specially authorized state bodies, state authorities on the ground, state and economic management bodies, economic entities about the fact of violation of the legislation in the field of environmental protection and rational use of natural resources, revealed by them;

make proposals to the relevant state bodies for taking measures on the revealed fact of violation of the requirements of the legislation in the field of environmental protection and rational use of natural resources;

apply to the relevant state bodies and receive information on the state of the environment, rational use of natural resources, measures taken to eliminate the revealed fact of violation of legislation in this field;

study public opinion on environmental issues and rational use of natural resources, public environmental expertise;

hear within the limits of their competence the reports of heads of enterprises, institutions and organizations located in the respective territory on issues of environmental protection, sanitation, landscaping of the territory and, by their results, take decisions;

promote environmental protection, interact with other subjects of environmental control and the media on issues of public environmental control, including in the formation of a system of public inspectors of environmental control;

assist in the work on improving the ecological culture of the population, the development of environmental education and upbringing.

Citizens' self-government bodies may exercise other powers in accordance with the law.

participate in the preparation of an appeal by the self-governing body of citizens and (or) a non-governmental non-profit organization to the relevant government agencies to obtain information on the state of the environment, rational use of natural resources, and measures taken to eliminate the revealed violation of legislation in this area;

receive from legal entities and individuals the necessary documents and information for the implementation of public environmental control;

participate in carrying out of public opinion research on environmental protection and rational use of natural resources, public environmental expertise;

participate in the hearing of information and reports of the heads of the relevant government authorities, enterprises, institutions and organizations on environmental protection, sanitation, improvement and landscaping of the territory;

participate in the work on improving the ecological culture of the population, the development of environmental education and upbringing.

Article 19. The procedure for the implementation of environmental control. State environmental control is carried out by specially authorized state bodies, state authorities on the ground.

The procedure for implementing state environmental control is determined by the Cabinet of Ministers of the Republic of Uzbekistan.

Departmental environmental control is carried out by state and economic management in subordinate organizations of government bodies, as well as in organizations that are members of economic management bodies.

Industrial environmental control is carried out by economic entities in their economic and other activities.

The bodies of state and economic management, as well as economic entities, can create an environmental service in accordance with the Model Provision on the environmental service, approved by the Cabinet of Ministers of the Republic of Uzbekistan.

Public environmental control is carried out by self-governing bodies of citizens, non-governmental non-profit organizations and citizens.

The procedure for implementing departmental, industrial and public environmental control is determined in accordance with the model regulations on the procedure for the implementation of departmental, industrial and public environmental control approved by the Cabinet of Ministers of the Republic of Uzbekistan.

Article 23. Prohibition of interference in the implementation of environmental control. Interference in the implementation of environmental control, impact in any form on officials and authorized persons, public inspectors exercising environmental control, impeding their activities is prohibited.

Together with the ministries and departments concerned, a number of normative legal acts have been developed in the field of environmental control, which form and develop an environmental control system, improve the organizational and legal mechanisms for interaction of specially authorized state bodies in the field of environmental control and create an enabling environment for life and health of citizens.

The Law of the Republic of Uzbekistan "On Sanitary and Epidemiological Welfare of the Population". The purpose of this Law is to regulate relations in the field of sanitary and epidemiological welfare of the population and the health of the population, in which there is no harmful effect of environmental factors on humans and provided favorable conditions for his life.

Article 4. The main directions of state policy in the field of sanitary and epidemiological welfare of the population. The main directions of state policy in the field of sanitary and epidemiological welfare of the population are:

- development and implementation of sanitary-hygienic and anti-epidemic measures;
- state sanitary and epidemiological regulation;
- increasing the level of sanitary culture of the population;
- implementation of state sanitary supervision;
- international cooperation.

Article 5. Sanitary rules, norms and hygienic standards. Sanitary rules, norms and hygienic standards - documents that establish requirements in the field of sanitary and epidemiological welfare of the population, which are mandatory for compliance with state and other bodies, legal and individuals.

Sanitary rules, norms and hygienic standards are approved by the Chief State Sanitary Doctor of the Republic of Uzbekistan and come into force from the day of their official publication, if the acts themselves do not specify a later date.

Article 6. Powers of the Cabinet of Ministers of the Republic of Uzbekistan in the field of sanitary and epidemiological welfare of the population. Cabinet of Ministers of the Republic of Uzbekistan:

- ensures the implementation of a unified state policy in the field of sanitary and epidemiological welfare of the population;
- approves and implements state programs in the field of sanitary and epidemiological welfare of the population;
- coordinates the activities of state and economic management bodies in the field of sanitary and epidemiological welfare of the population.

The Cabinet of Ministers of the Republic of Uzbekistan may exercise other powers in accordance with the law.

Article 7. Powers of public authorities in the field of sanitary and epidemiological welfare of the population. Government departments in places:

- participate in the implementation of state programs related to sanitary and epidemiological welfare of the population within their authority;
- approve and implement territorial programs in the field of sanitary and epidemiological welfare of the population;
- coordinate the activities of the relevant territorial divisions of state and economic management in the field of sanitary and epidemiological welfare of the population;
- implement measures to improve the sanitary and epidemiological situation and maintaining the cleanliness of the territories, raising the level of sanitary culture of the population.

The bodies of state power on the ground may exercise other powers in accordance with the law.

Article 8. Bodies exercising state sanitary supervision. State sanitary supervision is carried out:

The Republican Center for State Sanitary and Epidemiological Supervision of the Ministry of Health of the Republic of Uzbekistan, the Centers for State Sanitary and Epidemiological Surveillance of the Republic of Karakalpakstan, regions and the city of Tashkent, districts and cities;

the relevant structural units of the Ministry of Defense, the Ministry of Internal Affairs, the National Security Service of the Republic of Uzbekistan, and the Uzbekistan Temir Yollari joint-stock company.

State sanitary supervision may be carried out by the relevant structural units of other ministries and departments designated by the Cabinet of Ministers of the Republic of Uzbekistan.

The Republican Center for State Sanitary and Epidemiological Supervision of the Ministry of Health of the Republic of Uzbekistan, the centers for state sanitary and epidemiological surveillance of the Republic of Karakalpakstan, the provinces and the city of Tashkent provide methodological guidance and coordination of the activities of the structural units specified in the third paragraph of part one and part two of this article.

Article 9. Officials exercising state sanitary supervision. The organization and implementation of state sanitary supervision are entrusted to:

Chief State Sanitary Doctor of the Republic of Uzbekistan, chief state sanitary doctors of the Republic of Karakalpakstan, regions, the city of Tashkent, districts, cities, and their deputies;

heads of the relevant structural units of the Ministry of Defense, the Ministry of Internal Affairs, the National Security Service of the Republic of Uzbekistan, the Uzbekistan Temir Yollari Joint Stock Company;

Other officials in accordance with the law.

Article 10. Powers of the Chief State Sanitary Doctor of the Republic of Uzbekistan. Chief State Sanitary Doctor of the Republic of Uzbekistan:

directs the sanitary and epidemiological service, defines the main tasks and priority directions of state sanitary supervision;

approves sanitary rules, norms and hygienic standards;

approves normative and technical documentation for determining the influence of environmental factors on the human body;

approves the National calendar of preventive vaccinations and the procedure for carrying out preventive vaccinations for epidemiological indications;

Identifies areas that are hazardous to human life and health, which prohibit the residence of people and the occupation of economic activities;

coordinates measures for the sanitary protection of territories from drifts and the spread of infectious and parasitic diseases;

at the threat of the emergence and spread of infectious and parasitic diseases that pose a danger to others, makes regulations on the conduct of appropriate sanitary and hygienic and anti-epidemic measures;

issues permits for import into the Republic of Uzbekistan and production of new food additives, specially introduced biologically active substances, chemicals, biological agents and materials, polymeric and plastic masses, perfumery and cosmetic products on the basis of their toxicological and hygienic evaluation;

exercises control over the targeted use of the republican and local epidemic funds and material and technical resources allocated for sanitary and hygienic and anti-epidemic measures;

examines complaints against decisions of the institutions of the sanitary and epidemiological service, as well as actions (inaction) of their officials;

appoints the chief state sanitary doctors of the Republic of Karakalpakstan, regions and the city of Tashkent.

