Энэхүү дүрмийн албан бус англи орчуулгыг зөвхөн судалгаа шинжилгээ болон мэдээллийн зорилгоор ашиглах боломжтой. Үүнээс үүдэх хууль зүйн аливаа үр дагаврыг ЦЭК хариуцахгүй болно.

Appendix to Government
Resolution No. 445, 2022

REGULATION ON WASTE SAFETY ARISING FROM ACTIVITIES CONCERNING RADIATION AND NUCLEAR INSTALLATIONS

One.General Provisions

1.1.The regulation aims to protect people and the environment from the harmful effects of ionizing radiation, prevent it and specify the safety requirements for radioactive waste management facilities.

1.2.The regulation shall apply to relations associated with ensuring the safety of the waste management operation, including radioactive waste management activities such as segregation, characterization, classification, processing, conditioning, storage, and disposal.

1.3. The regulation shall apply to the activities arising out of radioactive waste management, including nuclear installations, decommissioning, the use of radioactive isotopes in medical, industrial, geological, mining, agricultural, inspection, research, road, and construction fields, exploration of radioactive minerals, processing, and land rehabilitation after the use of radioactive minerals.

1.4. The regulation pertains to all levels of activities, including determination, assessment, segregation, characterization, volume reduction of the waste, and process, condition, transport, storage, and disposal of the radioactive waste management.

1.5. This regulation shall be complied with by an organization or legal entity that is associated with activities involving nuclear installations and radiation.

1.6. The activities associated with non-radioactive waste and other hazardous waste are exempt from this regulation.

1.7. An organization or a legal entity that is associated with activities involving nuclear installations and radiation shall meet the following requirements:

1.7.1. radiation protection and safety assessment for the operation and facilities; internal policies of radiation protection and safety; development of a radiation protection program; approval of authorized authorities responsible for monitoring radiation and its implementation;

1.7.2.environmental assessment, prevention of harmful effects to the environment, and radiation exposure and protection;

1.7.3. determination of criteria for the waste and the limited condition of the operation;

1.7.4. development and implementation of operational procedures, guidelines, and monitoring plans;

1.7.5. use of engineering best practices and solutions in the operations;

1.7.6. training of staff and practices;

1.7.7. establishment of a waste management system and implementation;

1.7.8. record and document the radioactive waste management operation and maintain waste records;

1.7.9. consistent maintenance and service of the facilities;

1.7.10. establishment of mechanisms for providing the required financial sources;

1.7.11. development and implementation of possible radiation accident prevention and preparedness;

1.7.12. preparation of required technical and equipment as reflected in the disaster recovery plan;

1.7.13. creation of a safety culture; determination of waste for non-radiation hazards and risks;

1.7.14. system for preventing the unauthorized access of individuals to nuclear installations, radioactive sources, radioactive material, and waste, and to have a permanent monitoring, alarm, and security system for sound and video recording.

1.8. . An organization or a legal entity that is associated with activities involving nuclear installations and radiation shall establish and implement possible options for waste management and an overall strategy for radioactive waste management.

Two.Monitoring of Radioactive Waste

2.1. An organization or legal entity that is associated with activities involving nuclear installations and radiation shall take all necessary measures to minimize the radioactivity and volume of the generated radioactive waste.

2.2. Before the design and construction of facilities for operating nuclear installations and radiation, the anticipated determination of waste during the development as mentioned above and in the decommissioning process shall be made, and resources, methods, and innovations that reduce that amount of waste shall be selected.

2.3. Radioactive waste shall be monitored by:

2.3.1. generation of radioactive waste to minimize;

2.3.2. reuse of radioactive material;

2.3.3.reprocessing;

2.3.4.disposal of waste.

2.4. Generation of waste from the site selection, design, construction, commissioning, operation, closure, and decommissioning of nuclear installations and radiation-related facilities shall be minimized.

2.5. The volume of waste shall be reduced as much as possible using potential measures such as reusing and reprocessing nuclear and radioactive materials.

