

Irradiated food in Europe

July 2001

food irradiation campaign

good food doesn't need irradiating 

The Food Commission (UK) Ltd
Campaigning for safer, healthier food

Legislation in Europe

Currently all member states of the European Union (EU) have their own set of rules governing which foods they permit for irradiation, and at what doses, for sale within their borders. (For details go to http://europa.eu.int/comm/food/fs/sfp/fi06_en.pdf).

In March 1999 the European Commission (EC) introduced a framework Directive and an implementing Directive on the irradiation of foodstuffs. Their objective is to harmonise at EU level the member states' national laws governing the treatment of foods and ingredients with ionising radiation, and the conditions of use of ionising radiation, so that irradiated foods may be freely traded within the EU. Each member state was responsible for implementing the legislation laid down in these Directives when they became applicable in September 2000.

The legislation stipulates that trade in irradiated foods across the borders of all member states is permitted, but only for foods on the EC approved 'positive' list. Currently the only foods on this list are dried aromatic herbs, spices and vegetable seasonings, and the maximum authorised dose for these is 10 kGy. An extension of the EC positive list to include more foods has been under discussion for several years.

Irradiated foods traded within the EU must only have been treated at EC authorised irradiation facilities. To date no facilities outside the EU have received the EC authorisation.

List of abbreviations:

FAO: Food and Agriculture Organisation
HACCP: Hazard Analysis Critical Control Point
IAEA: International Atomic Energy Association
SCF: Scientific Committee for Food (of the EC)
WHO: World Health Organisation
WTO: World Trade Organisation
Gray: irradiation dose unit kGy: kiloGray (1000 Gray)
10 kGy: equivalent to about 330 million chest x-rays

The EC Directives require all foods, or listed ingredients of foods, which have been irradiated, to be labelled with the words 'irradiated' or 'treated with ionising radiation'.

Legislation in the UK

Food irradiation in the UK is a devolved matter, with all EC and UK legislation being a requirement in England, Wales, Scotland and Northern Ireland. Responsibility for food irradiation and the licensing of food irradiation facilities in the UK now lies with the Food Standards Agency. Current national regulations allow for the treatment under licence of seven categories of food with ionising radiation. These are fruit (including fungi, tomato and rhubarb), vegetables (including pulses), cereals, bulbs and tubers, spices and condiments (including herbs and vegetable seasonings), fish and shellfish (including eels, crustaceans and molluscs) and poultry. However, at present it is not legal for any foods other than herbs and spices to be irradiated in the UK for general sale as no-one holds a current licence to do so (see below). Provided they are treated at EC authorised irradiation facilities outside the UK and correctly labelled, all seven irradiated food groups may be imported and marketed for general consumption in the UK.

In compliance with EC legislation, the UK Food Labelling Regulations 1996 and the Food Irradiation Provision Regulation 2000 require all foods, or listed ingredients of food, which have been irradiated, to be labelled with the words 'irradiated' or 'treated with ionising radiation'. The Food Irradiation Provisions Regulations 2000 removed an exemption which had previously allowed small amounts of irradiated food used in compound ingredients to remain unlabelled. All foods containing any irradiated ingredients must now be labelled as such.

When food is not pre-packed and is sold for immediate consumption (for example in restaurants), the indication of irradiation must be marked or labelled on a menu, notice, ticket or label that the customer can see when choosing the food. Use of the term 'may contain' is no longer permitted.

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Company Registration No. 2485176. Registered office as above. VAT No. 524 9331 48

Currently only one plant in the UK is licensed to irradiate foods for general marketing, and the only foods which it has irradiated since the early 1990s are herbs and spices. According to Cathie Deeley, spokeswoman for the UK herb and spice licence holders - Puridex Irradiation Technologies - food companies have been told by the leading supermarket chains that if they continue to irradiate any of their products, even if only for export, they can no longer be relied upon to supply the UK retail outlets because of the risk of accidental supply of irradiated products.

The Food Commission's surveys of 1993 and 1995 revealed that none of the major UK supermarkets had any plans to stock irradiated foods due to the reluctance of consumers to purchase them. The supermarkets also stated that they would take steps aimed to avoid unknowingly stocking irradiated foods.