The Chief State Sanitary Doctor of the Republic of Uzbekistan may exercise other powers in accordance with the legislation.

The Chief State Sanitary Doctor of the Republic of Uzbekistan is appointed by the President of the Republic of Uzbekistan.

Article 11. Powers of the main state sanitary doctors of the Republic of Karakalpakstan, regions and the city of Tashkent, districts and cities.

The main state sanitary doctors of the Republic of Karakalpakstan, regions and the cities of Tashkent, districts and cities:

supervise the institutions of the sanitary and epidemiological service subordinate to them;

issue opinions on construction and reconstruction projects;

determine the areas that are dangerous for life and health of people, on which residence of the population and occupation by economic activity is prohibited;

carry out measures for the sanitary protection of the respective territory from the introduction and spread of infectious and parasitic diseases;

carry out sanitary-hygienic and anti-epidemic measures when eliminating emergencies and outbreaks of infectious and parasitic diseases, including in conjunction with interested ministries and departments;

issue orders to eliminate the violations of legislation that are mandatory for execution by state and other bodies, legal entities and individuals.

The main state sanitary doctors of the Republic of Karakalpakstan, regions and the city of Tashkent, in agreement with the Chief State Sanitary Doctor of the Republic of Uzbekistan, appoint the chief state sanitary doctors of the districts and cities.

The main state sanitary doctors of the Republic of Karakalpakstan, regions and the city of Tashkent, districts and cities may exercise other powers in accordance with the law.

Article 12. Rights of officials exercising state sanitary supervision. Officials exercising state sanitary supervision shall, within the limits of their powers, be given the right:

a) require state and other bodies, legal entities and individuals to eliminate the violations of sanitary rules, norms and hygienic standards, and issue instructions for their elimination;

b) to supervise the observance of sanitary rules, norms and hygienic standards in construction and reconstruction projects;

c) issue in due course to state and other bodies, legal entities and individuals the following conclusions:

for planning and development projects for settlements and long-term plans for the location of facilities, as well as for construction projects, reconstruction of enterprises, buildings and structures;

on the allocation of land for construction, the determination of places of economic and household water use and conditions for the discharge of sewage after their cleaning, utilization and burial of toxic, chemical, radioactive and other substances;

on the conformity of buildings, living quarters, medical-prophylactic, educational, cultural, sports and other institutions, production and sanitary facilities, as well as equipment, vehicles, sanitary rules, norms and hygienic standards;

on the submitted proposals on the training load and the approximate mode of study for students in educational institutions;

d) to visit objects of legal entities in accordance with the procedure established by law and individual entrepreneurs for the purpose of supervising the implementation of sanitary rules, norms and hygienic standards;

e) require employers to:

removal from work of persons who do not systematically comply with sanitary rules, norms and hygienic standards, anti-epidemic regime, taking into account the specifics of production and the nature of the work performed and the danger of the spread of infectious and parasitic diseases;

conducting sanitary and hygienic and anti-epidemic measures;

f) to make excavation of food products, articles, items and materials for sanitary and hygienic examination, laboratory research, to conduct the necessary laboratory and instrumental research directly at the sites;

g) in accordance with the established procedure, to involve in the implementation of state sanitary supervision specialists of ministries, state committees and departments, as well as representatives of the public.

The chief state sanitary doctor of the Republic of Uzbekistan, the chief state sanitary doctors of the Republic of Karakalpakstan, regions, the city of Tashkent, districts, cities, their deputies, heads of structural subdivisions indicated in the third paragraph of part one and part two of article 8 of this Law, epidemiological welfare of the population within the limits of their powers, the following right is granted:

reject pre-design and project documentation for the allocation of land, construction, reconstruction, expansion of residential, public, industrial and other objects that do not meet the requirements of sanitary rules, norms and hygienic standards;

to suspend the operation of existing facilities, living quarters, production facilities, cultural and domestic buildings, the activities of catering and trade enterprises, educational, medical and preventive, sanatorium and other institutions, prohibit the use of equipment, tools, the use of vehicles until the violations of sanitary rules, norms and hygienic standards;

to suspend construction, reconstruction of settlements, buildings and structures and the performance of certain types of work at these facilities in cases of violation of sanitary rules, norms and hygienic standards;

prohibit the production, use and sale of new types of raw materials, chemicals, process equipment, processes and tools, food raw materials and food products, industrial products, building materials, sources of ionizing radiation, biological agents, containers, plastic, polymeric and other materials in contact with food raw materials, food products and medicinal products, products from them and other consumer goods, not registered in the Ministry of Health of the Republic of Uzbekistan, or if they are found to be hazardous to human life and health;

prohibit the use of chemicals, agents and methods used in the practice of domestic and drinking water supply, in the production and processing of food products, stimulants and growth regulators of agricultural plants and animals, pesticides, perfumery and cosmetics in the event of a harmful effect on human health, before the developer provides scientifically valid data on the safety of these substances, and methods;

prohibit the use of water that is found unfit for consumption for domestic and drinking water supply;

make proposals to employers on the temporary suspension from work of persons who are the source of infectious and parasitic diseases, as well as those who have not undergone medical examinations in a timely manner;

limit, suspend and prohibit the activities of business entities for a period of not more than ten working days in connection with the prevention of emergencies, epidemics and other real threats to life and public health.

Officials exercising state sanitary supervision may have other rights in accordance with the law.

Article 13. Duties of officials exercising state sanitary supervision. Officials performing state sanitary supervision shall:

in accordance with the established procedure, carry out supervision of ensuring the sanitary and epidemiological welfare of the population by state and other bodies, legal entities and individuals;

prevent, identify and eliminate violations of legislation on the sanitary and epidemiological welfare of the population;
timely inform the population of identified hazards;
establish the causes and conditions for the emergence, spread of infectious and mass non-communicable diseases;
to consider appeals of individuals and legal entities on the sanitary and epidemiological welfare of the population and take appropriate measures;
inform the legal and physical persons about the sanitary and epidemiological situation and the measures taken to ensure the sanitary and epidemiological welfare of the population.

Officials exercising state sanitary supervision may bear other duties in accordance with the legislation.

Article 14. Participation of citizens' self-government bodies, non-governmental non-profit organizations in ensuring sanitary and epidemiological welfare of the population. Self-governing bodies of citizens:

participate in the implementation of state, territorial and other programs in the field of sanitary and epidemiological welfare of the population; assist in the implementation of sanitary and hygienic and anti-epidemic measures;

carry out public control in the relevant territory for the implementation of measures in the field of sanitary and epidemiological welfare of the population, complying with the rules for building and maintaining yard and adjacent areas;

organize on a voluntary basis the participation of the inhabitants of the corresponding territory in the work on landscaping and gardening.

Self-governing bodies of citizens can participate in other events in accordance with the law.

Non-governmental non-profit organizations can assist and the necessary assistance to state and other bodies involved in ensuring the sanitary and epidemiological welfare of the population.

Article 22. Requirements for handling radioactive substances and other sources of ionizing radiation. Legal entities and individuals are obliged to comply with sanitary rules, norms and hygienic standards in the extraction, production, processing, use, storage, servicing, transportation, disposal of radioactive substances and other sources of ionizing radiation.