Three. Requirement for Segregation and Classification of Radioactive Waste

3.1. Radioactive waste shall be classified and segregated by its physical, mechanical, radiation, chemical, and biological properties and non-radiological hazards, and ensure safety by using other necessary tools, including cabinets, buckets, containers, packages, pincers, nooses, and oppressors.

3.2. Sealed radioactive sources and radiation-contaminated items shall be segregated, and sources shall be segregated and stored depending on the short (less than 30 years) and long (more than 31 years) half-lives of a radioactive isotope.

3.3. Establish a storage unit by creating a detailed record and inventory of the radioactive waste and an e-database through processing information such as the physical and chemical state of the waste, origin, type, names of the contained radioactive isotopes, dose rate, and date, and preparing for processing, packaging, storage, transportation, and disposal of radioactive waste.

Four. Requirement for Processing of Radioactive Waste

4.1. Safety shall be ensured by preparing, storing, transporting, and disposing of the radioactive waste, waste form, and packaging if necessary.

4.2. Waste disposal shall be inactive and in as safe a stage as possible by bringing the radiation dose to a level not exceeding 100 μSv/h and preparing to store and dispose of in the short term.

4.3. Ensure the safety of the operation in the processing of the radioactive waste, and in the event of an accident, appropriate measures shall be taken promptly to mitigate the harm.

4.4. The development of an environmental assessment and radiation protection program and a waste management strategy shall reflect the processing operation of waste, waste type, choice of disposal, and limitation conditions.

4.5. Waste shall be processed by choosing a possible method and determining the requirements, including activity, volume, physical and chemical form, possible technology options for processing, and the capacity of the storage and disposal facilities for the radioactive waste.

4.6. Radioactive waste shall be processed until it meets the conditions to be safely disposed of and stored.

4.7. Radioactive waste processing shall take the necessary measures to predetermine the radiation, non-radiation, and other hazards.

4.8. Solid waste processing shall be in accordance with the scheme in Appendix 1 of this Regulation.

4.9. Compaction shall be taken after the following conditions are met:

4.9.1. undamaged waste package (200-liter metal barrel);

4.9.2. do not use a pressurized container that prevents uncontrolled gas leakage;

4.9.3. does not contain liquid;

4.9.4 does not contain sealed sources.

4.9.5. does not contain powder;

4.9.6. does not contain chemically active material.

4.10. To burn into ashes in a dedicated incinerator, the following conditions shall be met:

4.10.1. does not contain sealed sources;

4.10.2. do not use a pressurized container that prevents uncontrolled gas leakage;

4.10.3. monitor the materials with high humidity to burn completely;

4.10.4. management of the radioactive ashes;

4.10.5. control the dust and particles, especially dust from ash processing;

4.10.6. The incinerator shall meet the requirements of the standard.

4.11. The pH environment, the amount of solid impurities, the amount of salts and acids, the possibility of its removal, safety, and technical and financial considerations shall be taken into account when optimally treating liquid waste.

4.12. Radioactive waste shall be processed by segregating the waste stream in case it varies greatly in chemical or radioactive nuclear content.

4.13. Different chemical solutions shall be stored separately and shall prevent chemical reactions that may cause heat, aerosol, and precipitation.

4.14. The solutions resulting from the pH environment or redox conditions modifications shall be isolated from volatile radioactive nuclei such as iodine.

4.15. If a waste management organization approves a Safety Assessment, mixing fluid streams may be allowed and the organic and aqueous wastes and radioactive isotopes with short and long half-lives must be segregated to prevent possible harm.

4.16. A small amount of radioactive liquid waste, where the annual radiation dose consumed by the population does not exceed 0.3 mSv, may be directly discharged into the normal sewage system or delivered to a wastewater receiving organization, provided prior permission shall be obtained from the regulatory authority responsible for radiation monitoring.

4.17. Consideration shall be given to the potential generation of secondary waste and various types of liquid waste when conducting a chemical precipitation process, as well as the need and requirements for treating activated sludge.

4.18. Considerations including secondary waste generation, evaporator integrity, and the risk of fire due to volatile organic materials shall be taken into account when conducting waste vaporization operations.

