Report of the International Food Irradiation Meeting
Brussels, 17th October 2001

This report is based on notes taken at the International Food Irradiation meeting held in Brussels on 17th October 2001. It is not a transcript, and should not be treated as such. Please do not quote any part of this document without written permission from the speaker. This report is intended purely as an aide-memoir for those who attended the meeting. To receive any materials from the meeting or to find out more about food irradiation, please contact Merav Shub, Food Irradiation Campaigner: irradiation@foodcomm.org.uk

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Introduction

Food Irradiation is re-emerging as a serious cause for concern for consumers worldwide. Promoted by some as a means to kill harmful micro-organisms which can contaminate food and cause food poisoning, the technology is recognised by others as offering greatest potential benefits to the food industry, through extending the shelf life and transportability of foods by prevention of spoilage, sprouting and insect infestation. Concerns continue to grow over the possible long-term impacts on the health of consumers who eat irradiated foods, and are coupled with fears over the unsustainability of the globalised food production and marketing systems which irradiation technology supports. Mounting pressure from international bodies, food processing and export companies, the nuclear industry and irradiation equipment manufacturers could soon result in a loosening of international irradiation standards. This meeting was called by The Food Commission, Public Citizen and AEC - Association of European Consumers - to raise awareness of these issues among European consumer groups and other interested parties.

Speaker 1: Wenonah Hauter, Director, Public Citizen, USA

Food Irradiation in the USA – background

In the United States, initial resistance to food irradiation technology resulted in the industry backing off, yet after a period of ten to fifteen years, the battle still has not been won. We need to keep vigilant, because food irradiation has returned. We are involved in a battle over what kind of food system we will leave for our children. Most US citizens do not have access to fresh or unprocessed food, yet the US government is promoting food from large multi-national companies.

The US government is moving agriculture out of the developed world and into the developing world. Food irradiation will become critical, because it kills insects and can replace the use of methyl bromide, which is being phased out internationally. Food irradiation also dramatically increases the shelf life of food. These two factors are the key drivers behind the push for a wider application of food irradiation. In order to make the public accept irradiation, the public relations focus is on the use of food irradiation to kill bacteria.

During the 1980s, a number of high-profile bacterial contamination scares, and a number of deaths through food poisoning, re-opened the case for food irradiation. The International Atomic Energy Association (IAEA) and the US government began to push once more for food irradiation for contaminated meat, fruit, vegetables and grains. The US government wants to remove the labelling requirement on food that has been irradiated. There are also moves to rename food irradiation as 'pasteurisation'. At the moment, the main irradiated foodstuffs on the market are herbs and spices. However there will be test marketing of irradiated meat - mainly frozen hamburgers, in 10 to 15 States.

Irradiation's effect on food

In the process of food irradiation, the food is given an extremely high dose of radiation. For example, frozen hamburgers are treated with a dose equivalent to 233 million chest x-rays. This changes the chemistry of the food. Electrons get knocked out of orbit and new substances – known as Unique Radiolytic Products - are formed within the food, such as benzene and formaldehyde. The dangers to health of these and other substances created in irradiated food are not being taken seriously enough. Adverse health effects of eating irradiated foods have been shown, and yet research on toxicity has stopped.

Public opposition to food irradiation led to the setting up of a second committee on food irradiation in 1982 to examine 441 studies on toxicity of irradiated foods. The committee concluded that most of the studies were deficient in one or more respects. They came up with five studies (sometimes quoted as seven, because some were joint studies) that, they said, showed that food irradiation is safe. When Public Citizen reviewed these studies, they found that the FDA were missing copies of some of them, and that one was only available in French. A medical doctor examined two of the studies and said that the conclusions of those studies differed from the statements of the FDA.

When Public Citizen had collected the studies and translated one into English, they found that, in their opinion, the studies did not support the conclusion that food irradiation is safe. Feeding trials showed evidence of tumours, malignancies, sterility, and lowered birth weight.

A recent report by the World Health Organisation (WHO) is a literature review of research on food irradiation. It includes some reports that are not peer-reviewed and some trials that were shorter than five days - insufficient to test for long-term impact on health.

A Public Citizen report: A Broken Record (available on the Public Citizen website) tells the story of the FDA's decision to approve food irradiation for a growing number of products. This list has grown, but as yet the food industry has been largely wary of applying the process to food. So it has remained a non issue - for a long time it stayed out of the consumer spotlight.