Jointly interested ministries and departments developed a number of normative legal subordinate acts on state sanitary and epidemiological regulation in the field of radiation safety and the implementation of state sanitary supervision in the implementation of radiation hazardous work, as well as the safe management of radioactive waste (16, 17, 21, 22).

Section F. Other general provisions concerning safety

Licensing in the area of turnover of ionizing radiation sources is carried out in accordance with the laws of the Republic of Uzbekistan "On licensing of certain types of activities" of 25.05.2000. No. 71-II and "On Radiation Safety" dated 31.08.2000. No. 120-II, as well as the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On Approval of the Regulation on Licensing Activities in the Sphere of Turnover of Ionizing Radiation Sources" dated 06.03.2004. No. 111.

Activities in the area of turnover of sources of ionizing radiation include:

research and development in the field of circulation with of ionizing radiation sources, design, construction and maintenance of ionizing radiation sources, design and manufacture of technological equipment, radiation protection equipment for them;

extraction, production, processing, use, storage, maintenance, transportation, disposal of of ionizing radiation sources.

Decisions on the issue of licenses, suspension or termination of the license, as well as its cancellation and re-registration are made by the Cabinet of Ministers Commission on Licensing Activities in the Sphere of Turnover of ionizing radiation sources (hereinafter - the Commission).

The functions of the working body of the commission are performed by the State Inspectorate "Sanoatgeokontekhnazorat" (hereinafter - the working body).

The working body accepts applications for the issuance (renewal) of licenses with the relevant documents, prepares an expert opinion on them, prepares draft decisions of the commission on extradition or on refusal of extradition license, termination or cancellation of the license and makes them for consideration by the commission, carries out registration and re-registration of licenses, concludes license agreements, maintains license registers, exercises control the licensees' compliance with license requirements and conditions, suspends and renews the validity of licenses.

Applicants of a license can only be legal entities.

The license for the right to carry out activities in the field of circulation of sources of ionizing radiation is issued for a period of 5 years.

Licensing requirements and conditions. Licensing requirements and conditions for the implementation of activities in the field of turnover of sources of ionizing radiation are:

obligatory observance by the licensee of the legislation on radiation safety, as well as the rules of safety engineering, labor protection, environmental requirements, sanitary norms, rules and hygienic standards of radiation safety, state standards;

presence of a license for the execution of the licensed type of activity of buildings (production premises, warehouses, etc.) owned by the owner on the basis of ownership or other proprietary right, corresponding to the established requirements;

availability of the necessary material for the implementation of the licensed type of material and technical base, equipment, other technical means;

availability of radiation safety service;

implementation of industrial control over the radiation situation at workplaces, in premises, in production areas, in sanitary protection zones and observation zones, as well as for the emission, discharge and burial places of sources of ionizing radiation;

ensuring the disposal of sources of ionizing radiation that do not find use;

carrying out work on the justification and assessment of radiation safety of products, materials and substances, technological processes that are sources of ionizing radiation;

availability of necessary conditions for ensuring radiation safety during a radiation accident;

availability of corresponding higher or secondary special educational of the personnel directly carrying out work related to licensed activity;

absence of workers registered for chronic mental illness, drug addiction, substance abuse, alcoholism, as well as workers who have an outstanding or not convicted criminal record for an intentional crime in the sphere of circulation of sources of ionizing radiation;

training, retraining and attestation of production managers, employees (personnel), specialists of production control services;

regular medical examination of employees directly performing work related to the licensed type of activity;

monitoring and recording of individual exposure doses to employees (personnel);

regular informing of workers (personnel) about the levels of ionizing radiation at their workplaces and the number of individual doses received by them;

availability of at least three specialists at the legal entity who have at least 3 years of experience in the licensed type of activity.

Monitoring compliance with licensing requirements and conditions. Control over exercising of licensee's compliance requirements by the working body.

When exercising control over compliance with licensing requirements and conditions, the working body, within its competence, has the right:

to conduct in accordance with the established procedure scheduled inspections of compliance with license requirements and conditions;

conduct in accordance with the established procedure unscheduled inspections of compliance with license requirements and conditions in the presence of facts testifying about their violations of the licensee;

request and receive from the licensee the necessary information on issues arising in the course of inspections of compliance with licensing requirements and conditions;

to compile on the basis of the results of inspections acts (certificates) specifying specific violations by the licensee of license requirements and conditions;

to make decisions that oblige the licensee to eliminate the revealed violations, establish the terms for eliminating such violations;

to submit proposals on termination of the action, or to revoke the license for consideration by the commission.

When checking compliance with licensing requirements and conditions, the inspecting workers of the working body draw up an act in two copies, one of which is transferred to the licensee, the second copy remains in the working body.

Suspension, termination, cancellation of license. Suspension of the validity of the license is made by the working body in cases and in the manner provided for in Article 22 of the Law of the Republic of Uzbekistan "On licensing of certain types of activities".

The decision of the working body on suspension of the license may be appealed to the court. In case of recognition by the court of the groundlessness of the suspension of the validity of a license, the working body bears responsibility to the licensee in the amount of the incurred damage.

The termination of the license is made by decision of the commission in cases and the procedure provided for by Article 23 of the Law of the Republic of Uzbekistan "On licensing of certain types of activities".

The commission's decision to terminate the license may be appealed to the court. In case of recognition by the court of the groundlessness of the termination of the license, the commission bears responsibility to the licensee in the amount of the damage suffered by it.

The license can be revoked by decision of the commission in cases and in the manner provided for in Article 24 of the Law of the Republic of Uzbekistan "On Licensing of Certain Types of Activities".

Section G. Safety of spent fuel management.

Research reactor WWR-SM INP AS RUz. The Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan has the license of the Cabinet of Ministers of the Republic of Uzbekistan for the right to carry out activities in the field of the using of ionizing radiation sources, including research and development work in the field of handling of ionizing radiation sources, use, storage, neutralization, utilization and burial.

The main objective of the reactor is to provide research units with a thermal neutron flux for conducting research in nuclear physics, radiation physics of solid matter, materials science, activation analysis, radiochemistry, radioisotope production, development of new radioisotope products, testing of structural materials, mineral raw materials and various products.

The reactor operates on thermal neutrons. Distilled water is used as a retarder, reflector, coolant and protection.

The reactor is loaded with uranium enriched to 19.7% with the U235 isotope. The workload for the U235 isotope at the beginning of the company is ~ 6.6 kg. The reactor uses nuclear fuel in the form of fuel assemblies (TVS) of the IRT-4M type.

Burial of spent fuel. Disposal of spent fuel is not implemented. The spent fuel of the WWR-SM Research Reactor is stored in special storage facilities for spent fuel located on the territory of the reactor itself.

Research reactor IIN-3M of JSC "Foton". In 2015, within the framework of the program for exporting highly enriched fuel to the Russian Federation financed by the US Department of

Energy, under the auspices of IAEA inspectors and experts, all highly enriched fuel was exported to the Russian Federation.

Section H. Safety of radioactive waste management

SUE "RBSRW" -State unitary enterprise "Republican Burial Site for Radioactive Waste" of the Academy of Sciences of the Republic of Uzbekistan. State Unitary Enterprise "RBSRW" conducts works on reception, from the enterprises, organizations and establishments of the Republic of Uzbekistan of radioactive waste, their transportation and burial. There is a license of the Cabinet of Ministers of the Republic of Uzbekistan for the right to carry out activities for the storage, transport, disposal of radioactive waste.

There are special transport means for the transport of radioactive waste.

