

**December 2016**

Labelling Review Recommendation 34: Review of mandatory labelling of irradiated food

# Executive summary

In 2009, the then Australia and New Zealand Ministerial Council for Food Regulation (now the Australia and New Zealand Ministerial Forum on Food Regulation (Forum)) agreed to a comprehensive independent review of food labelling law and policy. An expert panel, chaired by Dr Neal Blewett, undertook the review and the panel’s final report, *Labelling Logic: Review of Food Labelling Law and Policy* *(2011)* (Labelling Logic) was publicly released on 28 January 2011.

Recommendation 34 from Labelling Logic states that ***the requirement for mandatory labelling of irradiated food be reviewed.***The Panel noted that the mandatory labelling of irradiated food should be reviewed because foods treated with ionising radiation have been in the food supply for at least 30 years with no evidence of detrimental effects, and there has not been any convincing evidence published to indicate potential future harm to humans.

Currently, the *Australia New Zealand Food Standards Code* (the Code), in Standard 1.5.3 – Irradiation of food, requires a statement to the effect that a food has been treated with ionising radiation if the food has been irradiated. The requirement applies to packaged and unpackaged foods for retail sale and when sold to caterers as well as for irradiated ingredients or components of a food.

In response to the Labelling Logic report, the Forum stated that it is timely for the mandatory labelling requirement for all irradiated food to be reviewed and asked FSANZ to assess the need for this requirement to continue. FSANZ was also asked to assess whether there is a more effective approach to communicate the safety and benefits of irradiation to consumers.

In this request, the Forum did not ask FSANZ to consider a variation to Standard 1.5.3 nor did it indicate how FSANZ should undertake a review. FSANZ notes the Labelling Logic report stated that ‘people have now had 30 years’ experience of irradiated foods’. However, in reality, Australian and New Zealand consumer exposure to irradiated foods, has to date been low, and the number of foods permitted to be irradiated, and therefore required to be labelled has only recently increased. This low exposure limits FSANZ’s ability to analyse current consumer understanding, and the value placed on irradiation labelling by consumers. Similarly, it makes it difficult to assess the effectiveness of different approaches to communicate the safety and benefits of irradiation.

FSANZ has characterised the current environment by investigating consumer research, economic and technical issues and stakeholder views regarding the mandatory requirement to label irradiated food.

The key findings from this review are:

* There are differences in the use of food irradiation and the nature of the domestic markets for irradiated foods between Australia and New Zealand. However, in both countries, there is only a small quantity of irradiated produce available.
* Barriers identified by food industry stakeholders to the uptake of irradiation as a technology, included the cost of transporting to an irradiation facility, the cost of labelling and the need for product segregation. Also, major supermarkets not selling irradiated produce due to a perceived lack of consumer support was another barrier identified in both countries.
* From the limited evidence available, consumer awareness in Australia and New Zealand of food irradiation and food irradiation labelling is low. This is likely related to the limited exposure that consumers have to irradiated food and labelling in the market. Best evidence available suggests that consumers generally prefer non-irradiated products and would be prepared to pay an extra $2 for non-irradiated chicken or fruit (or be compensated by $2 to purchase the irradiated version). The level of compensation needed reduces if additional information is provided about the benefits of irradiation and its use as an alternative to chemical treatments.
* There is evidence to suggest that consumers use labelling, such as mandatory irradiation labelling, in making trust judgements about the overall food system. Consumers’ ‘right to know’ whether food is irradiated goes beyond enabling consumers to select or not to select foods in line with their preferences. Therefore, removal of labelling may lead to an erosion of trust in the food industry and the food system generally for some consumers. Some comments received from stakeholders reflected this by noting that the loss of labelling would affect transparency in the food supply, and this would adversely affect consumer trust in the food industry and the regulators.
* Qualitative consideration of the costs and benefits of removing mandatory irradiation labelling indicated differing effects between stakeholder groups, and within subgroups of each stakeholder group. This makes it difficult to conclude if removing the mandatory irradiation labelling requirement would have an overall net benefit to the Australian and New Zealand communities without quantification. Further, impacts depend on the extent to which mandatory labelling requirements are removed; for example, removing labelling requirements for only irradiated ingredients in processed foods versus removing labelling requirements for all irradiated food.
* There is limited evidence about the impact of providing information on the safety and benefits of food irradiation to consumers in Australia and New Zealand. The available information suggests that further education on the safety and benefits of food irradiation, as well as a greater understanding of food irradiation as an alternative to other processing treatments (e.g. chemical treatments), could increase consumers’ acceptance of irradiated foods.
* Various approaches to communicate the safety and benefits of food irradiation have been identified. However, further research is needed to analyse and compare the effectiveness of these approaches in the Australian and New Zealand context. It is also questionable whether labelling from a food regulation perspective has a role to communicate the safety and benefits of food irradiation. It may be more appropriate for food industry or other government agencies to play this role.
* In general, submitters and targeted stakeholders consulted strongly opposed the removal of the mandatory irradiation labelling requirement because of heightened concerns about the use of irradiation technology and a lack of understanding and acceptance of the safety and benefits of food irradiation. There were also concerns about providing information to enable informed choice. Suggestions were made to strengthen the existing requirement, including prescribed words for the statement or providing more information on the label about the irradiation process, its safety and the risks (if any) and benefits. In contrast, there was some minority support for either the complete removal of the labelling requirement for all foods, or an exemption for irradiation labelling of irradiated ingredients in restaurant meals and packaged foods.

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Supporting documents

The following documents used to inform the review are available on the FSANZ website at <http://www.foodstandards.gov.au/consumer/labelling/review/Pages/Labelling-review-recommendation-34irradiation-labelling.aspx>:

SD1 CHERE Literature review on the impacts of removing mandated food irradiation labelling on consumers

SD2 CHERE Experimental Study: Estimating the value of irradiation food labelling in Australia and New Zealand

SD3 Summary of stakeholder views

SD4 International food irradiation labelling requirements

SD5 Irradiation as a treatment for food

# 1 Introduction

## 1.1 Background to Recommendation 34

In 2009, the then Australian and New Zealand Ministerial Council for Food Regulation (now the Australia and New Zealand Ministerial Forum on Food Regulation (the Forum)) agreed to a comprehensive independent review of food labelling law and policy. An expert panel, chaired by Dr Neal Blewett, AC, undertook the review and the panel’s final report, *Labelling Logic: Review of Food Labelling Law and Policy (2011)* (Labelling Logic), was publicly released on 28 January 2011 (Department of Health and Ageing 2011a). This report included a recommendation in relation to irradiated food labelling:

|  |
| --- |
| **Recommendation 34:** That the requirement for mandatory labelling of irradiated food be reviewed.  |

The Panel noted that the mandatory labelling of irradiated food should be reviewed because foods treated with ionising radiation have been in the food supply for at least 30 years with no evidence of detrimental effects, and there has not been any convincing evidence published to indicate potential future harm to humans.