Food irradiation and the meat industry

Over the past decade and a half, there have been enormous changes in the way meat is produced and delivered to consumers. The industrialisation of slaughter and meat packing has led to a rise in E.coli. Slaughterhouse line speeds have increased dramatically, and powerful meat industry interests have influenced the way regulation has developed.

For meat safety, a new system of risk control has been introduced - HACCP (Hazard Analysis of Critical Control Points). It was intended as an additional control to federal meat inspectors, to prevent pathogens contaminating the meat supply. In the US, however, the introduction of HACCP was the beginning of the privatisation of the meat inspection system.

Talking to inspectors, Public Citizen has become very concerned about the implications for safety of HACCP and of the privatisation of meat inspection. Line speeds keep increasing. Chickens in a plant can be slaughtered at a rate of 200 per minute; cows can be slaughtered at up to 100 per hour. With privatised inspection, this could rise to 300 per hour. The inspectors say that now the meat simply whizzes by. Some say that in such circumstances, all of the meat could become faecally contaminated. Under HACCP, the inspectors are restricted. They are prevented from pulling a contaminated carcass out of the line. They are even prohibited from identifying it with a marker, and they cannot test it.

The FDA has plans for meat inspection and meat safety that would restrict regulations only to those bacteria that can kill. American chickens have a life of 45 days and may develop cancer due to their living conditions and feed. These cancers would simply be ground up. This is an issue on which Public Citizen is raising consumer awareness. People may not know or understand the pros and cons of meat production and food irradiation, but they do understand that they could be eating pus and cancerous tumours. People react strongly to such gross ideas.

Yet there is still high-level support for food irradiation, because it fits into a paradigm of a globalised food trade and a shift in production to the developing world. Brazil aims to become the fruit and grain basket of the world. They are busy mowing down the Brazilian jungle in order to do this. They have built eight irradiation plants and plan to have 24 ready soon. Proponents of food irradiation are also targeting the Middle East, encouraging high value cash crops to be exported to Europe.

The key components of the campaign against food irradiation:

- Keep labelling: When food is labelled as irradiated, the public hesitates before buying it, and many reject the food. The irradiation declaration has become smaller and smaller and more difficult to find and read. Public Citizen keeps examples of labels to draw attention to this issue.

- Preserve legislation: If labelling laws are removed then the floodgates are opened for irradiated food products.
- Monitor and expose the test marketing: The US government is paying for a huge public relations drive and for education on food irradiation. Public Citizen works on the counter campaign, leafleting outside stores (especially Wal-Mart, which planned to sell irradiated meat two years ago).
- Draw attention to the international perspective: Working with partners in other countries to show how food irradiation will not only affect the US food supply, but also the production and consumption of food worldwide.

Question and Answer Session:

Q: What is the USDA's role in decisions on irradiation?
Wenonah Hauter: The USDA is for sale. There is a revolving door between industry and the USDA, with members of staff passing between the organisations. But there is support from USDA meat inspectors for the campaign against food irradiation – some are very political. Veterinarians are also showing some concern. Public Citizen recommends building a coalition of constituencies in support of a campaign on food irradiation, especially alliances with animal welfare organisations. In the US, the Humane Society and the Animal Welfare Institute are particularly concerned about food irradiation's role in enabling the speeding up of slaughter line speeds. In Congress, the most influential members are those who work on trade issues. But food irradiation is not a high-profile issue like GMO. Public Citizen is concerned about the fact that on agricultural committees, the food industry has a great influence as the largest campaign fund contributor.

Delegate: There was a conference in 1998 run by the WHO, FAO and IAEA. It was said at the time that it would be unlikely that meat would ever be irradiated on a large scale because of the 'wet dog' effect (meat apparently gains an unpleasant smell when irradiated).

Wenonah Hauter: This is why burgers will be one of the first meat products to be irradiated for test marketing, because additives can be used to control the flavour.

Delegate: There is great concern about the destruction of enzymes in fruit and vegetables by the process of irradiation. This would be of particular nutritional concern for vegetarians. It is disappointing that there is such a need for a new campaign on food irradiation, because we thought that it would be limited to herbs and spices.

Wenonah Hauter: A good angle for the campaign is The Great Vitamin Robbery. Nutrient loss is of great concern.