4.19. Considerations including the generation of secondary waste requiring special preparation for ion exchange processes, resin reactions with strong oxidants, reduction of resin radioactivity, and specialized preparation for processing used resin shall be taken into account.

4.20. Consideration shall be given to the necessity and requirements of liquid leakage from high-pressure systems, the prevention of accidental dispersion of liquid waste, and the mandatory preparation including neutralization of radioactive solid materials or sludge when using a double filtration system.

4.21. Incineration (except for volatile and toxic substances) and absorption methods shall be used for treating organic waste, and environmental impact shall be considered in the uncontrolled release of radioactive and non-radioactive components, gases, and particles during incineration.

4.22. Consolidation into stable and solid form shall be obligatory for sludge and concentrate resulting from the processing of radioactive liquid waste (secondary waste).

4.23. Any waste stream containing radioactive particles shall be filtered before being released into the atmosphere.

4.24. Filters and cleaning equipment contaminated with radioactive isotopes having a long half-life shall be classified as radioactive solid waste and undergo appropriate management measures to ensure safety.

4.25. Management of radioactive waste with biological properties shall be performed according to the scheme specified in Appendix 2 of this Regulation.

4.26. Radioactive waste management shall be performed after all contaminants have been removed and pretreated.

Five. Requirements for storing radioactive waste

5.1. In drafting the design of the storage facility, consideration shall be given to pertinent parameters including the type, status, activity, quantity, and total storage duration of the radioactive waste, to minimize harm and the likelihood of potential radiation accidents.

5.2. The design of the radioactive waste management facility shall be developed by the authorized professional organization, and the following must be taken into consideration:

5.2.1. isolate the system of the radioactive waste processing facility from storage rooms and systems of other hazardous materials and waste;

5.2.2. provide the auxiliary and additional systems for decontamination and sampling;

5.2.3. radiation monitoring shall be conducted at all stages of receiving waste that may cause contamination to workplaces and personal protective equipment;

5.2.4. provide adequate sealing (such as suction cabinets, drip trays, and sealed and working wooden trays) and protection (lead or concrete blocks);

5.2.5. classify workplaces, mark control and observation zones (signs, stickers, traffic lights, etc.), place suitable barriers (tapes, chains, barriers, walls, doors, etc.);

5.2.6. radiation measurement (surface contamination and dose rate);

5.2.7. mark the characteristics of received waste, monitor the characteristics of processed waste, establish technological control;

5.2.8. arrange the location and organization of equipment and systems in a way that is easy to operate, maintain, and monitor;

5.2.9. select an expedient and secure method for transporting waste utilizing appropriate transportation equipment.

5.2.10. select a surface that can be easily decontaminated.

5.2.11. establish required drainage and ventilation systems (airflow, pressure differential, and air filtration methodologies).

5.2.12. establish normal and emergency power supply;

5.2.13. establish rooms and compartments for equipment to be used in the event of an accident;

5.2.14. establish a fire protection system;

5.2.15. implement physical security measures, install cameras, and alarm systems for safeguard.

5.2.16. establish a protective zone of the radioactive waste management facility at a distance, not less than 1 km from the outer fence of the facility;

5.2.17. protect from a flood.

5.3. Radioactive waste storage facilities shall be established by applicable laws and regulations, ensuring safety and security under normal and emergency operating conditions while addressing radiation and non-radiation risks associated with the waste.

5.4. The program and plan for the long-term storage and safe operation of radioactive waste shall be submitted to the authority responsible for radiation control, and notification shall be provided to nearby citizens, the provincial and capital governors, and the central state administrative body responsible for land issues. The organization operating the radioactive waste management facility shall adhere to the Law on Land and comply with the standards outlined in MNS 5105:2001 "general requirements for hygienic protective zones of industrial hygienic entities operating in an environmentally hazardous environment" of Mongolia, and determine the protection zone according to this standard.

5.5. The organization operating the radioactive waste management facility shall set the operating limit conditions during the planning stage and take organizational measures to ensure these limits are not exceeded.