The state of the radiation situation at the SUE "RBSRW" facility. All the requirements of the legislation, rules and norms of radiation safety, as well as the rules of engineering and fire safety, labor protection, environmental requirements, state standards, are also complied with in SUE "RBSRW", there are also sanitary and epidemiological certificates for the object and vehicles intended for the licensed type of activity. Systematic monitoring of the radiation situation in the workplace as well as radiation monitoring on the territory of the facility, in the sanitary protection zone is carried out. Individual dosimetric control is performed by the IAPC method and the thermoluminescent method (TLD).

Special exercises are held on the site on civil protection of personnel during a radiation accident, as well as an annual medical examination of employees directly engaged in work with sources of ionizing radiation. Every year, a knowledge test is conducted on radiation safety technology, which results in the issuance of an order to admit employees who have completed a medical commission to work with sources of ionizing radiation, there is also a radiation safety instruction manual for the prevention and elimination of accidents (fire) and a radiation safety instruction for the driver and responsible person for the transport of radioactive waste and sources of ionizing radiation on special vehicles. The disposal of uranium wastes in SUE "RBSRW" is not carried out.

Safety system of the facility. There is a material and technical base, equipment and other technical means for performing the licensed type of activity. The staff is provided with overalls, individual dosimeters. There is a dosimetric, radiometric equipment, which is annually verified in the Agency "Uzstandard". There are emergency kits.

The system has been developed for emergency safety. A plan of measures to protect personnel in the event of an accident, a safety declaration was developed. There is a plan of the main measures for Civil Protection in SUE "RBSRW". Annually complex exercises are conducted at the site with practical elaboration of the issues: Organization and work on the prevention and elimination of radioactive contamination at the site, the elimination of the consequences of the earthquake with the development of pollution issues, training on notification of employees of the facility and the population living in the immediate vicinity of the facility about the occurrence of an emergency situation at the facility and their actions.

Monthly, according to the schedule of classes, the staff of the facility conduct classes on their actions in the event of contamination of the terrain, earthquake, fire, evacuation. Before admission to work with radiation sources and radioactive waste, personnel are trained, instructed and tested knowledge of safety regulations. Once a half-year, an instruction is given on radiation safety technology. Every year, the knowledge of the radiation safety technology of the entire facility personnel is tested. According to the plan, emergency drills are conducted.

Individual dosimetric control covers all employees working with sources of ionizing radiation. Quarterly individual dosimetric control of external exposure is carried out:

in the radiological laboratory of the Republican Clinical Hospital of the Ministry of Health of the Republic of Uzbekistan with dosimeters of TLD;

in the radiation safety department of INP AS RUz cassettes IFKU-1.

Individual dosimetric control data are entered in the radiation dose register and in dosimetric charts of dose counts for each employee.

Radiation monitoring. Quarterly, the radiological laboratory of the Rep HDSES of MOH RUz conducts soil and vegetation studies selected from 21 control points for the content of radioactivity. Quarterly samples of groundwater are taken from observation wells for determination on radioactivity in the RSD of INP AS RUz. Monthly Uzhydromet service carried out radiometric control of radioactive contamination of atmospheric air. Analysis of soil, vegetation, air samples and groundwater from observation wells showed that contamination with radionuclides is absent. According to the work plan, dosimetric control is carried out in the zone of possible pollution, clean and sanitary protection zones, in the buildings of the facility, special vehicles, special equipment, tools and overalls of employees.

During the work, there were no excess of personnel dose limits and radiation incidents.

Radioactive waste is buried in radioactive waste storage. Reception of radioactive waste and sources of ionizing radiation from organizations is carried out with the permission of the State Inspectorate "Sanoatgeokontekhnazorat", if there is a conclusion of the relevant territorial body of the SES on the sanitary-hygienic condition of the facilities of organizations associated with the turnover of sources of ionizing radiation. Accounting for radioactive waste and sources of ionizing radiation is conducted in the income-expenditure register of the established form. Radioactive waste is received in a packed form (boxes, barrels, plastic, polyethylene, kraft bags), preventing the possibility of their spraying and spillage. Tare dimensions are not more than 400x400x600mm.

Spent ionizing radiation sources are adopted in special transport protective containers.

The facility is built on the basis of a typical project of enterprises of this kind, taking into account the geological, hydrological, seismic and environmental conditions of the area on the site, folded by water-resistant clayey rocks with low permeability. The site within which the facility is located belongs to the foothill zone of the Kuramin range, covering part of the Aidarlysayi dry land. Underground waters within Aidarlysayi have no connection with the underground waters of the Chirchik deposit. The contamination in the nearest water bodies is excluded.

Storages of radioactive waste are reinforced concrete monolithic underground rectangular structures. To protect the soil from harmful substances entering it, the storehouses from the inside are insulated with cement mortar, followed by ferrugination, the exterior is waterproofed with hot bitumen. Radioactive waste is disposed of in packages that prevent the ingress of radioactive substances into the environment.

Quarterly analysis of groundwater from observation wells shows that there is no contamination with radionuclides.

The territory of the facility is located outside the zone of activity of mudflows.

Operation and maintenance of the facility is carried out by the staff of the facility. Inspection of the facility is carried out by the State Inspectorate "Sanoatgeokontekhnazorat", RebHDSES of MOF RUz, IAEA.

Engineering and technical support is being provided by the Academy of Sciences of the Republic of Uzbekistan in organizing the physical protection of the facility, acquiring a new special transport. After the installation is closed, the radiation monitoring will continue with the sanitary and epidemiological supervision of the Ministry of Health of the Republic of Uzbekistan.

When the facility operates, the criteria and standards of radiation safety adopted in the Republic of Uzbekistan and the radiation safety standards of the IAEA are used.

For the classification of radioactive waste, IAEA recommendations, Classification of radioactive waste are used. Safety Guide. GSG-1. Vienna, 2014

Section I. Transboundary movement

Transboundary problems pose a threat to the transfer of radioactive waste from the Kyrgyz Republic. The territories of the republics of Uzbekistan, Kyrgyzstan and Tajikistan for more than 40

years were the main mineral resource base of uranium for the defense and energy industries of the former Soviet Union.

As a result of intensive mining operations, a large number of dumps of ore and wastes of hydrometallurgical industries. Many mining industries are located in foothill areas with progressive development of landslide processes and are destroyed, which leads to radioactive and toxic contamination of soils, surface and groundwater. One of the most dangerous in the ecological plan and the threat of transboundary transport is the uranium deposit of Mailuu-Suu (Kyrgyzstan).

The problem is of an international nature, both in the broad sense - in terms of non-proliferation of materials for the creation of nuclear weapons, and in the narrow sense of the word, bearing in mind that the processes of natural transfer of radionuclides do not recognize state borders.

To minimize the possible risks for the population and the environment, regular monitoring of the Pakhtaabad district of the Andijan region by the forces and means of the Central State Sanitary and Epidemiological Service of the Andijan region of the Republic of Uzbekistan is carried out.

The most dangerous for the territory of the Republic of Uzbekistan are the tailings dumps No. 3, 7, 8, which are the closest to the border. Therefore, in the framework of cooperation of specialists of the Republic of Uzbekistan and the Republic of Kyrgyzstan on the minimization of the risk from radioactive waste in the town of Mailuu-Suu: create a working group from specialists dealing with issues of radiation safety and related specialties; to equip radiological laboratories of the Andijan region of the Republic of Uzbekistan and the Jalalabad region of the Kyrgyz Republic with radiometric, dosimetric and spectrometric equipment.

