Food irradiation explained

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Background information on the rules on food irradiation

Directive 1999/2/EC of the European Parliament and of the Council of 22 February 1999 on the approximation of the laws of the Member States concerning foods and food ingredients treated with ionising radiation

Report from the Commission to the European Parliament and the Council on food and food ingredients treated with ionising radiation for the years 2020–2021

Update

An overview of rules and practices of food irradiation in the EU following the European Commission's most recent review of this process.

Overview

Food irradiation is the process of killing pathogenic bacteria that can cause food poisoning (such as *Salmonella*, *Campylobacter*, and *Escherichia coli*), through a radiant energy known as ionising radiation.

Permitted food irradiation in the EU

Directive 1999/2/EC sets the basic rules for the use of irradiation on foods and food ingredients.

Foods and food ingredients can be irradiated and sold across the whole EU market only if they are on a list of approved food categories listed under Directive 1999/3/EC. Currently only dried aromatic herbs, spices, and vegetable seasonings may be irradiated and sold across the EU.

Some EU Member States allow the irradiation of other categories of food, including frogs legs, poultry, fish, and vegetables. However, these products can only be sold on the domestic market of the Member State that has authorised irradiation, and cannot be sold across the EU. The EU has published a list of these Member State authorisations.

Any irradiated food ingredient sold in the EU, or food products containing an irradiated ingredient, must be labelled with the words "irradiated" or "treated with ionising radiation".

Irradiation facilities in both EU and non-EU countries must be officially approved by the EU authorities before they can irradiate food that is sold on the EU market. Only 10 non-EU

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irradiation facilities are approved (Commission Decision 2002/840/EC), located in South Africa (3 facilities), India (3), Thailand (2), Switzerland (1), and Turkey (1). In the EU, 13 Member States (Belgium, Bulgaria, Croatia, Czech Republic, Estonia, France, Germany, Hungary, Italy, the Netherlands, Poland, Spain, and Romania) have approved irradiation facilities, although Bulgaria, Italy, and Romania did not irradiate food in the latest evaluated period (2020–2021).

Food irradiation in practice

During 2021–2022, 5,029 tons of food products were irradiated, a decrease of 35.8% on the previous reporting period (2018–2019). They included only herbs/spices; frozen frog legs; poultry; and dehydrated blood, plasma, and coagulates (European Commission 2023). In the same period, 83% of food irradiation took place in Belgium (European Commission 2023).

In 2021 the European Commission evaluated the EU rules on irradiation. It concluded that the initial aim of the Directive, to align rules across EU countries, had not succeeded, and different EU Member States continue to irradiate different products. It identified a steady decline in irradiation in the EU: approximately 60% between 2010 and 2019. The evaluation concluded that this was not because of the EU rules, but was due to EU consumers' reluctance to accept irradiated food. The EU food industry therefore has little interest in using irradiation. A public consultation carried out during the evaluation found that only a small number of sectors, such as shrimp, frog legs, crayfish, and blood products, were in favour of authorising the irradiation of their products (European Commission 2021). Consumer concerns regarding irradiation are thought to be linked to fears about nuclear technologies. Today, there is very little consumer awareness of food irradiation (European Commission 2021).

Timeline

There are currently no plans to increase the number of food categories in the EU that may be irradiated.

What are the major implications for exporting countries?

EU-wide, irradiation is permitted only for dried aromatic herbs, spices, and vegetable seasonings. Suppliers of these products must ensure that food irradiation is carried out by facilities that have been approved by the EU.

EU control authorities check imported products for compliance with EU irradiation rules. Between 1999 and 2019, 358 cases of irradiated foods were intercepted and reported to the Rapid Alert System for Food and Feed (RASFF). These all concerned foods that either were not authorised to be irradiated, were not labelled as irradiated, or were irradiated by facilities that were not approved (European Commission 2021).

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The prohibition of food irradiation can complicate trade to the EU as it limits the options that can be used by non-EU suppliers to combat bacteria. For example, in September 2020, ethylene oxide was widely used on sesame seeds from India to eliminate microbiological contamination that could have been addressed by irradiation. Detection of high and non-compliant levels of ethylene oxide residues led to significant disruptions in trade.

Resources

European Commission (2023) Report from the Commission to the European Parliament and the Council on food and food ingredients treated with ionising radiation for the years 2020–2021

Online resources from the European Commission:

- Annual reports – food irradiation
- Food irradiation – approved establishments

Directive 1999/3/EC of the European Parliament and of the Council of 22 February 1999 on the establishment of a Community list of foods and food ingredients treated with ionising radiation

2002/840/EC: Commission Decision of 23 October 2002 adopting the list of approved facilities in third countries for the irradiation of foods

Sources

Directive 1999/2/EC on the approximation of the laws of the Member States concerning foods and food ingredients treated with ionising radiation

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