Labelling Logic cites a 1999 World Health Organization (WHO) Technical Report (WHO 1999) into food irradiation, which concluded that irradiated food (at any dose appropriate to achieve the intended technological objective) is safe to consume and nutritionally adequate. The Panel noted that subsequent to the release of the WHO Technical Report, its conclusions have not been controverted and have been widely endorsed by international and national bodies.

## 1.2 Government response to Recommendation 34

The Government response to the recommendations in Labelling Logic was publicly released in December 2011 (Department of Health and Ageing 2011b). In relation to recommendation 34, the Forum commented that there is a significant body of evidence demonstrating that food processed using irradiation is both safe and nutritionally adequate. It said that irradiation provides significant benefits for consumers in terms of improved food safety and quality. Irradiation is also considered to be a cost-effective approach to managing biosecurity threats and preventing spoilage of fresh produce. The Forum noted the uptake of irradiation in Australia and New Zealand, and therefore the realisation of these benefits, was low.

The Forum supported the recommendation and stated that it is timely for the mandatory labelling requirement for all irradiated food to be reviewed. They asked FSANZ to assess the need for this requirement to continue and also to assess whether there is a more effective approach to communicate the safety and benefits of irradiation to consumers. The Forum was of the view that improving consumer confidence in irradiation will reduce disincentives for increased uptake and broader application of the technology by industry.

# 2 Review approach and scope

## 2.1 Approach

The Forum asked FSANZ to review Standard 1.5.3 – Irradiation of Food of the *Australia New Zealand Food Standards Code* (the Code) specifically with a view to assessing:

* the need for the mandatory labelling requirement for all irradiated food to continue
* whether there is a more effective approach to communicate the safety and benefits of irradiation to consumers.

In this request, the Forum did not ask FSANZ to consider a variation to Standard 1.5.3 nor did it indicate how FSANZ should undertake a review. FSANZ notes the Labelling Logic report stated that ‘people have now had 30 years’ experience of irradiated foods’. However, in reality, Australian and New Zealand consumer exposure to irradiated foods, has to date been low, and the number of foods permitted to be irradiated, and therefore required to be labelled has only recently increased. This low exposure limits FSANZ’s ability to analyse current consumer understanding, and the value placed on irradiation labelling by consumers. Similarly, it makes it difficult to assess the effectiveness of different approaches to communicate the safety and benefits of irradiation. FSANZ has therefore adopted an approach which seeks to characterise the current environment by investigating consumer research, economic and technical issues and stakeholder views in relation to the mandatory requirement to label irradiated food.

In response to the Forum’s request, FSANZ has sought to:

1. **Characterise consumer awareness, understanding and behaviour in relation to food irradiation labelling as well as the value of food irradiation labelling information**

FSANZ has considered the findings of:

* a literature review on the impacts of removing mandated food irradiation labelling on consumers, undertaken by the Centre for Health Economics Research and Evaluation (CHERE) (University of Technology, Sydney) (refer to SD1)
* an experimental study estimating the value of food irradiation labelling to Australian and New Zealand consumers, also undertaken by CHERE (refer to SD2)
* other identified Australian and New Zealand consumer research.
1. **Consider the costs and benefits of removing the mandatory labelling requirement, and whether its removal would encourage industry uptake of irradiation and irradiated foods/ingredients**

FSANZ has:

* analysed stakeholder views gathered through public consultation and targeted consultation (refer to SD3) to identify the industry drivers for using or not using irradiation technology, and whether the removal of the mandatory labelling requirement would encourage industry uptake of the technology
* taken a qualitative approach in considering the costs and benefits of removing mandatory irradiation labelling.
1. **Examine approaches to communicate the safety and benefits of irradiation to consumers**

FSANZ has considered:

* the findings of the CHERE literature review (refer to SD1), the CHERE experimental study (refer to SD2) and other literature
* stakeholder views elicited through public consultation and targeted consultation activities (refer to SD3).
1. **Canvass stakeholder views on food irradiation labelling**

FSANZ has undertaken both public consultation and targeted consultation (refer SD3).

To provide additional context to the current regulatory approach, FSANZ has also:

* compared the existing irradiation labelling requirements in the Code for irradiated food with the requirements for food irradiation label information in a number of countries and with those specified in the Codex Alimentarius Standard (refer to SD4)
* examined the current Australian and New Zealand markets for irradiated produce and provided background information on the use and safety of irradiation as a treatment for food (refer to SD5).

## 2.2 Issues not in scope

The Forum explicitly noted the pre-market safety assessment process should be excluded from the scope of this review. A detailed discussion about the evidence for the safety of irradiation as a treatment for food has also been omitted (a high level summary is provided in SD5 for background). Mandatory record keeping requirements for irradiation facilities are also not in the scope of this work.

# 3 Background

## 3.1 History of the regulation of irradiation foods in Australia and New Zealand

Before the current requirements were developed, there was a moratorium on the irradiation of food and on the sale of irradiated food in Australia. In New Zealand, irradiated food could only be sold subject to Regulation 264(1) of the *New Zealand Food Regulations 1984*. The only food granted approval for sale was irradiated paprika (one consignment in 1993).

In October 1992, FSANZ (then the Australia New Zealand Food Authority; ANZFA) commenced work on a proposal (Proposal P94 – Food Irradiation) to develop a standard for irradiated food. A draft Standard was released for public comment in Australia at the end of 1995.

With New Zealand joining Australia in the joint food standards-setting system, there was a delay while the New Zealand Government considered whether the standard for irradiated food should be adopted as a joint Australia New Zealand standard.

In 1998, New Zealand Ministers confirmed that New Zealand was prepared to proceed with one standard that regulated irradiated foods for both countries.

Following public consultation, the draft standard was approved by the then Australia New Zealand Food Standards Council (ANZFSC) (now the Australia and New Zealand Ministerial Forum on Food Regulation) in August 1999.

