

LEGISLATION, TECHNICAL POTENTIAL AND CONTROL OF IRRADIATED FOOD IN ROMANIA

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Abstract. *Knowing the present status and legislative setting of food irradiation in our country is a start point for every researcher who wants to look into ionizing radiation of food practice and control. The paper aims to list the main legislation, to summaries the most important legislative principles, the technical potential and to review the activity of ANSVSA, the Romanian authority in food safety control. The materials reviewed consist of Common order no. 855/98/2002, Common order no. 856/112/2002 and other governmental decisions, normatives and government emergency ordinances related to food irradiation, but also the sites of European Commission and IRASM Technological Irradiations Department, of Horia Hulubei National Institute for Research and Development of Physics and Nuclear Engineering. The conclusion of the study was that Romanian legislation is harmonized with that of the EU and other international guidelines. Additionally, there is technical potential for irradiating foods in the form of IRASM. The control of foods treated with ionizing radiation is performed by ANSVSA supervised by the Ministry of Health.*

Keywords: food irradiation, Romanian legislation, food control.

INTRODUCTION

The former Soviet Union was the first country that authorized irradiated food for human consumption in 1958. At that time, the treatment of potatoes with ionizing radiation was allowed in order to inhibit sprouting [1]. That clearance was the start of a series of authorizations in Canada and USA, at first, and then all around the Globe. In 1980 JECFA (Joint FAO/IAEA/WHO Expert Committee on Food Additives, IAEA - International Atomic Energy Agency) stated the wholesomeness and the microbiological and toxicological safety of irradiated foods. In 1981 WHO (World Health Organization) published the "Wholesomeness of Irradiated Food" brochure. The Codex Alimentarius, under the auspices of FAO (Food and Agriculture Organization) and WHO, published in 1984 the "Codex General Standard for Irradiated Foods and Recommended International Code of Practice for the Operation of Radiation Facilities Used for the Treatment of Foods"[1]. The "International Code of Practice" section of the document provides global GMP (Good Manufacturing Practices) standards for the operation of a food irradiation facility.

These documents specify that food irradiation up to an overall average dose of 10 kGy causes no special nutritional or microbiological problems. They also appoint the sources of ionizing radiation accepted for food industry and provide dose and energy limit guidelines. Their publication had a profound influence on further international developments and formed the basis of legislation in many countries.

Nevertheless, national legislations are still very divergent, and this lack of international harmonization has become a major impediment to international trade of irradiated foods and foodstuffs.

Although legislation principles differ, there are a few basic guidelines that authorities should follow to ensure the safety of irradiated foods. These are collected in a number of international documents, such as:

- Codex General Standard for Irradiated Foods
- Codex Recommended International Code of Practice for the Operation of Irradiation Facilities for the Treatment of Food
- Codex General Standard for the Labeling of Prepackaged Food
- Codex General Principles of Food Hygiene, and related Codes of Practice for specific commodities
- Codex Hazard Analysis and Critical Control Point System and Guidelines for its Application

To date, 40 countries have approved irradiation treatment of more than 50 different foods [1].

Up to this moment, the EU has not yet reached a consensus in what legislation is concerned because of Germany's resistance [1]. Holland, Belgium and France, on the other hand, are systematically irradiating a large number of foods and foodstuffs.

At European Community level, irradiated foods and food ingredients are regulated by:

1. Framework Directive 1999/2/EC concerning foods and food ingredients treated with ionizing radiation, which covers general and technical aspects for carrying out the process, labeling of irradiated foods and conditions for authorizing food irradiation.

2. Implementing Directive 1999/3/EC on the establishment of a Community list of food and food ingredients treated with ionizing radiation. So far, this list of products authorized for irradiation within the whole EU contains only a single food category: "dried aromatic herbs, spices and vegetable seasonings".

National authorizations can be given in Member States allowing the irradiation of certain foods, but also, restrictions or bans can be imposed on irradiated foods until the completed EU-wide list of authorized products for irradiation enters into force.

