

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

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**Technical specification for the measurement of environmental
gamma radiation dose rate**

环境 γ 辐射剂量率测量技术规范

(English Translation)

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1 Scope of application

This standard specifies the principles and technical requirements for environmental radiation dose rate measurement, including measurement purposes and requirements, measurement implementation, measurement records Records and reports, quality assurance, etc.

This standard is applicable to environmental quality monitoring, peripheral environmental monitoring of radiation sources and emergency monitoring of environmental radiation air absorbed dose rate measurement.

Radiation dose rate measurement in other environments can be implemented by reference.

2 Normative references

This standard refers to the following documents or their clauses. For dated reference documents, only the dated version is applicable to this standard.

For undated references, the latest version (including all amendments) is applicable to this standard.

HJ 61 Technical Specification for Radiation Environment Monitoring HJ 1009 Technical Specification for Operation of Automatic Radiation Ambient Air Monitoring Station HJ 1128 Nuclear Power Plant Nuclear Accident Environmental Emergency Monitoring Technical Specification JJG 393 portable X, radiation surrounding dose equivalent (rate) meter and monitor

3 Terms and definitions

The following terms and definitions apply to this standard.

Radiation source

All substances and entities that can cause radiation exposure, such as the emission of ionizing radiation or the release of radioactive substances. For example, the release of radon. Substances are radiation sources that exist in the environment. Irradiation disinfection devices are radiation sources in the practice of irradiated food preservation, and X-ray machines are radiological diagnosis. Unlike radiation sources in treatment, nuclear power plants are radiation sources in the practice of nuclear power generation.

Environmental gamma radiation dose rate the natural radionuclides, artificial radionuclides or X/ rays emitted by the radiation device in the surrounding material of the measuring point are at the measuring point.

The absorbed dose rate generated in the air.

Environment Radiation dose rate can be measured continuously and instantaneously. Unless otherwise specified, this standard refers to instantaneous measurement.

Critical group

For a given radiation source and a given exposure path, the exposure is quite uniform and can represent the given radiation source and the given exposure.

The group of members of the public who receives the highest effective dose or equivalent dose by the route.

Relative intrinsic error Under certain reference conditions, the relative error of the instrument to the indicated value of a certain measured under specified reference radiation.

4.1 Purpose of measurement

Environment Radiation dose rate measurement is an integral part of radiation environment monitoring, and its main purpose is.

- a) Provide data for estimating the external exposure dose of radiation generated by radiation sources in the environment to key groups of people or members of the public.
- b) Provide information for verifying whether the radiation or effluent release of the radiation source meets the requirements of regulations, standards and management limits.
- c) Monitor the status of radiation sources and provide warnings for abnormal or unexpected situations.
- d) Obtain information on the environmental natural background level of radiation and changes in environmental radiation levels caused by human activities.

e) Provide radiation level information for nuclear and radiation emergency response decision-making.

4.2 Measurement requirements

4.2.1

Radiation environmental quality monitoring generally refers to the investigation of natural or artificial radiation levels and changing trends throughout the country or within a certain area.

4.2.2

Environmental radiation level surveys nationwide or within a certain area, usually with grids with appropriate distances evenly distributed, and the grid size is average Optional 25 kmx25 km, 10 kmx10 km, 5 kmx5 km or smaller areas, buildings, roads and fields located in the same grid point Point, environment radiation dose rate measurement can be carried out together.

a) Field measurement point selection

1) The lawn in the city, the grass in the park, and certain islands, mountains, virgin forests and other places that are not easily affected by human activities, it is possible to select and set points appropriately and measure regularly.

2) The point should be far away from tall trees or buildings, and the distance from nearby tall buildings should be greater than 30 m.

3) The topography of the site should be flat, open, free of stagnant water, bare soil or covered by vegetation, avoid choosing the surface soil in the environment to change Location (such as dirt, gravel, concrete, asphalt, etc.).

b) When carrying out road surveys, the points should be set on the center line of the road.

c) When carrying out indoor measurement, the point should be set at the position where the personnel stay for the longest time or the indoor center position.

d) Other

1) The measurement results are related to the ground (including surrounding buildings), groundwater level, soil composition and water content, rainfall, snow and ice cover, tides, release the ground subsidence of radioactive materials, the precipitation of emissive gas, and the diffusion conditions are related to environmental factors. Pay attention to their influence when measuring; avoid other surrounding the influence of natural or man-made factors on the measurement results, such as lakes and beaches, near the storage yards of bricks, ore and cinder, etc., for special attention measurement Point, can not be subject to these restrictions.

2) The selection of the measurement time should be representative. In the field

measurement, the measurement is generally not carried out in rainy day, snowy day, after rain and within 6 h after snowy day.

the amount.

4.2.3

For the automatic monitoring station of radiation ambient air for continuous measurement, the following points should be paid attention to when selecting points.

- a) The location of the points should be representative, taking into account the layout of the area and population factors, and taking full account of the representativeness of the region and the representativeness of the resident dose.
- b) The construction plan of the area should be fully integrated. Once the location is determined, it should generally not be changed to ensure the continuity and comparability of the measurement data.
- c) Comprehensive consideration should be given to guarantee conditions such as point power supply, lightning protection, waterproof flooding, communication, traffic, and safety. In principle, the electricity supply adopts the city the voltage stability is better than $\pm 10\%$; it has a stable wired data communication link and wireless communication signal for the communication department; it is advisable to use fences and other hand the segment establishes a relatively independent site space.

4.2.4

When performing continuous measurement, the relevant local meteorological parameters, such as temperature, humidity, wind speed, wind direction, rainfall (snow) amount, etc., should be obtained simultaneously.

4.2.5

The environmental measurement points around nuclear facilities should be centered on the nuclear facility, divided into sectors according to different distances and directions.

Layout in principle, where crowds often stop in areas where key people are located, on the plant boundary closest to nuclear facilities, and on plant boundaries that dominate the wind direction.

The places to stay and the places where the maximum landing concentration is outside the factory are densely distributed. Continuous measurement of the periphery of large nuclear facilities such as nuclear power plants and spent fuel reprocessing facilities the location is generally centered on nuclear facilities, covering 16 azimuths in the Yanyu Planning Area (the coastal nuclear power plant is located on the sea side as needed).

Design), the environmental radiation dose rate generated by artificial radionuclides in the plume and surface sediments should be considered. Should choose some that are not susceptible to nuclear the measurement points affected by the facility are used as control