Q: Where does food irradiation sit within the legislative framework?
Wenonah Hauter: Food irradiation is covered by a law put in place in 1958. Food irradiation is treated as a food additive because of the creation of Unique Radiolytic Products. Under the 1958 Act, the FDA implements the regulations, but likes to create lots of room to allow for variations in implementation over time. Under the Act, each food group to be irradiated had to be legalised individually. There was one category left: processed food. Soon all processed foods will be able to be legally irradiated. Public Citizen is planning to sue the FDA over this decision.

Q: What about labelling?
Wenonah Hauter: Congress has ordered the FDA to revisit the question of labelling because of consumer resistance. Through our campaign, 20,000 names on a petition were collected. Labelling is generally supported by politicians under the 'right to know' principle. No politician wants to be seen as the one that removes this principle. However, the wording for the declaration will probably be something like "irradiated for food safety" or "irradiated to protect you from food poisoning". We must ensure that labelling remains a requirement. If it must be stated on the label, the food industry will probably hesitate to use irradiation because of widespread consumer resistance.

Delegate: I note that the American Medical Association and the American Dietetics Association support food irradiation.

Wenonah Hauter: Some members of these groups have said that they do not support their associations' policy. But this is characteristic of the way food irradiation is now seen. The bureaucratic food legislators have signed off food irradiation as "safe" and "desirable". The food irradiation industry is hiring in public relations firms to convince people it is a good idea. Public Citizen counters this by working through food co-ops and local networks.

Speaker 2: Martin Frid, Food and Trade Policy Officer, Swedish Consumer Coalition, Sweden

Food Irradiation in Sweden – background
Sweden prohibited food irradiation in the 1980s. There are two irradiation facilities in Sweden, which can only use irradiation treatment on medical equipment and some food specially prepared for cancer patients. There has never been a move to commercialise food irradiation within Sweden, partly due to labelling, partly because the food industry produces sanitary food, partly due to nutritional concerns, partly due to concerns that positive bacteria will also be killed, and partly due to a lack of consumer demand.

Until 1995, the Swedish legislation was simple. Politicians agreed that food irradiation was not allowed. The law was passed through the Swedish Parliament, and the Food Administration in Uppsala implements the regulations and performs tests to ensure that illegally irradiated products are not ending up on the shelves.

In 1995, Sweden joined the European Union (EU) and the World Trade Organisation (WTO). This has radically changed the way Sweden can legislate on food issues. More and more of the legislation is governed through the European Commission (EC) and the Council of Ministers. Following the series of food scares (BSE, E.coli, salmonella, dioxins…) the EU is changing its legislation. The new European Food Authority will be modelled on the US FDA. Food legislation is being put into one package, with the European Commission white paper on food safety published in January 2000.

There is a general trend to harmonise the rules to facilitate trade. But this is making slow progress. Food irradiation has been one of the issues on which this process has encountered problems because some countries have very strict rules while others are very liberal (e.g. Portugal, Belgium and Holland). How can harmonisation take place in this context? The legislation was supposed to be

completed by December 2000, but it has been delayed. An excellent consultation organised by DG Sanco provoked many negative comments about food irradiation, from the industry and from consumer groups. The consumer groups gave strong arguments and they commented on how regulation can go wrong.

The legislative process has not stopped, despite the delays. It has continued at Codex (the international food standards-setting body run by the UN's World Health Organisation and Food and Agriculture Organisation). The WHO has been running a so-called study group on food irradiation (which is quite unusual) and wants to remove the limit of 10Kgy and allow any dose of irradiation that is necessary to kill all bacteria. The study group has issued a report with some disturbing conclusions.

Consumers International is an observer at many Codex meetings. Food irradiation is usually dealt with by CCFAC – the Codex Committee on Food Additives and Contaminants. Consumers International reported that it had participated in a CCFAC meeting at The Hague and that it was a difficult meeting. Codex is supposed to base its standards on science and risk assessment. But some countries that already promote food irradiation tend to take over and promote their view. Thus the WHO "study group" report needs to be re-examined and its conclusions challenged.

Opposition to food irradiation is also complicated by the notion promoted by WHO of 'substantial equivalence'. It is generally held at Codex that high doses of irradiation (e.g. 10Kgy) are as safe as cooking, which has been practised for thousands of years. Products that are judged to be "substantially equivalent" cannot be treated in special ways under international trade rules. For example, mandatory labelling of irradiated foods in one country can be challenged by another country.

Questions campaigners need to ask:

- Should we have a boycott of US food?

Well, as there is currently legally binding mandatory labelling which has been agreed by all countries in Codex, this shouldn't be necessary. But if Codex decides that food irradiation is "no different" from cooking and doesn't require scientific risk assessment, then it would be very difficult for Sweden or the European Union to defend its own legislation if there is a formal challenge via the WTO.

