



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

**GB 14883.1-2016**

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**National food safety standard - General rules for the  
examination of radioactive substances in foods**

食品安全国家标准 食品中放射性物质检验 总则

**(English Translation)**

**Issued on: August 31, 2016**

**Implemented on: March 1, 2017**

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**Issued by: National Health and Family Planning Commission of the PRC**

**3. No action is required - Full-copy of this standar**

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### Foreword

This standard replaces GB 14883.1-1994 "General rules for the examination of radioactive substances in foods".

As compared with GB 14883.1-1994, the main changes of this standard are as follows.

- CHANGE the standard name into "National food safety standard - General rules for the examination of radioactive substances in foods";
- ADJUST the text in accordance with the format of the national food safety standard;
- ADD 3 chapters. "Terms and definitions", "Safety requirements", and "Report of test results";
- SORT and ADJUST the general requirements and instructions for sampling, pretreatment, inspection methods, and the contents of the chapters on quality control methods.

National food safety standard

General rules for the examination of radioactive

substances in foods

## **1 Scope**

This standard specifies the common requirements for sampling, pretreatment and test result reports as stated in determination method criteria of each part in GB 14883 (unless otherwise specifically stated).

This standard applies to the determination method criteria of each part in GB 14883.

### **2.1 Radionuclides**

It refers to the nuclides having radioactivity. In accordance with its source, it can be divided into two categories. natural radionuclides and artificial radionuclides. The common forms of decay of radionuclides are alpha decay, beta decay and gamma decay.

### **2.2 Carrier**

It refers to a substance that can carry a certain trace substance together to participate in a chemical or physical process. The amount of the radionuclides for the radiochemical operation is often very small, so it is difficult to separate or transfer it using the common amount substance treatment method. However, the use of the stable isotope which is same as the radionuclides in chemical properties OR the substance which is similar to the radionuclides in chemical properties as the carrier to make the both jointly participate in the entire treatment process, can effectively settle this problem.

**3.1 General sampling shall follow the sampling requirements as specified in GB/T 5009.1.**

**3.2 The amount of the sample required for the test may be determined in** accordance with the sample amount as required by the test method used OR the dust ratio between the dust consumption by the sample and this food. The sampling amount shall be not less than 3 times the sample amount as required

for the test, AND the sample is divided into 3 equivalent parts after being mixed uniformly, one part for test, AND the other two parts for re-test, reference or arbitration.

**4.6.3 It shall strictly control the temperature during the ashing process (it may use quartz thermometer or calibrated automatic temperature controller for controlling), so as to avoid the loss of radionuclides or sample sintering.**

**4.6.4 For rice and other foods which are difficult to be ashed, it may take it out** at the final stage of ashing, cool it down, AND add appropriate amount of nitric acid, hydrogen peroxide or sodium nitrite and other ashing agent to speed up the ashing rate; after being evaporated in the electric furnace, it shall be ashed continuously in the muffle furnace, BUT it shall also pay attention to the impact of the ashing agent onto the measurement result; if necessary, it can make corrections OR treat the rice after being boiled and swelled or the bean after being soaked and pulped, which can apparently speed up the ashing rate.

**4.6.5 The carrier elements and the tracer radioisotopes shall be added into the** sample before ashing.

**4.6.6 The ashed food ash shall be placed in the drier to cool it to room** temperature, weighed, AND calculated of the ash/fresh ratio.

**4.6.7 The food ash is placed in the porcelain evaporate dish, ground fine by** millet pestle or glass rod, mixed uniformly, passed through the 180  $\mu\text{m}$  sieve, dried at 110  $^{\circ}\text{C}$ , AND stored in the drier or grinding bottle to prepare for use.

#### **4.7 Special requirements for sample pretreatment**

Special requirements for pretreatment in certain radionuclide testing will be specified in the corresponding standards.

## **5 General requirements and instructions for test**

methods

**5.1 If there are two or more test methods for the same test item, such methods** can be selected based on actual conditions, BUT the first method will be used as an arbitration method, which shall be selected for the arbitration test.

**5.2 When determining the measurement efficiency or chemical recovery rate, it** shall use a certified standard solution or standard reference substance for preparation in accordance with standard method.

**5.3 During the test, the chemical method shall be performed on a parallel** sample, AND the gamma spectrum and other physical methods shall be performed on parallel samples as practical as possible.

**5.4 The water used for the inspection and analysis method shall, unless** otherwise specified, refer to the distilled water or deionized water the purity of which complies with the general analysis requirements (generally it shall reach the level I water requirements of GB/T 6682).

**8.1 The test personnel shall operate in strict accordance with the analytical** procedures specified in each standard method. For toxic, harmful or potentially hazardous reagents or materials, it shall operate strictly in accordance with the precautions of the reagents or materials, AND do well in personal safety protection.

**8.2 In the case of unsafe factors such as poisoning, explosion, corrosion,** burns, etc., during the test process, the laboratory shall establish corresponding contingency plans AND take special protective measures.

**8.3 The taking, placement, application, and use of the radioactive standard** solution shall have appropriate shielding protection.