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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 6249-2025

Replacing GB 6249-2011

**Regulations for environmental radiation protection of nuclear
power plants**

核动力厂环境辐射防护规定

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Table of Contents

Foreword i

1 Application scope

2 Normative references

3 Terms and definitions

4 General requirements for radiation protection

5 Site selection requirements

6 Radiation protection requirements under operational states

7 Radiation protection requirements under accident conditions

8 Effluent discharge management and effluent monitoring

9 Radiation environment monitoring

10 Radioactive solid waste management

11 Decommissioning of nuclear power plant

Annex A (Informative) Basic assumptions for determining the source terms of postulated siting accident of LWR nuclear power plants

Annex B (Informative) Recommended method for determining the source terms of postulated siting accidents in the small modular nuclear power plant

Annex C (Informative) The adjustment method of annual discharge control value of effluents from reactors of different thermal power

Annex D (Normative) Recommended concentration of radionuclide activity in liquid effluent

Annex E (Informative) Categories of typical design basis accidents in LWR nuclear power plants

Foreword

This document was issued on 24 January 2025 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 May 2025.

It is a GB standard without the /T suffix: compliance is mandatory in China.

The document runs to 15 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

GB 6249-2025 Regulations for environmental radiation protection of nuclear power plant

It replaces GB 6249-2011, which is superseded.

1 Scope

GB 6249-2025 is the Chinese regulation for the environmental radiation protection of nuclear power plants, and it is the standard that fixes what a plant may release and what dose the public around it may receive. It is mandatory, it is short relative to its importance, and every environmental impact assessment and every operating licence in the Chinese nuclear programme is written against it. The document sets the dose constraint for a member of the public from the plant, the discharge limits for gaseous and liquid effluents by radionuclide group, the requirements on the effluent monitoring and on the environmental monitoring programme around the site, the requirements on the site and the exclusion and planning zones, the requirements applying in normal operation and in anticipated operational occurrences, and the reporting obligations. The 2025 edition replaces GB 6249-2011 and takes effect on 1 May 2025. For an operator, a designer, a regulator or anyone assessing a Chinese nuclear site, this is the limit the assessment is measured against.

This standard specifies the environmental radiation protection requirements for onshore stationary nuclear power plants in site selection, design, construction, operation, decommissioning, modification, etc.

This standard is applicable to onshore stationary nuclear power plants that generate electricity and supply steam and heat via water-cooled reactors. This standard may be used by the nuclear power plants of other types of reactors for reference.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. For other documents that are canceled, modified or revised by new ones, the new documents apply.

GB 18871 Basic standards for protection against ionizing radiation and for the safety of radiation sources

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

environmental sensitive area

all kinds of protected areas at all levels established in accordance with laws and areas particularly sensitive to the environmental impact of nuclear power plants, mainly including

national parks, nature reserves, scenic spots, world cultural and natural heritage sites, special marine reserves, drinking water source protection areas, key protected wildlife habitats and wild plant growing and breeding areas, natural spawning grounds, feeding grounds, wintering grounds and migration channels of important aquatic organisms, etc.

3.2

small modular nuclear power plant

nuclear power plant of advanced water-cooled reactor with thermal power of a single core not greater than 300 MW and a modular design that makes full use of its inherent safety characteristics

3.3

exclusion area

area within a certain range around the reactor, in which permanent residents are prohibited, and the operator of the nuclear power plant exercises effective control over this area, including the evacuation of any individual from this area; highways, railways and waterways can pass through this area, but shall not interfere with the normal operation of the nuclear power plant; in the event of an accident, appropriate and effective arrangements may be made to regulate traffic in order to ensure the safety of staff and the public. In the exclusion area, activities unrelated to the operation of nuclear power plants are allowed as long as they do not affect the normal operation of nuclear power plants and endanger public health and safety

3.4

planning restricted area

area designated by the provincial people's government and directly adjoining the exclusion area. Industrial facilities and activities within the planning restricted area will not pose an unacceptable threat to the safety of the nuclear power plant; the mechanical growth of the population is limited in the planning restricted area, and the population accumulation area will not pose an unacceptable impact on off-site emergency response, so as to ensure the safe operation of the nuclear power plant and protect the public health and the environment

3.5

population accumulation area

area to be controlled specially with high population density and traffic density in the planning restricted area, e.g. residential areas, schools, hospitals, office areas, commercial centers, tourist spots, nursing homes, etc., which shall be divided in consideration of effective barriers of natural terrain and artificial facilities

3.6

multi-reactor site

nuclear power plant site with two or more reactors and the distance between reactors less than 5 km

3.7

effluents

gas or liquid stream containing radionuclides to be discharged into the environment for dilution and dispersion by a nuclear power plant. The effluents shall be discharged within the permitted range and shall be effectively monitored

3.8

operational states

general term for two types of states, i.e. normal operation and expected operation events. Normal operation refers to the operation of the nuclear power plant within the specified operating limits and conditions. Expected operation events refer to various operational processes deviating from normal operation that are expected to occur at least once during the operating life of a nuclear power plant; as corresponding measures have been taken in the design, such events will not cause serious damage to safety-important items or accident conditions

3.9

accident conditions

conditions more serious than the expected operation events, including design basis accidents and severe accidents

3.10

design basis accidents

accidents of a nuclear power plant that is designed in accordance with the determined design criteria and conservative methods, during which the fuel damage and the release of radioactive substances will not exceed the specified limits

3.11

infrequent accidents

accidents with very low frequency during the operating life of a nuclear power plant (expected to be 10^{-4} /reactor year $\sim 10^{-2}$ /reactor year), which may cause damage to a small number of fuel elements, but a single infrequent accident will not cause the loss of function of the reactor coolant system or containment barrier

3.12