ANZFSC agreed to a case-by-case approval of irradiated foods and a regulatory approach for labelling that:

* was consistent internationally, in particular with the Codex General Standard for the Labelling of Prepackaged Foods (Codex Alimentarius 1985)
* required all irradiated food to be labelled irrespective of how minor the irradiated ingredients are when present in a processed food
* would allow for a voluntary statement of the benefit of food irradiation on the label, provided it was not false, misleading or deceptive.

Underpinning this was the policy decision that irradiated foods would be labelled to assist consumers to make an informed choice about the food they buy. Irradiated foods would not be labelled for safety reasons, as only those foods assessed as safe are approved for sale.

## 3.2 Current regulation of irradiation food

Standard 1.1.1 – Structure of the Code and general provisions, in the Code prohibits the irradiation of food unless an express permission is given (section 1.1.1—10). This applies to food that is for sale in Australia and New Zealand, or food that is imported from another country.

Permissions for irradiation of specific foods are in Standard 1.5.3 – Irradiation of food. The foods that are approved to undergo irradiation are: apple, apricot, bread fruit, capsicums, carambola, cherry, custard apple, honeydew, litchi, longan, mango, mangosteen, nectarine, papaya, peach, persimmons, plum, rambutan, rockmelon, scallopini (squash), strawberry, table grape, tomatoes, zucchini, and many herbs and spices and fresh, dried or fermented leaves, flowers and other parts of plants used in herbal infusions (excluding tea). Most recently, FSANZ has approved a permission to irradiate blueberries and raspberries.

A pre-market safety assessment is undertaken as part of consideration for permission to irradiate. This assessment considers any risks to public health and safety from consuming the irradiated food and if there is a technological need for irradiation (e.g. a quarantine measure, also referred to as a ‘phytosanitary’ measure). Only foods that have undergone a pre-market safety assessment by FSANZ are approved as safe to consume.

Irradiation of food is also subject to additional requirements outside of the Code. Information about these requirements as well as background information on the use and safety of irradiation as a treatment for food is provided in SD5.

## 3.3 Current Australian and New Zealand labelling requirements for irradiated food

Standard 1.5.3 states that if a food has been irradiated, or it contains as an ingredient or component[[1]](#footnote-2), a food that has been irradiated, then a statement to the effect that the food, ingredient or component has been treated with ionising radiation is required. The requirement applies to packaged and unpackaged foods, for retail sale and when sold to caterers.

If an irradiated food or a food containing irradiated ingredients/components is exempt from bearing a label (e.g. unpackaged whole fruits or vegetables, or meals sold in a restaurant) then a statement that the food, ingredient or component of the food has been treated with ionising radiation must be stated in labelling that accompanies the food or is displayed in connection with the display of the food. Irradiated ingredients/components in a food must be labelled to the effect that they are irradiated, irrespective of the level they are present in the food (e.g. irradiated herbs and spices must always be labelled if used as an ingredient in food).

The wording of the statement is not prescribed. Food manufacturers can select the wording, so long as the statement indicates to the effect that the food has been treated with ionising radiation and is not false and misleading under the requirements of Australian Consumer Law and the New Zealand *Fair Trading Act 1986*.

The international Radura symbol shown in Figure 1 is a standard international symbol indicating that a food product has been [irradiated](http://en.wikipedia.org/wiki/Irradiation). It is usually green and resembles a plant in a circle, however graphical details and colours vary between countries. The Code does not mandate the display of this symbol on the labels of irradiated food, however there is no prohibition on its use. If the symbol is used, the food label must still display the mandatory labelling requirements for irradiated foods.



**Figure 1. International Radura symbol**

## 3.4 Comparison with Codex specifications and other overseas regulations

The requirements for food irradiation label information in the Codex General Standard for the Labelling of Pre-packaged Foods and in regulations of the United States of America (USA), Canada, the European Union, Indonesia, Malaysia, Vietnam and South Africa are summarised in SD4. All of these countries and Codex require labelling to identify irradiated foods, however there are some differences in the requirements, including exemptions, the wording required and the use of symbols.

In Australia and New Zealand, there are no exemptions from the requirement for food irradiation labelling for food sold for retail sale and when sold to caterers. The labelling requirements apply both to irradiated foods and to foods containing an ingredient or component that has been irradiated. Conversely, Canada, Malaysia and South Africa provide an exemption for irradiated ingredients from being identified as irradiated if present in the final prepackaged food in amounts below a threshold (e.g. in Canada, an irradiated ingredient that constitutes less than 10 per cent of the prepackaged food does not need to be identified as ‘irradiated’). In the USA, the irradiation labelling requirement does not apply to a food that contains an irradiated ingredient but that has not itself been irradiated.

In terms of the required wording, in Australia and New Zealand, a statement to the effect that the food, ingredient or component has been treated with ionising radiation is required. The wording of this statement is not prescribed. There is a similar approach in the Codex standard and in Canada. Other countries specify the wording to be used. For example, the USA requires the statement ‘treated with radiation’ or ‘treated by irradiation’. Indonesia also requires the objective of irradiation (i.e. the purpose) to be included. In Australia, New Zealand and Indonesia and under the Codex standard, use of the Radura symbol is voluntary; however this symbol is required to be used on the label of irradiated foods in the USA, Canada, Malaysia, and South Africa. In the USA, a variation of the international symbol is mandated.

## 3.5 Recent policy considerations

### 3.5.1 Labelling Logic

In addition to Recommendation 34, the Panel also considered the labelling of new technologies (of which food irradiation is one) more broadly. New technologies were defined in Labelling Logic as ‘technologies whose application for use in the food production chain automatically triggers a pre-market safety assessment of the foods or ingredients produced or treated by them’ (Department of Health and Ageing 2011a).

The Panel stated that new technologies in food production have frequently raised safety concerns; hence the reason for requiring foods produced using these new technologies to undergo a pre-approval assessment for safety. Labelling Logic goes on to say that this provides the basis for the argument for the prescriptive identification of foods or ingredients treated or produced by such technologies, at least for a designated period, at the end of which time the need for such identification should be reviewed.

Labelling Logic included a discussion on how new technologies such as genetically modified (GM) foods and food irradiation had only been introduced over the past generation. The Panel believed that all foods produced from or treated by major new technologies should, as a general principle and subject to scientific evidence, require mandatory identification for a period of 30 years from the time of their introduction. At the end of the 30 year period and with the accumulated experience of a generation, the mandatory requirement should be reviewed.