- What does the WTO Sanitary and Phytosanitary (SPS) Agreement say about food safety?

The trade bureaucrats wrote this agreement in the Uruguay Round. Article 5 of the SPS Agreement gives details of risk assessment. Article 5.7 is similar to the Precautionary Principle, allowing for a degree of caution. So you cannot just ban something, you must have a risk assessment to show that the ban is based on so-called "sound science".

Throughout, trade and harmonisation are the end goals. Rules must not disrupt trade. The SPS Agreement says that countries should engage in multilateral recognition agreements. HACCP is a very good example of a risk assessment scheme that is becoming internationally recognised and promoted by regulators and Codex as a system facilitating harmonisation.

Comparing the issue of food irradiation to growth hormones

A parallel case to food irradiation is the long-running dispute over growth hormones. These are banned in the EU for use in cattle, but allowed in the US. The US took this case to the WTO

disputes panel. The first time, they upheld America's case so the EU lost and penalty tariffs were applied. The EU disagreed with the ruling and took the case to the next level at the WTO appellate body. They looked at the final detail, and overturned two out of three decisions of the disputes panel.

The WTO agreement actually says that countries can set their own level of protection for citizens, so they can argue the case for better standards if there is a scientific risk assessment to back up the position. The EU is now conducting a risk assessment of various growth hormones. EU will most likely have to do the same with food irradiation in order to avoid losing a WTO dispute.

The WTO appellate body is intended to be neutral. It is a small group of international lawyers who affect the lives of billions of people. Consumer groups say that this process is not participative or transparent.

- What can we do?

We could try to change the WTO agreement. We thought Seattle would be useful on this point. While this didn't happen because the proceedings were disrupted, other benefits may emerge from the raised awareness globally of the power of the WTO and the democratic deficit in its operations. The erosion of democratic influence over legislation means that it is harder to see whether the science is carried out properly. We need to press for publicly funded research on food safety.

Open Discussion Session

Q: Does irradiation deal with the BSE prion?

Wenonah Hauter: No it cannot. And irradiation companies are now also claiming that irradiation can kill anthrax, and are pressing for US mail to be irradiated. But there is no evidence in the scientific literature to say that irradiation can kill anthrax. We looked for it and couldn't find any. In the US, people are most interested in avoiding eating gross things. We think there should be labelling to help people cook meat more thoroughly, to help them avoid food poisoning.

Delegate: We mustn't forget that salmonella is a killer. We need to find ways to tackle this. Food irradiation may not be the right way, but we do need to find ways to stop lethal food poisoning.

Wenonah Hauter: The widespread implementation of HACCP will lead to more salmonella and listeria. It allows sloppy processing.

Delegate: The problems of BSE came from the abattoir - splattering blood and fragments of the nervous system from using a particular type of saw. We've seen action on that - HACCP and independent meat inspectors from the Department of Agriculture. We've also cut out infected bonemeal from animal feed.

Martin Frid: Where shall we draw the line? How contaminated should we allow the food supply to be? Food irradiation allows contamination to increase, with the idea that we can deal with it at the end of the line. Should we have better hygiene rules and properly trained (and legal) meat plant workers? Food irradiation is a quick-fix solution, and it is promoted as such.

Delegate: Hygiene in shops is bad. Cafés, take-aways - there are no common standards of hygiene. There needs to be action on this.

Delegate: Once meat has been irradiated, it becomes the ideal breeding ground for new bacteria, so you need extra care when handling and preparing the product, not less.

Delegate: The hygiene ideology - the obsessive destruction of all bacteria - produces health problems in itself. We need some bacteria, eg in the production of yoghurt and cheese… and in our digestive system.

Wenonah Hauter: Rules can work against small companies.

Delegate: The 'need' for food irradiation arises from mass production, new methods and intensification.

Delegate: Let's not assume that small-scale traditional producers are any more hygienic or safe than big producers. Even traditional producers need to follow hygiene rules. We need to focus on trained staff who understand the risks of what they're doing and can change their processes accordingly. That is the essence of HACCP.

Speaker 3: Merav Shub, Food Irradiation Campaign Co-ordinator, The Food Commission, UK

Illegal sales of irradiated foods in Europe

As we have heard, the US is seeing a strong push to openly irradiate more foods and also to weaken irradiation labelling requirements. In Europe the situation is somewhat different. Far fewer products are permitted for irradiation across Europe, and labelling regulations are still strong. The current problem lies with enforcement of the law to prevent illegal sale of unlabelled irradiated foods.