5.6. Personal dose control of professionals, workplace and environmental control and monitoring, radiation accident preparedness, and response plans shall be developed and implemented in radioactive waste storage facilities.

5.7. The organization operating the radioactive waste management facility shall establish an arrangement to have the financial resources and resources necessary for the implementation of its activities, long-term storage of radioactive waste, and decommissioning of the storage facility.

5.8. Radioactive waste shall be stored safely until it meets the requirements for disposal of waste to the environment specified in the "general regulations of radiation protection and safety" or until it is disposed of.

5.9. The following requirements shall be met for the storage of radioactive waste:

5.9.1. radioactive waste should be immobilized;

5.9.2. stable physical and chemical state of radioactive waste and its packaging and containers;

5.9.3. radioactive waste should be in a form that does not emit heat;

5.9.4. have a double protection for storing radioactive isotopes;

5.9.5. packaging of radioactive waste should be suitable for environmental conditions during the storage period;

5.9.6. utilize a passive system for the safety of radioactive waste and minimize the need for an active system;

5.9.7. minimize the need for monitoring and maintenance to ensure safe operation;

5.9.8. minimize human factors and human needs;

5.9.9. shall be accessible to the disposal facility in the event of a potential accident;

5.9.10. shall be able to control waste packaging and perform work;

5.9.11. waste storage facility shall be able to be used until the waste is disposed of;

5.9.12. shall be able to return waste from waste storage facilities;

5.9.13. waste packaging shall be suitable for waste disposal.

5.10. Packaging and containers of radioactive waste must comply with the radioactivity, physical, and chemical state of the waste.

5.11. The following information shall be recorded on the waste container:

5.11.1. radioactive nuclei;

5.11.2. personal number;

5.11.3. activity and date;

5.12. The storage and disposal facility capacity shall be regularly evaluated, taking into account the waste output during normal and accidental radiation-related operations, and the safety and reliability of the facility shall be regularly monitored and controlled.

5.13. Measures shall be implemented to protect the current and future population in the case of long-term storage of radioactive waste, and measures shall be taken to protect human health and prevent pollution and degradation of the environment as specified in the relevant laws, rules, and regulations.

5.14. Sealed radioactive sources that are no longer in use shall be managed according to the methods specified in Annexes 3 and 4 of this Regulation.

5.15. Each batch of waste shall be labeled with a long-term storage-resistant, identification number, and appropriate information must be recorded and stored in the waste system. Records shall be securely stored, amended, and easily accessed over a long period.

5.16. The following information shall be included in the waste registration system:

5.16.1. origin of waste;

5.16.2. personal number;

5.16.3. documents, detailed information about the type and design of waste;

5.16.4. size and volume;

5.16.5. measurement results and date;

5.16.6. surface contamination measurement results;

5.16.7. radioactive nuclei, activity rate;

5.16.8. fissile nuclear (e.g. 239-Pu-Be source);

5.16.9. physical and chemical states;

5.18. Organizations engaged in activities related to nuclear installation and radiation shall register the protective strip of radioactive waste management facilities in the land cadastral database.

5.19. Organizations engaged in activities related to nuclear installation and radiation shall obtain a conclusion from the professional organization responsible for land issues when determining the location for radioactive waste storage.

Six. Operational requirements for the waste management facility

6.1. Organizations or legal entities engaged in activities related to nuclear installation and radiation shall be inspected by the organization responsible for radiation control for the buildings, equipment, structures, systems, and parts that were completed according to the design and plan when starting an operation of the waste management facilities.

6.2. Any changes that have significant safety implications for facilities shall require a review of the radiation protection program and are subject to review and approval by the radiation control agency.

Seven. Requirements for decommissioning of a facility

7.1. The initial decommissioning plan shall be developed at the design stage of the radioactive waste management facility and updated periodically during its operation. The final decommissioning plan shall be approved by the radiation control authority, and decommissioning shall be carried out in accordance with the plan.

7.2. Reduction of potential future risk shall be conducted by reducing the dose of occupational exposure of employees, waste, and the probability of accidents during decommissioning in the facility decommissioning activities.

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