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

GB 15146.3-2008

Replacing GB 15146.3-1994

**Nuclear criticality safety for fissile materials outside reactors -
Part 3: Requirements for nuclear criticality safety in the storage
of fissile materials**

反应堆外易裂变材料的核临界安全 第3部分：易裂变材料贮存的核临界安全要求

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4.5 Or a mixture of hydrogen-containing compound ($2 < H/X \leq 20$) mass limit, kg 3.6

Appendix A

Foreword

All technical content in this section is mandatory. GB 15146 "Nuclear criticality safety for fissile materials outside reactor" has so far released the following 11 sections.

--- GB 15146.1 easily outside reactors Nuclear criticality safety - Part 1 of fissile material. Nuclear Criticality Safety Administration regulations (on behalf of the For GB 15146.1-1994)

--- GB 15146.2 outside reactors Nuclear criticality safety - Part 2 of fissile material. fissile material, processing and operations processing The basic technical rules and subcritical limits (instead of GB 15146.2-1994)

--- GB 15146.3 outside reactors Nuclear criticality safety for fissile materials - Part 3. The nuclear criticality safety for fissile material storage Requirements (instead of GB 15146.3-1994)

--- GB 15146.4 fissile materials outside reactor - Nuclear criticality safety-containing aqueous solutions of fissile material for steel pipe intersections Nuclear criticality safety criteria

--- GB 15146.5 plutonium outside reactor nuclear criticality safety for fissile materials - Nuclear criticality control criteria and a mixture of natural uranium Subcritical limits

--- GB/T 15146.6 fissile materials outside reactor - Nuclear criticality safety borosilicate glass Raschig rings and its application criteria

--- GB 15146.7 easily outside reactors Nuclear criticality safety subcritical neutron multiplication of fissile material for measurements in situ

--- GB 15146.8 fissile materials outside reactor - Nuclear criticality safety - Part 8. heap

outside the handling, storage and transportation of LWR fuel Nuclear criticality safety criteria for feed unit (instead of GB 15146.8-1994)

--- GB Performance and seized 15146.9 fissile materials outside reactor - Nuclear criticality safety for nuclear criticality detection and alarm systems Inspection requirements

--- GB 15146.10 Safety requirements outside reactor nuclear criticality safety for fissile material fixed neutron absorber

--- GB/T 15146.11 outside reactor Nuclear criticality safety for fissile materials based on nuclear criticality safety limits and controls moderator This section GB of Section 315 146. This Part replaces GB/T 15146.3-1994 "fissile materials outside the reactor core Pro Border security storage of fissile material for nuclear criticality safety requirements. " Compared with GB 15146.3-1994 part of the main changes are as follows:

--- Increasing the foreword;

--- The critical limit with some modifications or deletions;

1 Scope

Part 3 applies criticality safety to storage, where the hazard is different in kind from processing: the material sits still, but it sits in quantity and in arrays, and the controlling parameters become spacing, the interaction between units, the reflection from walls and floors, and the possibility of flooding or of moderator entering the store. The standard sets the requirements for the storage arrangement, the spacing and the fixed neutron absorbers, and the administrative controls that keep the configuration as evaluated. Issued on 19 September 2008, in force since 1 August 2009, replacing GB 15146.3-1994. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the edition it replaces are taken from there. The clause text, the tables and the numeric limits are not reproduced on this page - they are in the document itself, which is delivered in full in English translation.

This section provides basic storage of fissile material for nuclear criticality safety requirements and limits. This section applies to storage of fissile material.

1.3 A solution or a mixture of hydrogen ($H/X \geq 800$) volume limit, L 4.0

3.0 aH/X represents the material itself, H/235U or H/239Pu atomic ratio. b This is the density of plutonium metal 19.6g/cm³ limits, the density limits of plutonium alloy 15.8g/cm³ was 6.0kg. c This is the density of plutonium metal 19.6g/cm³ limits, the density limits of plutonium alloy 15.8g/cm³ was 4.5kg.

5.8 Table 1 lists class I unit arranged in a cubic array storage, the maximum number of units allowed in relation to the volume of the gate element shown in Figure 1. Figure

1 The lower curve is for the case against the thickness of the reflector (concrete, steel, wood, clay built into the thick-walled depot) in addition to the array. Curve fit Only slightly for the outer reflector array of circumstances. NOTE. Slight reflection reflector means smaller reflector. Only arrays on both sides (floor and a wall) or side (the array on the big room) close to the thick When the reflector, the reflector can be regarded as only slightly reflective. The Class II listed in Table 1 are arranged in a cubic array storage unit, the outside unit's internal cubic array best water moderator, cubic external array Reflections of water, the maximum number of units allowed in relation to the volume of the gate element shown in Figure 2.

5.9 If the number of units of fissile material is less than the limits listed in Table 1, by maintaining the largest array unit determines the total amount of fissile material and the gate Cell size under the same conditions, the total number of array elements can be increased.

5.10 yuan at the gate from the center and the number of units has allowed the conditions established by the unit may limit a mixed array of different units, but this When all types of units must be centrally located, respectively.

5.11 can remove some cells from the array or array to increase the total volume of approach channel is formed within the array, in the channel to allow workers Staff or through travel and transport allow, but not in which to place the storage unit.

5.12 storage array to meet one of the following conditions may be considered isolated from each other.

a) If the surfaces of two planar array or cube array to the surface is greater than the distance between two of the following values, whichever is greater. the maximum size of each array Inch; 4m above.

b) there is concrete or 50cm above the water layer between the two arrays.

5.13 limits in Table 1 are listed for several common fissile material storage units making. For some cases, the provision of a single storage Yuan limits may be too restrictive or not suited to this point, according to experimental data and (or) calculated result of the calculation method is confirmed in detail Safety analysis, provide new limits. Examples of these storage units.

a) There are a number of more than slow and reflective capacity of water and concrete materials (such as heavy water, graphite, beryllium, etc.) incorporation of fissile material unit;

b) appear stronger than concrete or water reflection material around at the array;

c) loading unit exceeds tabulated limit value;

d) Fissile material means temporarily stored in the operating area or operating a small

chamber when the container is not closed;

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this section, however, encourage the parties to this part of the research agreement Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB 15146.1 fissile materials outside reactor - Nuclear criticality safety - Part 1. Nuclear Criticality Safety Administration regulations

GB 15146.2 outside reactors Nuclear criticality safety for fissile materials - Part 2. The operation of fissile material, processing, handling basic Technical Regulations and subcritical limits Performance and testing

GB 15146.9 fissile materials outside reactor - Nuclear criticality safety for nuclear criticality detection and alarm systems Claim

3 Terms and Definitions

The following terms and definitions apply to this part of GB 15146.

3.1 Be treated as a whole collection of fissile material, the material may be, a collection of material of any shape can also be separated by a number of The small components.

3.2 The storage unit is placed therein, and the volume of space having a defined boundary.

3.3 Rules set by the storage unit has a number of storage element composed of a gate arrangement.

3.4 Calculation methods recognized in accordance with the provisions of GB 15146.2.

4.1 Management Requirements

4.1.1 Storage in the operation of all fissile material shall comply with the relevant requirements of GB 15146.1 and GB 15146.2 of.

4.1.2 should be approved storage control methods and operating rules written to written procedures; involved in the transfer and storage of fissile material for staff You should be familiar with these procedures; storage limit should be a variety of fissile material posted.

4.1.3 Nuclear criticality safety management personnel should carry out the necessary checks to confirm the procedures established by implementation.

4.1.4 personnel access storage areas should be strictly controlled.