Among the protective measures of a constructive nature, it is necessary to build barrier dams and tanks in the territory of the Republic of Uzbekistan (Pakhtaabad district, Andijan region), as a result of possible removal of radioactive material from tailing dumps 3, 7 and 8, Mailuu-Suu on the territory of Kyrgyzstan and the plain developed and densely populated territory of the Republic of Uzbekistan. Radioactive material cannot be excluded in the irrigation canals.

The uranium, radium, thorium and the products of their decomposition carried by groundwater are concentrated in stagnant, waterlogged areas of the central part of the Ferghana Valley, forming contamination areas along with concomitant strontium, selenium, vanadium, molybdenum, lead and other chemical elements. Thus, there is accumulation of radionuclides and their inclusion in biological chains.

The solution of this problem should involve the forces and resources of all interested ministries and departments with the joint training of personnel on radioecological monitoring and radiation safety.

It is now necessary to continue the following work:

a comprehensive study of the radioecological state of soils, waters, atmospheric air and vegetation in contaminated areas, ensuring seasonal monitoring. The materials obtained will ensure the preparation of a well-founded mine reclamation project taking into account the degree of their impact on the natural environment and the population;

constantly update the data of the passports of the objects when performing reclamation and other works on them;

to carry out calculations of radiological risk for professionals and the general public;

gamma-survey of the surface of tailing dumps 3, 7, 8 with one-stage sampling for the content of natural radioactive elements in the investigated areas;

hydrochemical testing of the Mailuu-Suu River, its tributaries and springs at tailing dumps 3,7,8 with determination of uranium, radium and a number of toxic substances and measurement of radon content in water;

lithotomical testing of soils at designated tailing dumps and, if possible, radioactive sludges with the determination of the content of uranium, radium and a number of toxic metals with one-stage measurement of the content of natural radionuclides of uranium and thorium series and radon in the soil;

the creation of physical protection at the Mailuu-Suu facilities (3, 7, 8).

Section J. Disused from the use of IRS.

In accordance with paragraphs 1.6 and 1.7. The basic sanitary rules for ensuring radiation safety (BSRERS-2006) need to have a special permit (license) for the right to conduct these works, issued by bodies authorized to conduct licensing, to organizations and individual entrepreneurs operating in the field of radiation sources.

Permission to work with radiation sources is not required in cases where:

electrophysical devices generating ionizing radiation with a maximum energy of not more than 5 keV;

other electrophysical devices generating ionizing radiation, under normal operation conditions, the equivalent dose rate at any available point at a distance of 0.1 m from the surface of the equipment does not exceed 1.0 $\mu\text{Sv} / \text{h}$;

products, goods containing radionuclides for which there is a sanitary-epidemiological conclusion of the bodies of state sanitary-epidemiological supervision that the radiation doses created by them cannot exceed the values given in Clause 1.3 of NRB-2006.

at the workplace: the specific activity of radionuclides is less than the minimum significant specific activity (MSSA) or the activity of the radionuclide in the open source of radiation is less than the minimum significant activity (MSA) given in the table 8.4 NRB-2006, or the sum of the ratios of activity of radionuclides to their tabulated values is less than 1; but in the organization: the total activity of radionuclides to open sources of radiation does not exceed 10 times the MFA or the sum of the activity ratios of different radionuclides to their tabulated values given in Table 8.4 of NRB-2006;

the equivalent dose rate at any point located at a distance of 0.1 m from the surface of the closed radionuclide radiation source, does not exceed 1.0 $\mu\text{Sv} / \text{h}$ over the background. At the same time, reliable containment of radioactive substances inside the device should be ensured, and its regulatory and technical documentation should have a sanitary and epidemiological report of the State Sanitary and Epidemiological Inspection.

In accordance with Article 17 of the Law "On Radiation Safety", users of ionizing radiation sources are obliged to ensure the disposal of ionizing radiation sources (IRS) that are not being used. IRS not intended for further use are considered radioactive waste.

The use or storage of IRS should be stopped after the end of the assigned service life. It is perfectly permissible to consider extending the life of the IRS in justified cases, when the radiation parameters remain within satisfactory limits, the tightness is preserved and there are no detected defects together with its features. The operator must develop and harmonize with bodies that supervise radiation safety, programs for re-examination of a sealed IRS in order to extend the life of the system.

IRS after their decommissioning is transferred to SUE "RBSRW" for long-term storage.

Section K. General efforts to improve security

To date, with respect to radiation safety there are problems with radioactive waste. The implementation of works on reclamation of territories (cleaning up from radioactive waste) does not require low costs.

Geography of contaminated areas:

Removed contaminated sites of uranium industry in Navoi, Samarkand, Namangan, Tashkent, Andijan regions; the total quantity, composition, aggregate state and activity of radioactive waste are different;

sites and ranges, where studies were conducted on the behavior and distribution of artificial radioactive elements in natural environments (imitation of the consequences of the use of nuclear

weapons) located on the territory of the Scientific Research Institute of Genetics and Experimental Plant Biology of the Academy of Sciences of Uzbekistan;

on the territories of a number of cities and mountain villages (Angren, Charke-sar, Yangiabad), which were previously mines, radioactive anomalies formed as a result of loading and unloading operations and transportation of uranium ores, as well as uncontrolled use by the population of radioactive waste for construction and economic needs. Increased radioactivity refers to individual debris of uranium ore, heaps of ore material, embankments of motor roads. Water with increased concentrations of radionuclides and toxic metals in such villages is often used for watering livestock, in addition, the pouring of mines leads to contamination of soils and groundwater.

Many of the old mines in closed fields and mine workings now are flooded with water. Waters with a high content of radionuclides of the uranium-thorium series and heavy metals are poured out from the tunnels, the ground surfaces of the dumps and tailings are washed away under the influence of the slope runoff, polluting the surrounding areas. In areas where the coatings are destroyed, there are high fluxes of radon emissions. Thus, the zones of influence of the former uranium objects on the population of the surrounding territories are expanding. It should be noted that in recent years, in some places in Uzbekistan, mainly in mountainous accessible areas (for example, Yangiabad), there has been a growing interest in the development and revival of tourism. This can be an important factor in the motivation to rehabilitate the former industrial zones of uranium objects and clean up the territories.

In such settlements, an inventory of contaminated sites should be carried out and, in each specific case, make an informed decision about the strategy of rehabilitation measures on the basis of the generally accepted methodology of justification and optimization of radiation protection. In some cases, targeted measures of individual protection of the population may be more effective than the strategy of resettlement of the population from contaminated settlements (for example, Charkesar settlement).

In the settlements that are located in the immediate vicinity from tailing dumps and mountain dumps, it is necessary to conduct regular observations on pollution of atmospheric air. At most points such observations are not yet available.

In accordance with the Order of the Cabinet of Ministers of the Republic of Uzbekistan No. 14 / 1-825 dated 02.03.2011, the European Commission's project "Conducting a comprehensive environmental impact assessment and studying the feasibility of reclamation of a disturbed ecological system in the territory of the former uranium mines Charkesar and Yangiabad". The project of the European Commission was realized with the participation of the State Inspection "Sanoatgeocontehnazorat", the Ministry of Health, the State Committee for Ecology, the State Committee for Geology, the Academy of Sciences, the Ministry of Emergency Situations and the khokimiyats of Namangan and Tashkent regions.

The main goal of the project is the organization of works on risk reduction and reclamation of former uranium mines in Charkesar and Yangiabad. In the short term, the immediate goal of the project is a limited study of environmental impact assessment and feasibility studies of works and measures for reclamation. This will be achieved through the preparation of an action plan for expenditure and integrated conceptual management and reclamation of the Charkesar and Yangiabad mines, including the development of criteria and standards for practical remediation works and the process of attracting partners.

