

## GENERAL STANDARD FOR IRRADIATED FOODS

### CODEX STAN 106-1983, REV.1-2003

#### 1. SCOPE

This standard applies to foods processed by ionizing radiation that is used in conjunction with applicable hygienic codes, food standards and transportation codes. It does not apply to foods exposed to doses imparted by measuring instruments used for inspection purposes.

#### 2. GENERAL REQUIREMENTS FOR THE PROCESS

##### 2.1 Radiation Sources

The following types of ionizing radiation may be used:

- a) Gamma rays from the radionuclides  $^{60}\text{Co}$  or  $^{137}\text{Cs}$ ;
- b) X-rays generated from machine sources operated at or below an energy level of 5 MeV;
- c) Electrons generated from machine sources operated at or below an energy level of 10 MeV.

##### 2.2 Absorbed Dose

For the irradiation of any food, the minimum absorbed dose should be sufficient to achieve the technological purpose and the maximum absorbed dose should be less than that which would compromise consumer safety, wholesomeness or would adversely affect structural integrity, functional properties, or sensory attributes. The maximum absorbed dose delivered to a food should not exceed 10kGy, except when necessary to achieve a legitimate technological purpose.<sup>1</sup>

##### 2.3 Facilities and Control of the Process

2.3.1 Radiation treatment of foods should be carried out in facilities licensed and registered for this purpose by the competent authority.

2.3.2 The facilities shall be designed to meet the requirements of safety, efficacy and good hygienic practices of food processing.

2.3.3 The facilities should be staffed by adequate, trained and competent personnel.

2.3.4 Control of the process within the facility should include the keeping of adequate records including quantitative dosimetry.

2.3.5 Facilities and records should be open to inspection by appropriate authorities.

2.3.6 Control should be carried out in accordance with the *Recommended International Code of Practice for Radiation Processing of Foods* (CAC/RCP 19-1979, Rev.1-2003).

#### 3. HYGIENE OF IRRADIATED FOODS

3.1 The irradiated food should be prepared, processed, and transported hygienically in accordance with the provisions of the *Recommended International Code of Practice – General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3-1997), including the application of the seven principles of Hazard

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<sup>1</sup> High Dose Irradiation: Wholesomeness of Food Irradiated with Doses above 10kGy, Report of a Joint FAO/IAEA/WHO Study Group, Technical Report Series 890 WHO, Geneva, 1999; Safety and Nutritional Adequacy of Irradiated Foods, WHO, Geneva, 1994; and Wholesomeness of Irradiated Food, Report of Joint FAO/IAEA WHO Expert Committee, Technical Report Series 659, WHO, Geneva, 1981.

Analysis and Critical Control Point (HACCP) system where applicable for food safety purposes. Where appropriate, the technical requirements for the raw materials and end product should comply with applicable hygienic codes, food standards, and transportation codes.

3.2 Any relevant national public health requirement affecting microbiological safety and nutritional adequacy applicable in the country in which the food is sold should be observed.

## **4. TECHNOLOGICAL REQUIREMENTS**

### **4.1 General Requirement**

The irradiation of food is justified only when it fulfils a technological requirement and/or is beneficial for the protection of consumer health. It should not be used as a substitute for good hygienic and good manufacturing practices or good agricultural practices.

### **4.2 Food Quality and Packaging Requirements**

The doses applied shall be commensurate with the technological and public health purposes to be achieved and shall be in accordance with good radiation processing practice. Foods to be irradiated and their packaging materials shall be of suitable quality, acceptable hygienic condition and appropriate for this purpose and shall be handled, before and after irradiation, according to good manufacturing practices taking into account the particular requirements of the technology of the process.

## **5. RE-IRRADIATION**

5.1 Except for foods with low moisture content (cereals, pulses, dehydrated foods and other such commodities) irradiated for the purpose of controlling insect reinfestation, foods irradiated in accordance with Sections 2 and 4 of this standard should not be re-irradiated.

5.2 For the purpose of this standard, food is not considered as having been re-irradiated when: (a) the irradiated food is prepared from materials which have been irradiated at low dose levels for purposes other than food safety, e.g. quarantine control, prevention of sprouting of roots and tubers; (b) the food, containing less than 5% of irradiated ingredient, is irradiated; or when (c) the full dose of ionizing radiation required to achieve the desired effect is applied to the food in more than one increment as part of processing for a specific technological purpose.

5.3 The cumulative maximum absorbed dose delivered to a food should not exceed 10 kGy as a result of re-irradiation except when it is necessary to achieve a legitimate technological purpose, and should not compromise consumer safety or wholesomeness of the food.

## **6. POST IRRADIATION VERIFICATION**

6.1 When required and where applicable, analytical methods for the detection of irradiated foods may be used to enforce authorization and labeling requirements. The analytical methods used should be those adopted by the Codex Commission.

## **7. LABELLING**

### **7.1 Inventory Control**

For irradiated foods, whether prepackaged or not, the relevant shipping documents shall give appropriate information to identify the registered facility which has irradiated the food, the date(s) of treatment, irradiation dose and lot identification.

### **7.2 Prepackaged Foods Intended for Direct Consumption**

The labelling of prepackaged irradiated foods should indicate the treatment and in all aspects

should be in accordance with the relevant provisions of the *Codex General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985, Rev.2-1999).

### **7.3 Foods in Bulk Containers**

The declaration of the fact of irradiation should be made clear on the relevant shipping documents. In the case of products sold in bulk to the ultimate consumer, the international logo and the words “irradiated” or “treated with ionizing radiation” should appear together with the name of the product on the container in which products are placed.