Romanian legislation is harmonized with that of the EU, consequently, Romania has two main legislative regulations for irradiated food and foodstuffs:

1. Common order no. 855/98/2002 for approving Normative concerning foods and ingredients treated with ionizing radiations

2. Common order no. 856/112/2002 for approving Normative concerning foods and animal feeds radioactively contaminated after a nuclear accident or other radiological emergency

Additionally, Romanian legislation includes governmental decisions, normatives and government emergency ordinances such as:

- Government Emergency Ordinance no. 97 of 21st June 2001 on production, trade and commercialization of foods

- Committee's Decision no. 40/2002 on adopting a list of third countries authorized for food irradiation with following amendments
 - Minister's of Public Health Order no. 870/2006 for approving the List of foods and food ingredients and maximum overall average doses
 - Governmental decisions no. 1529/2007 on completing Methodological normatives regarding food labeling from annex no. 1 to Governmental decisions no. 106/2002

MATERIAL AND METHOD

In order to complete the present inquiry of Romanian legislation and control activities there were reviewed the following documents:

1. Common order no. 855/98/2002
2. Common order no. 856/112/2002
3. Government Emergency Ordinance no. 97 of 21st June 2001
4. Governmental decisions no. 1529/2007
5. Minister's of Public Health Order no. 870/2006
6. ANSVSA's (National Sanitary Veterinary and Food Safety Authority) Order no. 45/2010 for modifying annex no. 1, 2, 3 and 5 to President's of ANSVSA Order 45/2005 on approving fees for analyses and other sanitary veterinary activities
7. ANSVSA's Order of 26th May 2010 for approving Sanitary Veterinary and Food Safety Normative on authorizing laboratories for sanitary-veterinaty and food safety control
8. Press release – seize of tea batch exported by People's Republic of China (16th February 2010)
9. Customs' rejection notification for foods and animal feeds (16th September 2010)
10. ANSVSA's Activity Report 2005, 2008, 2009
11. ANSVSA's Action Plan 2010-2011

In addition, the sites of European Commission and IRASM Technological Irradiations Department, of Horia Hulubei National Institute for Research and Development of Physics and Nuclear Engineering were consulted for further information.

RESULTS AND DISCUSSION

The Framework Directive sets out that the treatment with ionizing radiation of a specific food item may only be authorized if:

- there is a reasonable technological need;
- it presents no health hazard;
- it is of benefit to the consumers;
- it is not used as a substitute for GHPs, GAPs and GMPs ;

Food irradiation may be used only for the following purposes:

- to reduce the incidence of food-borne disease by destroying pathogenic organisms

- to reduce spoilage of foodstuffs by retarding or arresting decay processes and destroying spoilage organisms
- to reduce loss of foodstuffs by premature ripening, germination or sprouting
- to rid foodstuffs of organisms harmful to plant or plant products

Labeling of foods treated with ionizing radiation has been one of the most controversial issues related to commercial production. The Joint FAO/IAEA/WHO Expert Committee concluded that for irradiated foods which had been approved as safe to eat, there was no valid scientific reason for identifying the products with a label at the retail level when similar labeling is not required for the other commonly used processing methods [17]. The United Nation's Codex Alimentarius Commission, after receiving and reviewing the recommendations of the Committee, agreed to recommend the use of an optional logo or symbol and a compulsory written statement on the label of the irradiated product indicating that it had been irradiated.

Figure 1 illustrates the Radura, the international symbol of irradiated foods, while Figure 2 shows the labeling of irradiated foods using the Radura.



Figure 1. The Radura symbol



Figure 2. Labeling irradiated foods

Source: <http://www.arserrc.gov/www/fsit/FoodIrradiation.htm>

According to Article 7(4) of Directive 1999/2/EC, a treatment facility has to be approved for the treatment of foods and food ingredients in order to perform food irradiation.

Furthermore, Government Emergency Ordinance no. 97 of 21st June 2001 states that food irradiation can be performed only in treatment facilities authorized by the CNCAN (National Commission for Nuclear Activities Control) and authorized sanitary by the Health Ministry. The Ordinance also identifies the competent control authorities:

- sanitary veterinary, phytosanitary and technological control authorities designated by the Ministry of Agriculture and Rural development
- sanitary authorities designated by the Health Ministry
- authorities for consumer's protection designated by Consumer's Protection National Authority

The European Commission states that for Romania the competent authorities are [12]:

- for irradiation facilities, CNCAN
- for irradiated food, the Ministry of Health and ANSVSA

The only approved facility for the treatment of foods and food ingredients with ionizing radiation in Romania is the Multipurpose Irradiation Facility at IRASM Technological Irradiations Department, IFIN-HH (Horia Hulubei National Institute for Research and Development of Physics and Nuclear Engineering) [12]. IRASM is the result of a Technical Co-operation Project between the Romanian Government and International Atomic Energy Agency: IAEA TC Project ROM 8/011. The Irradiator of IRASM is a SVST Co-60/B type, loaded with 100 kCi representing 5% of maximum capacity [14]. The facility was authorized in 22nd December 2000.