The main expected results are the identification of potentially significant positive and negative, direct and indirect, short-term and long-term impacts, a thorough analysis of alternative remediation measures, an organizational plan to reduce negative impacts, a plan monitoring for both territories, a full assessment of further needs on technical assistance, involving the local administration, the public and other relevant organizations, identifying the strategy and institutional needs for implementing the recommendations developed under this project.

The final feasibility study, with all the necessary technical and economic information on remediation measures and plans, including a preliminary schedule, in the appropriate format and

content are presented for approval of the relevant state bodies of the republic. Full detailed technical specifications (including materials to be used, quality of materials with norms and standards, working methods and drawings to them, estimates of construction works with the estimated breakdown of the estimated budget) for remediation works in Charkesar and Yangiabad. The European Commission project collected all the necessary information for the implementation of maintenance and rehabilitation works on the territory of the former uranium mines Charkesar and Yangiabad, the results of measurements and laboratory analyzes, as well as calculations of costs for individual objects for work.

At the Charkesar and Yangiabad sites, it is necessary to carry out a set of works that include a reclamation approach for a specific site, including construction measures, as well as an integrated approach with long-term sustainable measures.

According to preliminary calculations by the WISUTEC Consortium for reclamation and implementation of measures to improve the environmental situation at the facilities located in Charkesar and Yangiabad, about 6.9 million euros, including VAT, are required.

The main reclamation activities include:

- construction of a discharge channel for surface runoff at Alatanga sites and Central Blade of Poor Ores;

- restoration of the old channel of the Alatanga River;

- sealing the entrance to the tunnel through the installation of reinforced concrete slabs and brick walls, bank protection at "Razvedchastok";

- sealing of dips by installing concrete plugs, sealing the inlet in the tunnel by pouring concrete at the facilities of Kattasai, Ore yard and Charkesar-1;

- shore protection works on the river Kattasay;

- the creation of a new central dump for the Kattasay site, the transfer of dumps with a volume of 115,000 m³, the delivery and installation of a 1 m thick cover, an area of 30,000 m², the construction of drainage channels for a new dump;

- dismantling of the bunker and other concrete elements, transfer of 200m³ of concrete fragments and 3000 m³ of the dumping rock, delivery and coating device with a thickness of 1 m, an area of 40,000 m², bank protection measures on the site of the "Rudny Dvor";

- transfer of 7000 m³ of the dump to form a base for the diversion channel, construction of a gabion protective wall at the northern and southern slope along the road on the Central mountain dump;

- dismantling of old industrial structures, collection of heaps of leached ore and covering them with dump material, etc.

Thanks to this project for the implementation of maintenance work and rehabilitation in the territory of the former uranium mines of Charkesar and Yangiabad, there is all the necessary information, measurement results and laboratory analyzes, as well as cost calculations for individual sites for reclamation operations.

On March 16, 2017 in the city of Tashkent, during the visit of the President of the EBRD to the Republic of Uzbekistan Mr. Sum Chakrabarty signed the Framework Agreement between the Republic of Uzbekistan and the EBRD on conducting operations on the Environmental Rehabilitation Account for Central Asia in the Republic of Uzbekistan (hereinafter referred to as the "Framework Agreement"), which entered into force by adopting the resolution of the President of the Republic of Uzbekistan of June 21, 2017 No. PP-3078 "On the approval of an international treaty," and the State Inspectorate "Sanoatgeokontekhnazorat" determined the computer agency responsible for the implementation of this Framework Agreement.

The document is aimed at providing the EBRD with means of gratuitous assistance for financing (co-financing) of projects implemented for the rehabilitation of former uranium mining facilities in the Republic of Uzbekistan, as well as measures to increase the republic's potential in eliminating the consequences of mining uranium ore.

In order to implement the resolution of the President of the Republic of Uzbekistan dated June 21, 2017 No. PP-3078 "On the approval of an international treaty, as well as the Framework

Agreement between the Republic of Uzbekistan and the European Bank for Reconstruction and Development on conducting operations on the Environmental Rehabilitation Account for Central Asia in the Republic of Uzbekistan The State Inspectorate "Sanoatgeokontekhnazorat" developed a draft resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On measures to implement the Framework Agreement between the Republic of Uzbekistan and the European Bank for Reconstruction and Development for Operations on the Environmental Rehabilitation Account for Central Asia in the Republic of Uzbekistan" providing for:

the definition of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan as the recipient of grants;

Establishment of a Project Management Unit under the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan;

approval of the composition of the Uzbek part of the Joint Committee for the exchange of information on the implementation of the Framework Agreement;

the adoption of other measures to effectively implement the relevant provisions of the Framework Agreement.

Currently developed and agreed with the involved ministries and departments, the draft resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On measures to implement the Framework Agreement between the Republic of Uzbekistan and the European Bank for Reconstruction and Development on conducting operations on the Environmental Rehabilitation Account for Central Asia in the Republic of Uzbekistan" was submitted to the Government of the Republic of Uzbekistan.

It is expected that it will be agreed with the EBRD.

Experts of the Coordination Group for the former IAEA uranium objects, developed a Strategic Master Plan for the restoration of the environment at the sites of uranium heritage in Central Asia (hereinafter referred to as the Master Plan).

Master plan is an integrated, logically related, systematic, transparent and effective approach to environmental restoration on the sites of uranium heritage in Central Asia, which provides the best use of available resources. This plan will provide confidence between the affected republics and potential donors that the risks and problems associated with the sites of uranium heritage in Central Asia will be eliminated in a timely, coordinated, cost-effective and sustainable manner.

The Master Plan is the main action plan for the implementation of remediation work in Central Asia within the framework of the above Framework Agreement.

On September 18, 2017 in Vienna during the 61st General Conference of the IAEA, the ceremony of signing the preface to the Strategic Master of the plan for the restoration of the environment at the sites of uranium heritage in Central Asia was held. The signing ceremony was attended by representatives of IAEA, EBRD, European Commission, Kyrgyzstan, Russian Federation, Tajikistan and Uzbekistan.

Section L. Annexes

There are no facilities for spent fuel management in the Republic of Uzbekistan.

State Unitary Enterprise "RBSRW" conducts work on reception, from enterprises, organizations and institutions of the Republic of Uzbekistan of ionizing radiation sources and radioactive waste, their transportation and disposal (long-term storage).

Installations in the process of decommissioning.

The research reactor IIN-3M of JSC "Foton" of JSC "Uzeltchanoat" is currently stopped. All work on the decommissioning of the entire reactor complex is carried out in accordance with the tripartite agreement signed at the IAEA.

1. Contract No. 201503038 between the International Atomic Energy Agency and the Consortium, which was formed by the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan, the Scientific and Production Company "Sosny" of the Russian

Federation and Joint Stock Company "Foton" (Republic of Uzbekistan) on decommissioning of the radiation-technological complex of JSC "Foton" in the Republic of Uzbekistan. Signed on July 31, 2015 in Vienna.

2. Contract No. 201503040 between the International Atomic Energy Agency, the Consortium, which formed the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan, Open Joint-Stock Company "Izotop All-Russia Association", Closed Joint-Stock Company "Mounting Firm" Radiy ", Russian Federation and the Joint Stock Company "Foton" (Republic of Uzbekistan) for the removal, curing and transportation of withdrawn from use of closed radiation sources located at radiation facilities located at the site of the radiation and technological complex of JSC "Foton" in the Republic of Uzbekistan. Signed on July 31, 2015 in Vienna.

2016-2017 the following works were carried out:

all sources of ionizing radiation (Co-60), located on two gamma-units, not suitable for further use, were taken to a disposal facility in SUE "RBSRW"; dismantled and taken to the disposal in SUE "RBSRW" reactor control panel and all its components, as well as the reactor's active zone (reactor tank);

work on the disposal and disposal of radioactive wastes in the reactor building.