### 3.5.2 Government response to Labelling Logic

In its response to Labelling Logic, the Forum agreed not to pursue an approach which required a review of labelling after a period of 30 years. Instead, the Forum considered that it was appropriate for FSANZ to continue to apply a case-by-case approach to the labelling requirements for new technologies, and opted to develop a Ministerial Policy Guideline that sets out how the case-by-case consideration of both regulatory (i.e. labelling) and non-regulatory measures would apply to a new technology requiring pre-market safety assessment.

In June 2014, the Forum endorsed the *Policy Guideline on the Labelling of Food Produced or Processed using New Technologies[[2]](#footnote-3).* The Policy Guideline sets out the expectations of the Forum for the case-by-case consideration of labelling of foods produced or processed using a new technology. It recognises that labelling on such foods can be an issue of consumer interest and, that in meeting this need, it is acknowledged that labelling is not a public health and safety issue, because the foods produced or processed using a new technology are subject to a pre-market safety assessment. The Policy Guideline states that unless reviewed prior, FSANZ should initiate a review of the regulatory intervention every ten years to determine whether it should lapse or continue.

However, noting that FSANZ was already tasked with reviewing food irradiation labelling through Recommendation 34, existing labelling requirements for irradiated foods were specifically excluded from the scope of the Policy Guideline.

In their response to Labelling Logic, the Forum also endorsed a framework and food labelling hierarchy that omitted labelling of food produced or processed using new technologies (refer to Figure 2 below) because labelling was specifically addressed by the new Policy Guideline.



**Figure 2. Food Policy Labelling Conceptual Framework**

Further to this, the Overarching Strategic Statement for the Food Regulatory System for Australia and New Zealand (Strategic Statement) (Australia and New Zealand Ministerial Forum on Food Regulation 2013) explains that although the labelling of foods produced or processed using new technologies is generally categorised as a consumer values issue (e.g. other food production and processing methods such as ‘free range’, or ‘halal’), there was an argument that such foods may be treated differently from foods produced using more traditional techniques due to the lack of historical data regarding human consumption, but as set out in the Policy Guidance this should take place on a case-by-case basis.

# 4 Consultation

## 4.1 Public consultation

A consultation paper was released on 18 January 2016 for a ten-week period, closing on 29 March 2016. In the consultation paper, stakeholders were asked about the value of food irradiation labelling and whether they believed there is a need for it to continue. Several labelling scenarios were proposed, for example, labelling of restaurant meals containing irradiated ingredients and labelling of irradiated ingredients used in packaged foods (compared to labelling of irradiated whole foods).

Further, industry stakeholders were asked whether or not they used irradiated foods or ingredients, and if the labelling requirement influenced their decision to avoid using them. FSANZ also sought general information about costs associated with current labelling requirements, and what the costs associated with the removal of mandatory labelling requirements might be.

In total, 406 individual submissions, campaign emails and late comments to the consultation paper were received and have been considered by FSANZ as part of its assessment for the review. This number comprised of:

* 62 individual submissions
* 223 campaign email submissions (from two separate campaigns)
* 23 late comments (of which 4 were individual submissions and 19 were campaign submissions)
* an additional 98 submissions (almost all campaign email submissions) for which FSANZ was unsuccessful in verifying identities of senders.

Three submitters provided both a campaign and individual submission; FSANZ has considered each submission separately.

Most of the individual submissions received were from consumers, and only ten submitters represented industry. Table 1 illustrates the individual submissions by stakeholder category.

*Table 1: Individual submissions by stakeholder category*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Consumer# | Industry | Government | Public Health | Other\* |
| Australia | 24 | 3 | 2 | - | 1 |
| New Zealand | 19 | 6 | 1 | 1 | - |
| International  | - | 1 | - | - | 2 |
| Unknown | 2 | - | - | - | - |
| Total | **45** | **10** | **3** | **1** | **3** |

# Includes consumer advocacy groups and individuals.

\* Includes academics, research institutions.

One of the campaigns was a ‘DoGooder’ campaign initiated by Food Irradiation Watch (a consumer advocacy group). Two hundred and twenty-four submitters provided a submission or a late comment based on the ‘DoGooder’ campaign. The other campaign comprised a standard form letter developed by Food Irradiation Watch. Fourteen campaign email submissions based on this form letter were received.

A summary of submitter views, the consultation paper questions, and information on the two campaigns are provided in SD3.

## 4.2 Targeted consultation

As an adjunct to the public consultation, FSANZ undertook targeted consultation with a broad range of stakeholders to ensure their views were captured and represented. The process also enabled FSANZ to obtain a more thorough understanding of the issues related to food irradiation labelling relevant to particular stakeholders.

The targeted consultation comprised face-to-face meetings with individual stakeholders in Australia and New Zealand, as well as seeking the views of representatives of FSANZ committees and groups. The targeted consultation activities outlined in Table 2 took place in October and November 2015, and between March and May 2016.

Stakeholder views from targeted consultation are also included in SD3.

*Table 2: Stakeholders consulted through targeted consultation*

|  |  |
| --- | --- |
| Date | Stakeholder organisation, group or committee |
| October 2015 | Horticulture New Zealand and Tomatoes New Zealand(peak bodies representing overall horticultural industry sector and New Zealand tomato producers, respectively)  |
| New Zealand Fresh Produce Importers Association(peak body representing produce importers)  |
| November 2015 | Steritech (Australian irradiation facility) |
| Australian Horticultural Exporters Association (representing Australian produce exporters) |
| Food Irradiation Watch(Australian-based consumer advocacy group) |
| Australian Table Grapes Association(representing table grape producers) |
| Gene Ethics(Australian-based consumer advocacy group) |
| March 2016 | MG Marketing(New Zealand grower-based co-operative, produce importer and distributer) |
| Freshmax(New Zealand-based produce importer, marketer and distributer) |
| Progressive Enterprises(major New Zealand grocery retailer) |
| Foodstuffs (major New Zealand grocery retailer) |
| Buy Link(New Zealand-based produce buyer and distributer) |
| April 2016 | Consumer NZ (Consumer advisory and advocacy organisation) |
| Retailers and Manufacturers Liaison Committee(FSANZ consultative forum) |
| May 2016 | Consumer and Public Health Dialogue (FSANZ consultative forum) |

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# 5 Review findings

## 5.1 Use of food irradiation in Australia and New Zealand

There are some important differences in the use of food irradiation and the nature of the domestic markets for irradiated products between Australia and New Zealand.