European attitudes to irradiation

Last year the European Commission put forward a draft proposal for extension of the positive list. The EC suggested the addition of the following foods, all of which have been given a favourable opinion by the EU Scientific Committee for Food (SCF): deep frozen aromatic herbs, dried fruit, flakes and germs of cereals, mechanically recovered chicken meat, offal of chicken, egg white, gum arabic, frog legs and peeled shrimps. Several other foods, which had also received a favourable opinion by the SCF, were suggested for exclusion from the EC list. These were fresh fruits and vegetables, cereals, starchy tubers (potatoes), fish, camembert from raw milk, casein, rice flour, blood products, fresh red meats and poultry meat. This proposal was opened up for discussion by means of a consultation with consumer organisations, industry and other interested parties. Some of the views expressed during this consultation are presented below. A revised proposal has yet to be published by the EC.

European food industry

Several key European food industry bodies expressed doubts about the desirability and appropriateness of the technology.

The meat industry

The Brussels-based Liaison Centre for the Meat Processing Industry in the EU stated that their *'longstanding position is that the organisation remains against the decontamination of fresh meat, poultry meat and meat products by ionising radiation'*. They wrote *'we believe that good hygiene practices, taken up in HACCP systems, should get first priority to improve the hygienic conditions along the meat chain'*. The European Union of Traders in Livestock and Meat also regards irradiation as unacceptable because it affects the taste of fresh red meat. They stated *'at present, fresh red meat should not be included. It would seem premature regarding the high level of hygiene rules in the EU, the current method of irradiation which denatures the taste of fresh red meat and the consumers who are not ready to accept'*.

The dairy industry

The German Milk Industry Association stated *'there is no technological need to irradiate casein. It would only substitute good hygienic practices. In addition the authorisation of casein would affect negatively the image of the European milk industry'*. The French Milk Products Industry (Groupe Lactalis) stated that they also are not in favour of irradiation of casein and caseinates.

The fruit industry

The Brussels-based Association of Dried Fruit and Vegetable Industries stated *'irradiation can never substitute for good hygiene practices in the production of dried fruit and vegetables'*. They commented *'in our sector effective alternatives to irradiation already exist'* and *'there are in place good manufacturing practices which guarantee the consumer irreproachable standards of hygiene'*. They continued *'irradiation must answer a real technological need, and therefore we ask you not to include dried fruit or fruit flakes in the positive list'*.

The Association of German Food Traders stated *'concerning the inhibition of sprouting and the delay of ripening, it should be carefully considered whether applications are necessary. Sprouting and ripening are natural processes that allow the consumer to judge the age and freshness of products. Through irradiation consumers might be misled'*. Therefore they recommended that the technology *'should be allowed only in a restrictive manner or should be prohibited'* for inhibition of sprouting and delaying of ripening.

The fish industry

The Dutch Fish Product Board stated that irradiation of raw fish and raw, uncooked fishery products should never be irradiated as these products are always cooked, or at least sufficiently heated, by the final consumer or caterer. In addition cold water shrimps like *crangon crangon* should also not be included on a positive list. However they would like to see warm water shrimps (cooked and peeled), frog legs and crayfish (cooked and peeled) on the list.

Other food sectors

The European Confederation of Food and Agriculture Industries has commented that several food manufacturing sectors including cereal flakes, tea, dried fruits and meat are against allowing ionising radiation to treat their products, as they wish to avoid the possibility of it being used to substitute for good hygiene leading in turn to unfair trade practices.

European irradiation industry

The International Association for Industrial Irradiation considers that *'all products to which the SCF has given a favourable opinion and which are currently approved in any one of the member states must be included [in the positive list]'*. They asserted that *'food irradiation will not replace good hygienic practices, but will add extra safety for the consumer'* and that *'red meat and poultry should be included'*. They added *'fish and shellfish are also sensitive products'* and that *'"to improve the hygienic conditions during the production of these foodstuffs" is not enough in itself to avoid the outbreak of illnesses caused by Salmonella, Listeria, Campylobacter or E. Coli 0157:H7'*. They also said that *'food irradiation is a self-limiting process: high*

dose treatment increases costs and reduces the sensory qualities making it unacceptable to the manufacturer'.

The London-based Panel of Gamma and Electron Irradiation, with members from industry and governmental bodies with diverse interests in radiation processing, stated that 'irradiation is an effective and safe process with potential benefits for human health'. They added that the 'general interpretation of low treatment volume [in member states] as a good indicator of no technological need is incorrect'.

