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NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 18524-2016

National food safety standard - Hygienic specification for food irradiation processing

食品安全国家标准 食品辐照加工卫生规范

(English Translation)

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Foreword

This standard replaces GB/T 18524-2001 "General technical requirements for food irradiation".

As compared with GB/T 18524-2001, the main changes of this standard are as follows.

- CHANGE the standard name into "National food safety standard -Hygienic specification for food irradiation processing";

- MODIFY the standard structure;

- ADD the terms and definitions;

- ADD the basic hygienic requirements and management guidelines for radiation processing, personnel and records;

- ADD the relevant requirements for the radiation processing process control and radiation safety control;

- ADD the management requirements for records and documents;

- DELETE the Appendix A from the original standard, the content of which is moved into the irradiation processing control part. DELETE the Appendix B from the original standard which relates to the packaging materials, the content of which is moved into the packaging part.

National food safety standard - Hygienic specification for food irradiation processing

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1 Scope

This standard specifies the basic hygienic requirements and management guidelines for irradiation device, irradiation processing, personnel and records for food irradiation processing.

This standard applies to food irradiation processing.

2 Terms and definitions

The terms and definitions in GB 14881-2013 apply to this standard.

2.1 Food irradiation

It refers to the irradiation process in which the radiation chemistry and radiation microbiological effects produced by ionizing radiation in foodstuffs are used to inhibit the germination, delay or promote ripening, and realize the insecticide, disinfection, sterilization, and antisepsis.

2.2 Absorption dosage D

It refers to the quotient obtained through dividing the average energy which is given by any ionizing radiation onto the substance having a mass of dm by the dm, that is, , in the unit of J - kg-1 (joules/kg), in the name Gray, and in the symbol of Gy, 1 Gy = 1 J - kg-1.

2.3 Dosage nonuniformity

The ratio of the maximum absorption dosage to the minimum absorption dosage within the processing load.

2.4 Minimum effective dosage

The minimum dosage required to achieve a radiation purpose, i.e., the lower limit of the process dosage, when the food is irradiated.

2.5 Maximum tolerated dosage

The maximum dosage, i.e., the upper limit of the process dosage, that does not adversely affect the food quality and functional characteristics when the food is irradiated.

5.2.4.1 After the food loading mode is established, it shall load with the actual

product or the simulant of similar density to measure its dosage distribution, so as to perform the loading mode verification.

5.2.4.2 When measuring the dosage distribution, a sufficient number of dosimeters shall be

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placed in the irradiated product load to determine the minimum and maximum dosage areas, then select the conventional dosage monitoring location, AND calculate the relationship between the dosage at the conventional dosage point and the maximum dosage and minimum dosage.

The dosage measurement shall include the sampling monitoring product absorption dosage, product dosage nonuniformity verification, and the inspection of the relationship between the device operation parameters and product absorption dosage.

5.2.4.3 In conventional irradiation processing, the dosimeter shall be placed at the location of the minimum dosage in the irradiation container OR the position easy to be placed having the known quantitative relationship with the minimum dosage. Meanwhile, it shall also install a dosimeter at the maximum dosage area to monitor the maximum acceptable dosage of the food. AND it shall make record AND archive it.

5.2.4.4 When the irradiation parameters change, the dosage distribution shall

be re-measured. It shall, in accordance with the expected irradiation processing application of the device, the dosage measurement system performance, and the measurement uncertainty, etc., select the appropriate dosage measurement dosimeter in accordance with the provisions of GB/T 16640, AND it shall trace back to the national absorption dosage standards.

5.2.5 Repeated Irradiation

5.2.5.1

In addition to the repeated irradiations of the low moisture foods (such as cereals, beans, dehydrated food, and similar products), the repeated irradiation shall not be performed under other conditions.

5.2.5.2 Irradiation of the following foods is not considered as repeated

irradiation.

- Food made from raw materials irradiated by less than 1 kGy dosage;

- Food containing 5% or less of radiation;

- Food irradiated for many times by all the dosage to be absorbed to realize the special process purposes.

5.2.5.3 The cumulative dose of repeated irradiated food shall not exceed 10 kGy.

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8 Marking

The marking of irradiated food shall comply with the requirements of clause 4.1.11.1 of GB 14891 and GB 7718.

9.1.1 Irradiation device records

It shall record all data relating to the construction, acceptance, licensing registration, and maintenance of the irradiation device.

9.1.2 Recording of irradiation processing parameters

It shall record the parameters on the irradiation processing control, dosage detection, and irradiation device during startup and daily operation.

9.1.3 Irradiation product records

It shall record the product type, irradiation purpose, irradiation dosage, irradiation date, and post-irradiation product quality inspection (including post-irradiation sampling, retention and inventory management).

It shall record the irradiation processing requirements and conditions, which shall be kept by special person AND archived for reference. The records of the irradiation processing and conditions shall include but not limited to the following.

a) The name, code, lot number and quantity, exit-factory date, receiving date of the irradiated food, AND the name, address and contact of the irradiated food delegator;

b) The purpose of irradiation;

c) The name and activity of the radionuclide, OR the irradiation device energy, beam, scan width, transmission speed and processing parameters that affect the absorption dosage of the food;

d) The density of the irradiated food, AND the loading pattern of the food in the irradiation container or within the irradiation device;

e) Irradiation dosage;

f) The operating parameters set by the irradiation device;

g) The date of irradiation;

h) The placement and number of conventional dosimeters;

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