In Australia, irradiation is used primarily to enable fruits and vegetables from fruit-fly zones to be sold in fruit-fly free zones, both within Australia and in other countries, such as New Zealand and in Asia. Depending on the product, irradiation is the preferred treatment because it has a less detrimental effect on the product quality compared to other phytosanitary treatments (refer to SD5). There is one food irradiation facility dedicated to irradiating foods for a phytosanitary need situated in Queensland.

In contrast, there is no food irradiation facility in New Zealand. This is partly because New Zealand is fruit-fly free and there is no real phytosanitary need for the technology. This means that food grown domestically is not irradiated for domestic consumption or to meet phytosanitary requirements for export to other countries. As a result, food irradiation is associated with imported foods only.

Information about the size of the domestic markets for irradiated produce in Australia and New Zealand is provided in SD5. Up until the 2013-14 season, the main commodity irradiated was mangoes. Since 2013-14, mangoes, capsicum and tomatoes have been irradiated and more recently plums. In the 2015-16 season, a total of about 34 tonnes of produce was irradiated (excluding herbs and spices and plant material in herbal infusions) and distributed in the Australian domestic market, with the greatest quantity being plums (23 tonnes), followed by capsicums and a small quantity of tomatoes. In relation to the importation of irradiated foods, in the 2015-16 season, the only imported irradiated food for retail sale in Australia was lychees (15 tonnes). Overall, irradiated produce is a small proportion of total production.

In New Zealand, Import Health Standards are in place for Australian mangoes, lychees, papaya, tomatoes and capsicums. This means that even though other foods are permitted to be irradiated in Australia and New Zealand, currently they cannot be exported to New Zealand. In the year ending June 2016, the total volume of irradiated produce exported from Australia to New Zealand was about 1550 tonnes. Compared with the volume of non-irradiated fresh produce (24,365 tonnes), the volume of irradiated produce is therefore very small. Most of the irradiated produce exported from Australia to New Zealand is mangoes (about 1000 tonnes in the year ending June 2016). Approximately 350 tonnes of tomatoes and nine tonnes of capsicums were exported from Australia to New Zealand in the year ending June 2016. While Import Health Standards are also in place for irradiated produce from other countries, no irradiated produce came into New Zealand from other countries between July 2015 and July 2016.

The small quantity of irradiated produce available in both Australia and New Zealand domestic markets means that consumers have only been exposed to limited amounts of labelled irradiated products to date.

## 5.2 Consumer research

FSANZ commissioned CHERE to undertake a literature review on the responses of consumers to food irradiation labelling (the full literature review is at SD1). Available peer reviewed literature and relevant grey literature was sought that would address the following research objectives:

* consumer awareness and understanding towards food irradiation labelling
* the purchasing impact of food irradiation labelling on consumer choice
* the economic impact of food irradiation labelling on consumer choice (including costs and benefits)
* the impact of removing mandatory food irradiation labelling information on consumer attitudes
* other general points in relation to the population demographics and other attributes affecting or differentiating the literature

CHERE included 46 studies in their review; the majority were from peer-reviewed sources. Since the completion of the review, some new studies have been identified (e.g. from submitters) or completed (e.g. the FSANZ Consumer Label Survey) and these have been included in this summary.

The published literature generally considers consumers’ responses to food irradiation as a particular technology, with few studies that focus on the labelling of irradiated products *per se*. Only two studies relating to consumer awareness and understanding that were specific to the Australian and New Zealand context were found, and are reported below.

Studies undertaken in Australia and New Zealand find the awareness of labelling for food irradiation is low. A 2003 FSANZ consumer survey found less than one per cent of Australian and New Zealand consumers were aware of irradiated food labels (NFO Donovan Research 2003). After prompting, only 6% of consumers recognised irradiated food labels. Further, only 3% claimed to use irradiated food labels occasionally when making purchasing decisions. More recently, the 2015 FSANZ Consumer Label Survey estimated that 11.9% of Australians and 15.1% of New Zealanders indicated they usually look for irradiation information when purchasing a product for the first time (FSANZ 2015).

Gamble et al. (2002) found 60% of Australians and 68% of New Zealanders were aware of the term ‘irradiation’; however consumer awareness of food irradiation labelling was not specifically measured. CHERE found 38% of Australians and 51% of New Zealanders had heard of food irradiation (refer to SD2). Some international studies indicate higher levels of awareness among consumers, however the different regulatory environment and uptake by industry limits the generalisability of such findings (refer to SD1).

CHERE argues that consumer understanding of the food irradiation process is likely to be a key determining factor in their understanding of any associated labelling. An earlier labelling study commissioned by FSANZ reported that ‘irradiation’ was almost synonymous with ‘radiation’ for some Australian and New Zealand consumers (NFO Donovan Research 2001). Other participant comments indicated low awareness and misunderstanding of food irradiation. A representative survey commissioned by FSANZ in 2007 found 13% of Australian respondents and 11% of New Zealand respondents nominated irradiation of food or food ingredients as an issue of concern for them (TNS Social Research 2008). However, other food issues were nominated by more participants as being of concern (e.g. food poisoning: 48% and 35% of Australians and New Zealanders respectively; storage times of foods sold as ‘fresh’: 48% and 35%; genetically modified (GM) foods: 25% and 29%).

The CHERE literature review did not find any Australian or New Zealand studies on the impact of food irradiation labelling on purchases. However, subsequent to the review, CHERE undertook a study among Australian and New Zealand consumers to measure the impact of irradiation labelling on their choices (refer to SD2 for the study report).

The study also included three information treatments (low (a control group), medium, high[[3]](#footnote-4)) which enabled the impact of information about irradiation on consumers’ choices to be measured.

The study used uncooked chicken, bananas, and strawberries as the products. The study found that Australian and New Zealand participants in the low and middle information groups had a clear preference for non-irradiated chicken and fruit. This was not the case for participants in the high information group. For the low information group, the results suggest that participants would be prepared to pay an extra $2 for non-irradiated chicken or fruit (or be compensated by $2 to purchase the irradiated version). This was consistent for both Australian and New Zealand participants. For the medium information group, which included information about benefits of irradiation, the results suggest that participants would still prefer non-irradiated food but the level of compensation required was lower than the low information group. For the high information group, where irradiation was an alternative to chemical treatment, participants were willing to accept irradiated food without additional compensation. These results suggest that education and labelling information can influence the acceptability of irradiated foods.