To date, in the territory of JSC "Foton" there are no nuclear and radioactive materials, in addition to low-level radioactive waste. A written appeal was sent to the IAEA guarantee department with a request to remove this object from IAEA guarantee.

Until mid-2018, it is planned to completely clean the territory of JSC "Foton" from radioactive contamination and its removal from regulatory control.

The inventory list of spent fuel, which is contained in the WWR-SM storage facility of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan and which was buried, the description of the material, information, if any, about its mass and overall activity level.

Inventory list of spent fuel in storage No. 1

№п/ п	IRT-4M	UM, pc.	Weight of uranium-238+235	Weight of uranium-235
1	19H39707	1	1195,86	110,36
2	19H39807	1	1201,90	114,80
3	19H40107	1	1203,51	111,21
4	19H41207	1	1312,50	238,30
5	19H41707	1	1185,80	104,40
6	19H43309	1	1139,63	98,43
7	19H44109	1	1154,32	107,32
8	19H44209	1	1151,05	109,65
9	19H44309	1	1150,30	107,40
10	19H44409	1	1151,83	104,43
11	19H44509	1	1161,65	110,85
12	19H45009	1	1308,45	109,65
13	19H45109	1	1339,70	123,50
14	19H45309	1	1355,88	160,68
15	19H51010	1	1155,25	103,55
16	19H51110	1	1163,06	106,36
17	19H51310	1	1157,07	101,27
18	19H51410	1	1168,90	109,20
19	19H51510	1	1182,71	120,71
20	19H51610	1	1167,57	105,57
21	19H51710	1	1160,51	100,81
22	19H51810	1	1187,14	123,34

23	19H51910	1	1172,21	106,81
24	19H52210	1	1168,40	105,30
25	19H52310	1	1164,83	100,13
	Total IRT-4M	25	29860,03	2894,03

Inventory list of spent fuel in storage No. 2

№	IRT-4M	UM, pc.	Uranium weight-238+235	Uranium weight-235
1	19H39407	1	1181,81	99,51
2	19H39307	1	1187,21	106,31
3	19H39507	1	1191,90	106,80
4	19H39607	1	1196,20	109,60
5	19H39907	1	1195,29	104,99
6	19H40007	1	1202,10	111,00
7	19H41107	1	1180,70	107,60
8	19H41307	1	1196,84	114,74
9	19H41407	1	1166,92	105,02
10	19H41507	1	1179,60	102,40
11	19H41607	1	1181,40	103,90
12	19H41807	1	1187,84	112,84
13	19H41907	1	1183,15	103,95
14	19H42007	1	1195,90	111,10
15	19H42809	1	1149,23	113,93
16	19H42909	1	1141,90	103,40
17	19H43009	1	1139,00	99,90
18	19H43209	1	1131,18	89,28
19	19H43109	1	1150,42	108,82
20	19H43409	1	1144,15	104,65
21	19H43509	1	1151,76	110,46
22	19H43609	1	1148,01	104,41
23	19H43709	1	1137,44	97,84
24	19H43809	1	1127,90	90,60
25	19H43909	1	1130,70	93,40
26	19H44009	1	1151,30	107,50
27	19H44609	1	1318,30	119,90
28	19H44709	1	1303,97	106,27
29	19H44809	1	1309,11	113,71
30	19H44909	1	1317,80	120,80
31	19H51210	1	1159,53	96,43
	Total IRT-4M	31	36738,56	3281,06

Inventory list of spent fuel storage No. 3/1

№	IRT-4M and EK-10	UM, pc.	Uranium weight -238+235	Uranium weight-235
1	19E04M00	1	1303,95	99,76
2	19E05A00	1	1329,56	118,30
3	19E06M00	1	1148,54	100,48
4	19E07A00	1	1177,64	105,80
5	19H40207	1	1174,35	100,85
6	19H40307	1	1191,07	108,67
7	19H40407	1	1191,57	109,97

8	19H40507	1	1179,73	97,63
9	19H40607	1	1173,31	101,81
10	19H40707	1	1174,42	105,42
11	19H40807	1	1181,56	106,86
12	19H40907	1	1184,8	112,5
13	19H41007	1	1191,5	114,4
14	EK-10 A	1	1242,00	90,00
15	EK-10 B	1	1242,00	90,00
16	EK-10 C	1	1242,00	90,00
17	EK-10 D	1	1242,00	90,00
18	EK-10 E	1	1242,00	90,00
19	EK-10 F	1	1242,00	90,00
20	EK-10 G	1	1242,00	90,00
21	EK-10 H	1	1242,00	90,00
22	EK-10 I	1	1242,00	90,00
23	EK-10 J	1	1242,00	90,00
24	EK-10 K	1	1242,00	90,00
	Bcero IRT-4M	13	15602,00	1382,45
	Bcero EK-10	11	13662,00	990,00

Each NFE, which is a part of FRA, is a three-layer pipe and consists of a fuel core and shells of aluminum alloy, protecting the core from the environment and preventing the fission products from leaving it into the coolant. The core material is uranium dioxide dispersed in an aluminum matrix. The material of the head and shank is aluminum alloy. The inventory list of radioactive wastes that are stored in the repositories of SUE "RBSRW" of objects buried in storage facilities since 1971 to September 2017

№	Radionuclide	Half-life period (T _{1/2})	Quantity, pc.	Activity, Cu	Activity, Bq
1	Cs-137	30 years	5305	6952,4	257,22 TBq
2	Co-60	5,272 g.	5051	55406	2050 TBq
3	Sr-90	29,12 years	3251	14730	545 TBq
4	Am-241	433 g.	898	39,34	1456 GBq
5	Ra-226	1600 years	45766	6,6	244 GBq
6	Ba-133	10,74 g.	20	53,42	1,97 TBq
7	U-232	72 g.	19	-	-
8	U-233	1,585x10 ⁵ years	2	-	-
9	U-234	2,445x10 ⁵ years	10	-	-
10	U-235	7,038x10 ⁸ years	51	-	-
11	U-238	4,68x10 ⁹ years	232	13	481 GBq
12	Normal uranium	-	19	-	-
13	Powder uranium	-	25 кг	-	-
14	Uranium disks	-	200	-	-
15	C-14	5730 years	66	0,442	16,4 GBq
16	tritium	12,35 g.	1422	1152	42,6 TBq
17	Pu-239	2,4x10 ⁴ years	1163	232	8,6 TBq
18	Pu-238	87,74 g.	80	30	3 TBq