Gammaster Provence SA, a Dutch-owned irradiation company in southern France, stated that 'with regard to the benefit for the consumer, many irradiated final products offer reduced health hazards (microbiological and chemical), prolonged shelf life, reduced prices, etc'. They added 'although good hygienic practices are very important they will never result in the same guarantee as a treatment of the end product'.

Companies are continuing to develop new equipment for food irradiation. For example, Scanditronix Medical AB of Sweden has recently developed a compact system for food irradiation, which they call Betaline. This is an electron-beam treatment and boasts a compact design that allows for its incorporation into existing production lines, without the need for extensive plant reconstruction.

UK health organisations

The British Medical Association (BMA) commented 'the fact that some products are irradiated in substantial amounts in one member state is not an indicator of technological need'. The BMA stated that 'the proposed strategy would encourage food producers to lower food safety standards because any degree of contamination could be compensated by irradiation', and concluded 'food irradiation should be restricted to dried aromatic herbs, spices and vegetable seasonings.' Meanwhile Lothian Health Authority expressed concern 'for the health and safety of workforce involved in irradiating food'.

At the recent Annual Conference of the Association of UK Port Health Authorities, a paper on food irradiation was presented. A straw poll was taken of the audience which consisted of port health officers and others in similar positions. The outcome of the poll demonstrated an overwhelming majority against the further use of the technology, even if controls are in place.

European consumer attitudes

European consumer organisations

The European Consumers Organisation (BEUC) doubt there is a 'real technological need for products proposed', and commented 'the fact that products could be unavoidably contaminated is not an adequate reason for food irradiation and should rather be considered as a substitute for good hygiene practices'. They also voice concerns over irradiated mechanically recovered chicken meat, offal and egg white, because it would 'probably give the consumer the impression that the product is safer, therefore there is a risk that they will fail to take necessary measures to prevent cross-contamination'. In addition they raise the issue of toxins in food, stating 'food irradiation does

not inactivate performed toxins in a given product' and 'irradiation of shrimps does not protect the consumer against food poisoning'.

The European Community of Consumer Co-operatives (Euro Coop) argued that 'the Commission discusses safety and hygiene at the wrong point of the chain and is not in line with the new holistic approach of the hygiene rules covering all stages of the food chain'. They added 'it is possible to raise chicken in a salmonella-free environment' and that 'priority should focus on improving production at primary level, storage, manufacturing processes, etc rather than on killing off contamination at the last stage'. They continued 'it may make the problem of food poisoning worse, if food irradiation is being used to legitimate bad hygiene' and 'extended shelf life of food products is not in the interest of the consumer, but always in the producer's interest'.

The Consumers in Europe Group (CEg) stated that 'food irradiation should only be applied if other methods are not available or possible. Food irradiation should not be used as a substitute for poor hygiene'. They added 'a benefit cannot necessarily be assumed to be derived from prolonged shelf life' and 'food irradiation is not a low cost method.' They have called for 'a clearer definition of "reasonable technological need" ' and ask 'is it a consumer need or an industry need?'

The Swedish Consumer Coalition believes 'there is no need to include dried fruit and flakes or germs of cereal in the list of foods which can be irradiated' as 'the latter are often considered as health foods such as muesli, and this image would be confused', even 'tainted and misperceived as dangerously contaminated'. They added 'irradiation plants are expensive and will be a weapon only for the big multinationals to eliminate smaller and local productions'.

The Italian Consumer Movement stated 'for not a single one of these products proposed for irradiation can a "reasonable" technological need be found'. They commented that 'there is a case for asserting the principle of precaution, until medium and long-term tests on superior mammals are made compulsory, before putting products on the market'.

UK supermarkets

The major UK supermarkets control approximately 60-70% of the grocery market. They have maintained a position against stocking of irradiated foods on the grounds that they perceive a lack of consumer demand for such products.

UK consumers

In a survey published by the UK Food Standards Agency in January 2001, 24% of people questioned expressed concern with regard to irradiated food. An earlier qualitative study confirmed that this issue did concern consumers once they specifically considered food safety.

Over the past few years UK consumers have had relatively little reason to be concerned by irradiation of their food. There has only been one active licence to irradiate food, only for herbs and spices, and even this has not been done for some time due to the general unpopularity of the technology. Since the successful conclusion of the Food Irradiation Campaign in the late 1980s, a decade has passed with relatively little coverage in the general media of the technology and its applications for food. In this context, a 24%

response stating concern is significant and indicates the levels to which consumer resistance could rise if irradiated foods were introduced on a large scale.