The right of consumers to know whether food is irradiated or not was a common theme in the literature (refer SD1). Importantly, this goes beyond enabling consumers to select or not to select food products in line with their preferences. Rather, labelling is a direct communication between consumers and the broader food system incorporating both industry and government regulators. It acts as a surrogate for personal interaction with the food industry and it influences consumers’ trust in the industry and the food system more generally. Labelling is a key point of vulnerability where trust in the food system can be developed, reinforced or broken down (Tonkin et al 2016). Labelling is used to inform judgements about the technical competence of food system actors and also their goodwill and fiduciary responsibility to consumers. Even where labelling is perceived as technically correct, trust in the food system may be impacted negatively if consumers feel they have been misled (Tonkin et al 2016). In a scenario of removing mandated irradiation labelling, some consumer’s expectations of the fiduciary duty of food regulators will be unmet; this may ultimately erode trust in the food system more generally.

### 5.2.1 Summary

* There are few contemporary studies that explore Australian and New Zealand consumers’ awareness and understanding of food irradiation labelling.
* The findings generally indicate that consumers’ current level of awareness of food irradiation and food irradiation labelling is generally low. This is likely to be linked to the limited exposure that consumers have to irradiated product and labelling in the market.
* The best evidence available suggests that consumers generally prefer non-irradiated products and would need to be compensated by $2 to purchase irradiated chicken or fruit.
*
* Providing additional information about a) the benefits of irradiation, and b) highlighting its use as an alternative to chemical treatments, reduces the level of compensation required.
* Labelling, such as mandatory irradiation labelling, is used by consumers in making trust judgements about the food system and its participants. Removal of labelling may lead to an erosion of trust for some consumers.

## 5.3 Food industry use of irradiation technology

FSANZ received information from industry through consultation but notes that there was little response to the public consultation from the industry sector, and that there were no submissions from the food service sector. Comments about food service businesses came from other food industry stakeholders.

In general, producers, importers/exporters and distributors were of the view that Australian and New Zealand retailers have a low interest in selling irradiated food. These stakeholders considered that the low interest stems from an apparent general lack of consumer support, sometimes linked to the perception that irradiated foods are unsafe and nutritionally inadequate. One of these stakeholders noted that the labelling requirements make retailers think twice about stocking irradiated food, because they believe consumers will not want to purchase it. Major supermarkets representatives consulted confirmed this was the main reason for deciding not to sell irradiated produce.

Non food-service stakeholders indicated that there is little or no use of irradiated food by the food service sector. The reason commonly given was the difficulty for food service businesses to identify irradiated ingredients, given that the supply of an ingredient can vary between irradiated and non-irradiated versions, and that labelling their products to accommodate this variability was challenging. The identification of irradiated food ingredients in the final food was also viewed as a disincentive for these businesses.

Several Trans-Tasman food manufacturers specifically mentioned that they do not use irradiated ingredients in their products. The requirement to declare the presence of irradiated ingredients was the primary reason for avoiding these ingredients. The requirement to label irradiated foods was considered to be the main reason that irradiated foods are unlikely to be found in any Australian and New Zealand processed/packaged foods.

In general, Australian and New Zealand food industries have quite different perspectives on aspects of food irradiation due to the differing nature of the domestic markets (see below and section 5.1).

### 5.3.1 Australian industry

Australian fruit and vegetable producers are increasingly interested in irradiation for two main reasons. Firstly, permissions for certain chemical post-harvest treatments for fruit-fly have been revoked (e.g. the pesticide fenthion) or are being phased out. Secondly, for some foods, irradiation results in improved product quality (e.g. taste, colour and flavour) compared to other post-harvest treatments.

Consultations with Australian fruit and vegetable producers indicated that, if labelling requirements for irradiated food were removed, there would be an expansion in use of irradiation for pest control. Australian exporters also indicated that there could be a ten-fold increase in the volume of irradiated produce being traded to New Zealand if the labelling requirements were removed.

Food industry stakeholders cited a number of reasons that food irradiation labelling acts as a disincentive for not using irradiation technology. Some stakeholders believe that consumers view irradiation labelling as a warning and therefore do not wish to associate their products with a perceived ‘dangerous’ technology. One food manufacturer commented that even if labelling of irradiated food was not mandatory, they would still be hesitant to use irradiated ingredients given the perceived lack of consumer acceptance of the technology. The cost of labelling and, in particular, the cost of stickers on individual irradiated fruit (sometimes required by retailers) was also given as a reason for not irradiating by some Australian food industry stakeholders. There were some comments that the labelling requirements impose the need to segregate irradiated food from non-irradiated food, with associated costs.

The labelling requirements in the Code are not the only barrier to irradiating food in Australia. Another key factor cited by stakeholders is the cost of transporting food to the (one) dedicated phytosanitary irradiation facility in Queensland and then to export markets. If there was more than one irradiation facility in Australia, then this cost could be reduced, and there would be potential for greater market opportunities to be realised. One stakeholder also commented that this cost reduction could also result in greater use of irradiation for domestic purposes.

With respect to the export of foods to New Zealand, some industry stakeholders noted that delays in preparing Import Health Standards (prepared by the New Zealand Ministry for Primary Industries for approval of irradiation as a phytosanitary measure for imported food commodities) can be a barrier to Australian fruit and vegetable producers using irradiation.

### 5.3.2 New Zealand industry

Some New Zealand produce growers are strongly in favour of mandatory irradiation labelling so that the New Zealand grown produce can be distinguished from imported irradiated produce. Given the absence of mandatory country of origin labelling in New Zealand, these producers see irradiation labelling as a proxy for country of origin labelling. One submitter noted that the volume of Australian irradiated tomatoes imported into New Zealand has decreased from about 400 pallets (tonnes) in the first season (2013) to 346 pallets in the second season (2014). This submitter referred to a campaign against imported irradiated tomatoes by Horticulture New Zealand and Tomatoes New Zealand, and major retailers agreeing to support local non-irradiated tomatoes, as the reasons for the decrease in irradiated tomato imports. The same industry submitter also noted that independent grocers and retailers in New Zealand have continually offered Australian irradiated tomatoes for sale since 2013, which suggests that consumers are purchasing them.

Some stakeholders indicated that when making purchases, consumers are more influenced by price than whether food is irradiated. This indicates that at least some industry stakeholders consider that labelling may not be the main driving factor to choosing to use or sell irradiated foods.

The sale of Australian irradiated mangoes is a unique example of irradiated produce that has been accepted at least by some New Zealand consumers. A food distributer noted that even though they are often more expensive, irradiated Australian mangoes are favoured by consumers over non-irradiated mangoes from other countries because irradiation treatment results in a higher quality fruit compared to other treatments (e.g. hot water dips). The fact that there are no locally produced mangoes also enhances consumer acceptance of the irradiated fruit. The acceptance of Australian irradiated mangoes in New Zealand by retailers and consumers is significant reason that Australian mango exporters have adopted irradiation technology.