№	Radionuclide	Half-life period (T _{1/2})	Quantity, pc.	Activity, Cu	Activity, Bq
19	Pu-241	14,4 g.	2	0,05	1,85 GBq
20	Eu-152	13,33 g.	2	1	37 GBq
21	Kr-85	10,7 yeas	10	0,052	37 GBq
22	Np-237	2,14x10 ⁶ years	2	-	-
23	Ni-63	96 years	14	0,076	3 GBq
24	Bi-207	38 years	2	0,028	1 GBq
25	Th-232	1,4x10 ¹⁰ years	196	238	8,8 TBq
26	Pu+Be	2,4x10 ⁶ years	241	13x10 ⁹ dpa	13x10 ⁹ dpa
27	Ti-44	47,3 g.	1	0,000001	37 qBq
28	Fe-55	2,7 g.	180	11	407 GBq
29	Tl-204	3,779 g.	87	3,3	122 GBq
30	Pm-147	2,6234 g.	193	76	2,8 TBq
31	Na-22	2,602 g.	20	27	999 GBq
32	Cf-252	2,638 g.	11	31x10 ⁷ dpa	31x10 ⁷ dpa
33	Cd-109	464 days	514	14	518 GBq
34	Sm-145	340 days	104	57	2,1 TBq
35	Zn-65	243,9 days	87	1,5	55,5 GBq
36	Co-57	270,9 days	214	16	592 GBq
37	Ce-144	284,3 days	12	0,21	7,7 GBq
38	Gd-153	242 days	17	0,2	7,4 GBq
39	Po+Be	138,38 days	450	775x10 ⁷ dpa	775x10 ⁷ dpa
40	Ca-45	163 days	2	0,000001	37 qBq
41	Po-210	138,38 days	210	0,145	5,4 GBq
42	Tm-170	128,6 days	331	19964	739 TBq
43	Se-75	119,8 days	400	7350	272 TBq
44	Sn-115	115,1 days	83	6,4	236 GBq
45	Y-88	106,64 days	2	0,000001	37 kBq
46	Ir-192	74,02 days	185	1714	4101 TBq
47	Zr-95	63,98 days	13	0,085	3 GBq
48	I-125	60,14 days	36	0,81	3 GBq
49	Sb-124	60,2 days	40	303	11 TBq
50	Hg-204	46 days	5	0,00001	0,37 MBq
51	P-32	14,29 days	980	0,01	0,037 GBq
52	Mn-54	312,5 days	2	0,00001	0,37 MBq
53	Sr ⁹⁰ +Y ⁹⁰	29,12 years	52	0,3	11 GBq
54	Am ²⁴¹ +Be	433 y.	2	0,1	3,7 GBq
55	Radioisotope detectors-RID (Pu238)	87,74 y.	1567	0,78	28,8 GBq
56	Radioisotope detectors-RID (Pu239)	2,4x10 ⁴ years	44882	22,4	828,8 GBq
57	OSGI	-	106	0,5	18,5 GBq
58	Sources of unknown type	-	65	-	-
59	Irradiated products	-	19947	-	-
60	The head from gamma therapeutic devices	-	17	-	-
61	Radiation head from	-	16	-	-

№	Radionuclide	Half-life period (T _{1/2})	Quantity, pc.	Activity, Cu	Activity, Bq
	gamma-ray flaw detectors "Gammavid"				
62	Containers RGU-U	-	63	-	-
		Total	130271	107960	3995 TBq
63	Barrels (IOS)	30 years	598	7,5	277,5 GBq
64	Barrels (complex composition)	-	229	1	37 GBq
65	Bags with RW (complex composition)	-	55687	12	444 GBq
66	Soil	-	115 m ³	5	185 GBq
67	tubes	-	2032 m	0,01	
		Total		25	943,5 GBq
		Total		107985 Cu	3995,4 TBq

f) References:

1. Law of the Republic of Uzbekistan dated 28.12.1993 No. LRUZ-1006-XII "On certification of products of services".
2. Law of the Republic of Uzbekistan of 31.08.2000 No. LRUZ-120-P "On Radiation Safety"
3. Law of the Republic of Uzbekistan dated 25.05.2000 No. LRUZ-71-P "On licensing of certain types of activities".
4. Law of the Republic of Uzbekistan as of 05.04.2002 No. LRUZ-363-P "On Waste".
5. Law of the Republic of Uzbekistan dated 11.12.2008 No. LRUZ-186 "On the accession of the Republic of Uzbekistan to the Joint Convention on the Safety of spent fuel management and on the safety of radioactive waste management".
6. Law of the Republic of Uzbekistan as of 13.04.2011 No. LRUZ-282 "On Amendments and Additions to the Law of the Republic of Uzbekistan" On Radiation Safety".
7. Law of the Republic of Uzbekistan of 27.12. 2013 No. LRUZ-363 "On Environmental Control".
8. Law of the Republic of Uzbekistan dated 26.08.2015 No. LRUZ-393 "On sanitary and epidemiological welfare of the population".
9. Establishment of the national system for the management of radioactive waste No. 111-S-1 of 1995, IAEA, Vienna.
10. International Basic Safety Standards for Protection against Ionizing Radiation and for Safe Management of Ionizing Radiation Sources No. 115 of 1997, IAEA, Vienna.
11. Code of Conduct on the Safety and Security of Radioactive Sources of 2003, IAEA, Vienna.
12. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 01.12.1998. No. 507 "On approval of the Additional Protocol to the Agreement between the Republic of Uzbekistan and the IAEA.
13. Safety rules for the operation of the WWR-SM research reactor of the INP of Uzbekistan. (PBY-03-17) of August 15, 2017.
14. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 6 March 2004 No. 111 "On approval of the Regulation on licensing of activities in the area of turnover of sources of ionizing radiation".
15. Sanitary rules and norms "Hygienic requirements for the device and operation of X-ray rooms, devices and conducting X-ray studies", approved by the Chief State Sanitary Doctor of the Republic of Uzbekistan B.Niyazmatov dated 25.01.2006. SanPin No. 0194-06.

16. Radiation safety standards (RSS-2006) and the Basic Sanitary Rules for Ensuring Radiation Safety (BSRERS-2006), approved by the Chief State Sanitary Doctor of the Republic of Uzbekistan, B. Niyazmatov. SanPiN № 0193-06.

17. Interdepartmental Resolution "On approval of the rules for physical protection of radiation sources, nuclear facilities, nuclear materials, radioactive substances and storage points", from 2008.

18. "List of threats to nuclear and radiation-hazardous objects and materials" approved by the Head of the State Inspectorate "Sanoatgeokontekhnazorat" from 2008.

19. Sanitary rules for radioactive waste management, approved by the Chief State Sanitary Doctor of the Republic of Uzbekistan, B. Niyazmatov dated 07.02.2008 SanPin No. 0251-08.

20. Hygienic requirements for the device and operation of radioisotope instruments, approved by the Chief State Sanitary Doctor of the Republic of Uzbekistan B. Niyazmatov dated 19.04.2008 SanPin No. 0252-08.

21. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 03.04.2009 No. 98 "On Approval of the Rules for the Organization of the State Accounting and Control System behind the turnover of sources of ionizing radiation. "

22. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 13.08.2009 No. 231 "On Approval of the Regulations on the Procedure for State Accounting and Control for the turnover of radioactive substances of radioactive waste, as well as for nuclear materials. "

23. Resolution of the President of the Republic of Uzbekistan No. 1396 of August 27, 2010 "On measures to further enhance the efficiency of the organization and conduct geological exploration".

24. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated 11.05.2011. №131 "On measures to further improve the structure of the State Inspectorate on Supervision of Geological Study of Depths, Safety in Industry, Mining and Public Sector under the Cabinet of Ministers of the Republic of Uzbekistan".

25. "Regulations on the branch inspection of the Atomic Supervision" of the State Inspectorate "Sanoatgeokontekhnazorat", approved by the Head of the State Inspectorate "Sanoatgeokontekhnazorat" of 15.07.2011.

26. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 16.02.2011. No. 35 "On approval of the rules for the transport of dangerous goods by trucks in the Republic of Uzbekistan".

27. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan of 20.12.2012. No. 358 "On a Unified State System for Early Detection and Response on radiation accidents".

28. Decree of the Cabinet of Ministers of the Republic of Uzbekistan of 31.12.2015. No. 379 "On measures to implement the Joint Convention on the Safety of spent fuel management and on the safety of radioactive waste management".

29. Decree of the Cabinet of Ministers of the Republic of Uzbekistan of 27.02.2016.No. 56 "On introducing changes and amendments to some decisions of the Government of the Republic of Uzbekistan in connection with the improvement of the rules for the transport of dangerous goods by trucks in the Republic of Uzbekistan".