Romania adopted the list of products authorized for irradiation in EU which contains only "dried aromatic herbs, spices and vegetable seasonings".

The history of ionizing treatment of food in Romania began in 1994 when the Feasibility Study for an irradiation facility in Romania was completed, IAEA auctioned for equipment, the winner being the Institute of Isotopes Co. Ltd. Budapest HUNGARY and the Tripartite Contract between IAEA Vienna - Institute of Isotopes Co. Ltd. Hungary - IFIN HH Romania began. The following years the Technical Project was completed. The building process was finished in 1999 and in May, the same year, the building was approved by the Institute of Isotopes. In September 2000 the irradiation equipment was installed by Institute of Isotopes Co. Ltd. Hungary [14].

Up to now, there was no commercial food irradiation treatment declared by IRASM at Community level [12]. The ionizations performed in our country were for maintaining the laboratory practice and for research purposes.

In what the control of irradiated food is concerned, ANSVSA had a meeting on food and food ingredients treated with ionizing radiation and radioactive contamination of foods and animal feeds in May 2005. Later that year ANSVSA participated to a study visit in London [4].

IFIN-HH organizes a series of seminars the next years: in 2006 a seminar on detection methods for irradiated foods and in 2008 a seminar on infrastructure developing and certification of LDAI (Laboratory for Irradiated Foods Detection) and a workshop called "Security of Irradiated Foods" [5, 14].

In 2008 SR EN 13751:2003 Foodstuffs - Detection of irradiated food using photostimulated luminescence was implemented. The validation measurements were performed on samples irradiated at IRASM, 80 experimental measurements were made on spices and vegetable seasonings [5].

In 2010 ANSVSA gave two press releases related to irradiated foods. The first press release, given in February, was about a batch of "Sanye Antiadipose Tea" [8]. According to The Institute of Hygiene and Public Health it was treated with ionizing radiations. As there was no irradiation facility authorized by the EU in Peoples Republic of China, the tea batch was banned from entering Romania and the EU market space. As a result of this incident, ANSVSA intensified the control of foods and foodstuffs imported from third countries and all rejects would be banned at customs.

The second press release, given in September, was a notification sent by Constanța North and South, Halmeu, Otopeni and Galați Customs Inspection Points regarding unauthorized irradiation treatments of antiadipose tea and cactus extract

and irradiation treatment of Angelica vegetal extract [10]. The batches were either returned, or destroyed as the importer or exported decided.

As for future objectives, ANSVSA wants to elaborate sampling procedures for testing irradiated foods and to assure optimum operation of control equipment and to intensify its collaboration with IFIN-HH IRASM for controlled irradiation of samples and further tests [7].

CONCLUSIONS

As a result of the present study there can be said that food irradiation legislation complies with European legislation and in general with international recognized documents and standards. Foods and foodstuffs can be irradiated only in facilities authorized by CNCAN such as IRASM at IFIN-HH, the only irradiation facility in Romania. IRASM is a facility using a Co-60 source which became fully functional in 2001.

Commercial irradiation can be done with a maximum overall average dose of 10 kGy and the irradiation clearance was given only for dried aromatic herbs, spices and vegetable seasonings. Up to this moment no commercial irradiation of foods and foodstuffs was reported to the European Commission.

The control authorities of food treated with ionizing radiation are Ministry of Health and ANSVSA, which develop both regulatory principles and control procedures. ANSVSA reported up to 2010 two incidents at customs related to food irradiation. Food sampling for irradiation detection is still in its infancy in Romania as to this moment there is no large scale control of food products from the retail chain.

While Romania has the technical potential for commercial irradiation of foods and food ingredients there is seemingly no current request on our market. The irradiation facility at IFIN-HH is being used for other purposes such as research purpose, irradiation sterilization of medical devices and cultural heritage conservation: mass disinfection for wood, textile, parchment, hay objects, even mummies [14].

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