### 5.3.3 Summary

* Australian and New Zealand food industries have different perspectives on food irradiation, due to the differing nature of their domestic markets. For Australia, there is interest in using the technology to replace other forms of phytosanitary treatments, whereas in New Zealand the focus is on imports.
* The key barriers identified by both Australian and New Zealand industry stakeholders to the uptake of irradiation as a technology included major supermarkets not selling irradiated food due to a perceived lack of consumer support, the cost of labelling and product segregation. In Australia, produce growers said the cost of transport to the only irradiation facility in Queensland and then to export markets was also a barrier.
* According to Australian industry stakeholders, removal of the mandatory labelling requirement could result in a ten-fold increase in the volume of irradiated foods exported to New Zealand. However, there is a strong view amongst the New Zealand horticultural sector that irradiation labelling should remain in place so that New Zealand grown produce can be distinguished from imported irradiated produce.
* Some New Zealand industry stakeholders consider that price may influence consumer purchase decisions more than whether the food is irradiated. This means that for some industry stakeholders, labelling may not be the main driving factor in choosing to use or sell irradiated foods.

## 5.4 Consideration of the costs and benefits of removing mandatory irradiation labelling

Feedback from consultation has highlighted some costs and benefits that could arise from removing the mandatory labelling requirement.

In considering these costs and benefits, FSANZ has prepared a summary of consultation findings of how different community groups perceive they could be affected. The purpose of this review was to characterise the current environment by investigating consumer research, economic and technical issues and stakeholder views in relation to the mandatory requirement to label irradiated food, rather than to propose changes to Standard 1.5.3 through FSANZ’s usual standards development processes. FSANZ has therefore taken a qualitative approach instead of quantifying the overall net benefit or cost to the Australia New Zealand community. If the Forum considers that further work is required in relation to the mandatory labelling requirements, the magnitude of the costs and benefits could be further explored.

Consultation has revealed that some groups would be negatively affected, whereas other groups would receive a net benefit from removing mandatory labelling requirements.

Australian primary producers and food manufacturers indicated that they consider the mandatory irradiation labelling to be a barrier to the uptake of irradiation as a post-harvest phytosanitary treatment. New Zealand food retailers and major supermarkets indicated that they consider the mandatory irradiation labelling to be a barrier to the sale of irradiated produce, although one New Zealand supermarket and two distributors said that price is more influential. Australian primary producers and food manufacturers, and Australian and New Zealand food service industries stand to gain the most from removing mandatory irradiation labelling as using this technology does have benefits in certain circumstances over other treatments.

Both consultation with consumer interest groups, and CHERE’s consumer research (SD2), revealed that there is a group of consumers that have heightened concerns regarding the technology. Such consumers value the labelling in helping them avoid irradiated produce. This group of consumers would be the most negatively affected group from removing mandatory irradiation labelling. New Zealand primary producers may also be negatively affected from removing mandatory irradiation labelling requirements.

This section highlights the more significant costs and benefits from removing the mandatory irradiation labelling requirement that were identified through the consultation process.

### 5.4.1 Primary producers and retailers

Phytosanitary treatments are required to ensure plant disease and pests are not introduced into certain jurisdictions or other countries. For example, phytosanitary treatment is a requirement for produce originating in Queensland fruit fly affected areas of Australia to be sold in fruit fly free jurisdictions or countries. Australia also imports irradiated produce from other countries; this produce is required to meet standards as set out by the Code.

There are several post-harvest treatments available to producers, although not all methods are accepted as a treatment of all pests by all jurisdictions.

The phytosanitary treatment adopted by a business will depend on which will provide the greatest profit when all positive and negative consequences are considered. Consultation suggests that the mandated labelling of irradiated produce leads to additional costs. This may be a barrier to market access for Australian produce being sold across jurisdictional borders and into New Zealand, particularly where other phytosanitary treatments methods are not accepted.

Businesses that sell irradiated whole foods, or foods that contain irradiated ingredients, that are not generally required to bear a label, are required to provide irradiation labelling. Consultation has revealed that the major New Zealand supermarkets require that whole unpackaged fruit or vegetables be labelled individually. In order to label each fruit or vegetable separately, produce must be transported to a labelling facility where it is unpacked, labelled and repacked before being transported to the final destination. If removing the mandatory irradiation labelling requirement resulted in the major supermarkets relaxing their labelling stipulations, Australian primary producers’ production costs would decrease in relation to:

* the administration and delay costs from transporting produce to a labelling facility and labelling each product
* the cost of labelling materials
* the labour involved in transport, unpacking, labelling and repacking.

Some producers choose to individually label all of their produce, such as mangoes and apples, with a branded label. Where producers are able to segment their harvest destined for irradiation prior to this branding label being applied, they may be able to reduce the incremental cost of applying the additional irradiation label. Irradiation is primarily used to protect against the spread of certain plant disease and pests. This means only the portion of the harvest destined for certain markets would be irradiated and thus require labelling. The cost of the irradiation specific labelling materials and a portion of the labour would still be attributable to the mandatory irradiation labelling requirement.

Currently, supermarkets in Australia and New Zealand stock very little irradiated produce unless an established market has been proven, such as the case of Australian irradiated mangoes in New Zealand. This could be leading to instances of forgone opportunity for the retailers and Australian producers.

Labelling was reported to be a barrier to irradiated produce being sold by the major New Zealand supermarkets. Removing mandatory labelling requirements may support a wider availability of fresh produce being available outside of its traditional local growing season (e.g. Australian tomatoes being sold in New Zealand during winter, or mangoes at any time of the year). This facilitates competition on price (e.g. tomatoes) and quality (e.g. mangoes). During consultation, both of these factors were reported to be valued by the consumer (for factors considered important when consumers purchase food, refer to CHERE’s consumer research in section 5.2).

Increased New Zealand market access for Australian producers may come at the expense of New Zealand primary producers that are unable to compete on price (e.g. tomatoes are grown in hothouses during the New Zealand winter, which is an expensive production method).

Information gathered from stakeholders indicates that small enterprises and independent retailers are more likely to stock a wider range of irradiated produce than the major supermarkets and use display signage to indicate that the produce is irradiated. Removing the mandatory labelling requirement may reduce operating costs in relation to:

* reduced requirements around traceability and handling to ensure the segregation of irradiated produce from non-irradiated produce of the same type
* reduced reputational risk from mislabelling irradiated produce as non-irradiated or not labelling irradiated produce at all
* reduced signage costs.

