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Determination for dangerous quantities of radioactive material

放射性物质危险量的确定

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed and coordinated by the National Nuclear Energy Standardization Technical Committee (SAC/TC58).

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Determination of the Dangerous Quantity of Radioactive Substances

1 Scope

This document gives the exposure scenarios and exposure pathways, health effects, radioactive substances and their impact on the health of the individual.

Quality characteristics, as well as D value and its application.

This document applies to the determination of hazardous quantities of radioactive materials during nuclear and radiation emergency preparedness.

2 Normative references

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 D value

A dangerous amount of radioactive material. If this amount of radioactive material gets out of control, it could cause death or reduced living standards for those exposed. Permanent damage to quality.

3.2 Deterministic effect

An ionizing radiation health effect that usually has a dose threshold. When the dose exceeds the threshold, the higher the dose, the more serious the effect. The greater the degree.

NOTE 1 Such effects are called severe deterministic effects if they are fatal, life-threatening, or result in permanent damage with reduced quality of life.

NOTE 2 Dose thresholds are related to the type of deterministic health effect and are less related to individual differences in exposed persons. Examples of deterministic effects include erythema, Hematologic damage and acute radiation sickness. Deterministic effects are also called "adverse tissue reactions." [Source. GB 18871-2002, J3.2, modified]

3.3 Exposure pathway

The pathway by which radiation or radionuclides reach the human body and cause exposure.

[Source. GB 18871-2002, J5.15, modified]

4 Exposure scenarios and exposure pathways

4.1 Determination of D value When considering the exposure scenario, radioactive materials are divided into two categories. one is non-diffusible material (D value is recorded as D1), and the other is The substance is a diffuse substance (D value is recorded as D2). The specific meaning is as follows.

- a) The D1 value is the activity of the radionuclide in the non-dispersible material. If the source is out of control but there is no dispersion, the radionuclide can lead to an emergency situation and is expected to cause serious deterministic effects;
- b) The D2 value is the activity of radionuclides in the diffuse material. If the source is out of control and diffuses, it may lead to an emergency state and is expected to cause serious consequences. re-determination effect;