During the last anti-irradiation campaign in the 1980s, illegal sale of irradiated seafood received a lot of attention. Earlier this year, UK trading standards officers and a BBC television survey found that unlabelled irradiated shellfish were still on sale in the UK. There have been reports of shiploads of prawns arriving in the UK, being refused entry due to excessive microbial contamination, being then sent to Holland for 'Dutching' – in other words irradiating to reduce the bacterial load – and then being shipped back to the UK and sold cheaply. This practice misuses irradiation to clean up unfit food and is illegal. It is worth noting that irradiating such food may kill the bacterial contamination, but it does not remove the toxic residues already produced by the bacteria prior to irradiating. In some case it is these toxins which pose a hazard to health, rather than the bacteria themselves.

Recently in the UK attention has focused on unlabelled irradiated food supplements such as Korean ginseng. In America, supplements are treated like pharmaceutical products. Irradiation is often used to sterilize pharmaceutical products and surgical instruments, so irradiation in the US seems a normal process to use in order to ensure sterility of food supplements such as ginseng. (As with spices, un-irradiated ingredients such as ginseng are often found to have a high microbial contamination load). In Europe however, supplements are treated and defined as food, and retailers demand that irradiated ingredients are not used. In the case of ginseng, some producers replace the raw ginseng root ingredient with a chemically extracted substitute, as an alternative to irradiating. The only approach that is not taken by manufacturers is to openly label the product as irradiated and present a defence of the technique for this use.

Research has revealed that food supplement manufacturers as well as some producers of products containing herbs and spices continue to sell unlabelled irradiated products despite warnings that this is illegal and misleads the consumer. Their response has been that they are unaware that their raw materials have been irradiated and that they rely on the assurances of their suppliers. Organisations such as the Food Commission have paid for testing products which in our view should be regularly tested by the producers themselves to ensure they meet their commitment to the consumer.

Irradiation detection methods

In the early 1990s the European Commission financed a two-year research programme for the development and validation of detection methods for foods treated by ionising radiation. In the course of this programme a number of methods were developed. In 1993 the European Committee for Standardisation (CEN) was asked to standardise these methods. The availability of recognised detection methods for food irradiation provides opportunities to ensure that foods are correctly labelled.

At the Scottish Universities Research and Reactor Centre (SURRC) in East Kilbride, two methods were developed, namely, thermo-luminescence (TL) testing, and photostimulated luminescence (PSL) testing. Both methods are based on the effect of irradiation on the mineral content of foods. When minerals are irradiated they absorb energy. This energy can be released by heating the product and measuring the light released. This is thermo-luminescence (TL) testing. TL testing was developed from 1987 onwards and became the first UK validated method for detecting irradiated foods. This method is accurate but time-consuming and expensive, requiring laboratory sampling. Therefore, bearing costs in mind, one would only want to send samples for TL testing if one already knew that the foods were quite likely to have been irradiated or to contain irradiated ingredients.

The second method - PSL detection - releases stored energy from the minerals in the sample by an optical technique, using infrared radiation to detect blue and ultraviolet light emissions and to count single photons released. The PSL detector is a portable instrument developed by SURRC which can be used in a laboratory or on site. The advantage of PSL is that a large number of products can be screened, with an initial positive or negative reading achieved in under a minute. The results of a PSL test are not quite as reliable as those from TL testing, so a positive PSL result indicates that the sample needs further testing (eg TL) for confirmation. In this way the PSL detector allows more economical and rapid screening of a large number of foods, in order to isolate which of those samples should then be sent to a laboratory for the more expensive confirmatory TL test. Were retailers such as supermarkets to purchase their own PSL detectors they would be able to carry out their own routine screening of their ingredients and products and would then be better able to uphold their commitments to UK consumers not to stock unlabelled irradiated foods. Yet so far very few PSL detectors have been sold.

The SURRC carries out tests for the UK Food Standards Agency and other organisations. Tens of cases of unlabelled irradiated foods have been detected by PSL testing in the UK, and confirmed by TL testing, yet there have been no prosecutions. Taking legal action against companies is a high finanial risk for the trading standards departments.. In the Netherlands, there have been two successful prosecutions (interestingly, one for a product that had been irradiated but failed to carry the correct labelling, and one for a product that carried the correct label but had not been irradiated).