

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 1258-2022

**Technical specifications for siting, design and construction of
radioactive waste repository for nuclear technology application
(English Translation)**

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Ecology and Environment

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Appendix A (Normative Appendix) Requirements for the Safety Protection System of Urban Radioactive Waste Repository

1 Scope of application

This standard specifies the technical requirements for site selection, design and construction of radioactive waste repositories for nuclear technology.

This standard is applicable to the site selection, site selection, and storage of radioactive solid waste and spent (old) radioactive source storage warehouses for new construction, reconstruction and expansion of nuclear technology utilization.

Design and construction, usually referring to municipal radioactive waste repositories.

The site selection, design and construction of the radioactive source repository in use may refer to this standard.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

GB 6514 Coating Operation Safety Regulations Painting Process Safety and Its Ventilation and Purification GB/T 15408 Technical requirements for power supply of safety protection system GB 17565 General technical requirements for anti-theft security doors GB 18871 Basic standard for ionizing radiation protection and radiation source safety GB/T 25724 Public Safety Video Surveillance Digital Video and Audio Codec Technical Requirements GB/T 28181 Technical requirements for information transmission, exchange and control of

security video surveillance networking systems GB 50009 Code for Loading of Building Structures GB 50014 Design Standard for Outdoor Drainage GB 50016 Code for fire protection of building design GB 50019 Design Specification for Heating Ventilation and Air Conditioning of Industrial Buildings GB 50034 Architectural Lighting Design Standard GB 50037 Design code for building ground GB 50052 Design Specification for Power Supply and Distribution System GB 50057 Code for Lightning Protection Design of Buildings GB 50065 Grounding Design Specification for AC Electrical Installations GB 50108 Technical Specification for Waterproofing of Underground Engineering GB 50116 Design code for automatic fire alarm system GB 50140 Design code for configuration of building fire extinguishers GB 50164 Concrete Quality Control Standard GB 50187 General Graphic Design Specification for Industrial Enterprises GB 50201 flood control standard GB 50202 Acceptance Standard for Construction Quality of Building Foundation GB 50204 Code for acceptance of construction quality of concrete structure engineering GB 50223 Classification Standard for Seismic Fortification of Construction Engineering GB 50242 Code for acceptance of construction quality of building water supply, drainage and heating engineering 3.5 radioactive waste repository yard the area between the perimeter of the storage area and the waste storage warehouse.

waste warehouse repository an independent physical building (structure) used to store radioactive waste and spent (old) radioactive sources.

very short lived waste (VSLW) the half-life of the main radionuclides contained in the waste is very short (generally less than 100 days), and the activity concentration of the long-lived radionuclides is in the solution range.

Below the control level, through storage decay, the radionuclide activity concentration can reach the uncontrolled level, and the uncontrolled level is implemented.

very low level waste (VLLW) the lower limit of the activity concentration of radionuclides in waste is the release level, the upper limit is generally 10 to 100 times the release level, and the long-life release level is the radionuclide activity concentration should be very limited, only limited containment and isolation measures are required, and it can be disposed of in a surface landfill facility, or according to Dispose of in industrial solid waste landfills in accordance with national solid waste management regulations.

low level radioactive waste (LLW) the activity concentration of short-lived radionuclides in waste can be relatively high, while the content of long-lived radionuclides is limited, which takes hundreds of years.

Efficient containment and isolation and can be disposed of in near-surface disposal facilities with engineered barriers.

4 General requirements

4.1

The construction of the waste bank shall fully analyze the regional nuclear technology utilization waste, the generation status of spent (old) radioactive sources and the development trend of nuclear technology utilization.

To meet the needs of safe storage of radioactive waste in the region.

4.2

The construction content of the waste warehouse should include but not be limited to the following items. waste warehouse, comprehensive room, supporting facilities in the warehouse area (transformation and distribution equipment) facilities, water supply and drainage facilities, heating and ventilation facilities, communication and security facilities, garage and car washing facilities, gates and walls of the storage area, etc.).

4.3

The location of the waste repository should be combined with the economic development, urban and rural development planning and land use planning of the region, taking into account external human events and natural the impact of the event on the waste bank and the possible impact of the waste bank on the public and the environment, so as to ensure that the waste bank has a relationship with the public and the environment during its design life.

It has sufficient isolation and good containment performance, and has convenient conditions for reconstruction, expansion and decommissioning.

4.4

The waste bank shall adopt safe, reliable and effective technologies, processes, equipment and instruments, combined with the functions and characteristics of the waste bank and the location of the waste bank.

According to the environmental conditions of the reservoir area, the general layout of the reservoir area, the form of buildings (structures) and the corresponding supporting facilities should be considered, and reliable radiation protection should be adopted.

protection, environmental protection and industrial safety precautions.

4.5

The waste warehouse shall be constructed in accordance with the requirements of the design documents, and the construction quality shall comply with the provisions of national or local standards. After construction is completed, Acceptance should be carried out in accordance with relevant national standards and regulations.

5 Site Selection for Waste Repository

5.1

The selection of the warehouse site should conform to the regional main functional area planning, industrial layout, urban and rural overall planning, land use overall planning and relevant laws and regulations.

requirements stipulated by laws and regulations.

5.2

The warehouse site should have convenient and economical transportation conditions.

5.3

The location of the reservoir should be an area with low population density and little development prospect.

5.4

The reservoir site should have site conditions that meet the construction needs, including earthquake, engineering geology and flood control requirements.

5.5

The warehouse site should have the necessary site area to meet the short-term planning of the waste warehouse, and it should be properly reserved according to the needs of the long-term development plan of the waste warehouse.

There is room.

5.6

The site selection should avoid the following locations and areas.

- a) densely populated areas in urban planning;
- b) scenic spots, ecological red line areas, water source reserves, nature reserves and other environmentally sensitive areas that need special protection;
- c) Areas with potential geological hazards such as debris flows, landslides, collapses, and karst caves;
- d) There is a danger of external events such as explosion, which may endanger the warehouse site;
- e) Areas that may be affected by dam failure accidents such as reservoirs, tailings ponds, waste dumps, etc.;
- f) Areas affected by seismic fault zones.