Continuing issues for consumers

● Nutrient loss

Food irradiation can result in loss of nutrients, for example vitamin E levels can be reduced by 25% after irradiation and vitamin C by 5-10%. This is compounded by the longer storage times of irradiated foods. This is not in the interest of consumers, least of all those in impoverished nations or sections of societies already struggling to obtain adequate nutrition.

● Radiolytic contamination

Irradiation of food often creates radiolytic by-products. Considerable controversy remains over the safety of these chemicals, and over the levels of research being undertaken to study them. One recent study found that hydrocarbons can form from an irradiated egg's natural fats. Some hydrocarbons can cause allergic reactions while others are known carcinogens, yet there do not appear to have been any tests undertaken of the hydrocarbons which formed in eggs.

● Viruses and bacterial resistance (superbugs)

Recent evidence also suggests that bacteria can become resistant to irradiation. As with pesticide and antibiotic use, this could create a need for ever-increasing doses to keep up with bacterial adaptations.

● Poor hygiene practices

Food irradiation can cover up poor hygiene practices and so provides no incentive to clean up food processing operations.

● Vermin and insect infestation

Irradiation renders contaminants such as insects and rodent faeces sterile, enabling them to go undetected in food supplies.

● Mass production and transportation

Food irradiation supports the trend towards centralised mass production and distribution of foods worldwide. Prolonged shelf life allows the transportation of foods over greater distances contributing to increased fuel consumption and air pollution, more road accidents, socio-economic decline among small-scale local farmers and loss of wildlife habitats to industrial farming and road construction.

Changes in international standards

The 1997 Joint FAO/IAEA/WHO Study Group on High Dose Irradiation concluded that *'food irradiated to any dose appropriate to achieve the intended technological objective is both safe to consume and nutritionally adequate'*. The Study Group also concluded that *'no upper dose limit need be imposed' as 'irradiated foods are deemed wholesome throughout the technologically useful dose range from below 10kGy to envisioned doses above 10kGy'*.

The international food standards-setting body, Codex Alimentarius, is proposing a revision of its rules governing food irradiation. The proposal includes an increase in the maximum food irradiation doses to levels above the present limit of 10kGy. Codex is also proposing a replacement of the word *'shall'* with *'should'* in the text of the revision. This change in wording means that food companies will no longer be obliged, but merely encouraged, to comply with the Codex food irradiation standards. The Codex proposal is currently at step 5, half way through the approval process.

The proposed standards are far less strict than those governing food irradiation in the US. Fears have been raised by US food campaigners, Public Citizen, that if the proposals are approved, other countries could challenge the US standards through the World Trade Organisation (WTO). They could do so on the grounds that the US standards comprise a trade barrier to irradiated imports from countries with less stringent regulations. A successful challenge could pressure the US to weaken its standards.

Similar pressures are being felt in Europe. The International Consultative Group on Food Irradiation (set up in 1983 by the FAO/IAEA/WHO) has stated that they *'respectfully request the European Commission to give due consideration to approving the use of irradiation to a wide variety of food products based on the Codex General Standard for Irradiated Foods, as endorsed by the EC Scientific Committee for Food'* in order to *'avoid introducing non-tariff barriers to trade'*.

Meanwhile the WTO is pushing for a global standard on food sanitation and sterilisation that includes food irradiation. Under the WTO's Sanitary and Phytosanitary (SPS) measures, the choice which each country presently has over whether or not to allow the import of irradiated foods will be removed. Under the terms of the SPS agreement, governments will have to justify on *'scientific grounds'* why a product should be exempted.

Conclusions

There appears to be little support for irradiated food among consumer organisations or the food industry in Europe. If the EC bows to the mounting pressure from irradiation interests and international bodies by introducing large scale irradiation of foods across Europe, it is likely to meet with widespread opposition.

The Food Irradiation Campaign (FIC) has been revived in order to raise awareness of, and co-ordinate international action in response to, the mounting pressures pushing this technology to the fore. If you would like to be kept updated on this issue contact Merav Shub, FIC Network Co-ordinator, on +44 (0) 20 7837 9229 or email irradiation@foodcomm.org.uk indicating that you wish to be included in the Food Irradiation Campaign network.