In New Zealand, smaller, independent retailers are more flexible with stocking irradiated produce; they stock the cheaper Australian produce and compete on price with these products during the New Zealand winter, which could give them an advantage over the major supermarkets. Removing the mandatory labelling requirement may mean that the major supermarkets will also stock the cheaper produce, removing the competitive edge of the smaller retailers. However, there would likely be offsetting benefits to consumers.

### 5.4.2 Food manufacturers and food service businesses

Food manufacturers process ingredients into food products that are generally packaged. As such, each packaged food containing irradiated ingredients must have irradiation labelling.

The food service industry generally provides unpackaged meals to consumers for on-site consumption and packaged meals for takeaway. Food sold by the food service industry is also required to be labelled and in the case of food not required to bear a label (e.g. unpackaged meals sold in a restaurant), then irradiation labelling must accompany the food or be displayed in connection with the display of the food.

Irradiated ingredients/components in a food must be labelled to the effect that they are irradiated, irrespective of the level they are present in the food (e.g. irradiated herbs and spices must always be labelled if used as an ingredient in food).

Removing the mandatory labelling requirements may reduce operating costs in relation to:

* keeping labels up to date when substituting irradiated ingredients for non-irradiated ingredients per particular batch of a food product. This involves traceability, segregation and labelling costs.
* avoiding logistical issues of labelling processed unpackaged foods.

Where food service operators and manufacturers avoid irradiated food due to the labelling requirement, this may also prevent optimal ingredients being used as irradiated produce can be of higher quality and have longer shelf life than produce that has not been treated for phytosanitary reasons.

### 5.4.3 Government

The state and territory food regulatory agencies in Australia and the Ministry for Primary Industries in New Zealand are required to enforce the Code. Should the mandatory irradiation labelling requirement be removed, there would likely be a small decrease in compliance and enforcement efforts related to monitoring or enforcement of the irradiation labelling requirement for locally produced and imported food.

### 5.4.4 Consumers

Research suggests consumers value lower prices and longer shelf life of their produce (for factors considered important when consumers purchase food, refer to CHERE’s consumer research in section 5.2). Where consumers’ willingness-to-pay for these attributes exceeds the value they place on irradiation labelling, there would be a net increase in consumer welfare. Consumer welfare refers to the benefit gained from consuming goods and services; the individual’s own assessment of their satisfaction from consumption given prices and income.[[4]](#footnote-5)

If consumers’ increase in satisfaction from consuming cheaper produce is greater than their loss of satisfaction from consuming potentially irradiated food, then overall they are better off. Estimating satisfaction is subjective and difficult to measure. CHERE’s consumer research suggests a potential net benefit to general consumers in certain scenarios of decreased price and increased shelf life (refer to SD2).

However, a segment of consumers have heightened concerns about the use of this technology and believe mandatory labelling is necessary to ensure they are able to make an informed choice. They therefore attach a value to this information and the present regulatory arrangement. If the mandatory irradiation labelling requirement was removed, these consumers may incur higher costs in relation to:

* searching for specifically non-irradiated produce, such as at local markets
* choosing more expensive ‘organic’ foods or locally produced foods that are guaranteed to not be irradiated.

Removing mandatory irradiation labelling may adversely affect this segment of consumers’ trust in the food supply as they believe irradiation is a negative attribute that producers should be forced to label. They may also value the existence of the information per se regardless of whether it is going to affect their purchasing decision.

The diminished trust in the food supply due to removing mandatory irradiation labelling may extend beyond the group of consumers with heightened concerns regarding the technology use. CHERE’s consumer research suggested that, on the whole, consumers do place a value on irradiation labelling with respondents prepared to pay an extra $2 for non-irradiated chicken or fruit. When consumers are provided with information about food irradiation safety, benefits and use as an alternative to chemical treatments they, overall, were not willing to pay to avoid irradiation. However, CHERE note that, even with increased education and labelling, some individuals will still prefer non-irradiated foods (see section 5.2 for more on the CHERE consumer research findings).

This diminished trust could manifest in increased demand for organically labelled products, or people electing to grow their own fresh produce. Some growers and manufacturers may view this as a marketing opportunity and voluntarily incur the cost of labelling products as ‘irradiation free’ in order to capture profits from the increased demand for these products. ‘Irradiation free’ labelling may also need to be used to offset the risk of reduced profits from lower sales where the diminished trust in the food supply translated to lower demand for products that consumers deemed to be at risk of being irradiated.

However, the strength or likelihood of these effects is highly uncertain. Consultation with retailers and food manufacturers noted that there have been very few consumer enquiries in regards to irradiated produce.

### 5.4.5 Summary

Some stakeholders would be negatively affected from removing mandatory labelling requirements, whereas other stakeholders would receive a net benefit. Even within each community group, there are subgroups that are likely to have contradictory net impacts. For example, Australian primary producers are likely to benefit the most from the removal of mandatory irradiation labelling requirements due to expanded market opportunities, whereas the increased competition could negatively affect New Zealand growers. This makes it difficult to conclude if removing the mandatory irradiation labelling requirement would have an overall net benefit to the Australian and New Zealand communities without quantification.

Quantifying the overall net effect also depends on the options under consideration; for example, removing labelling requirements for only irradiated ingredients in processed foods versus removing labelling requirements for all irradiated produce.

The likely net impacts of removing labelling requirements for all irradiated produce on different community groups are summarised in Table 3.

*Table 3: Overarching impact of the removal of mandatory irradiation labelling by stakeholder group*

|  |  |
| --- | --- |
| Community group | Impact |
| Industry – primary production Australia | Increase of net income |
| Industry – primary production New Zealand | Potential decrease of net income |
| Industry – retailers and supermarkets | Potential increase of net income |
| Industry – food service | Increase of net income |
| Industry – food manufacturers | Increase of net income |
| Consumers – General consumers | Potential net increase of consumer welfare  |
| Consumers – Concerned consumers | Decrease of net consumer welfare  |
| Government – food regulatory agencies | Small decrease in required compliance and enforcement activities |

## 5.5 Approaches to communicate the safety and benefits of food irradiation to consumers

The Forum requested FSANZ review Standard 1.5.3 specifically with a view to assess whether there is a more effective approach to communicate the safety and benefits of irradiation to consumers.

As noted previously, the current labelling requirements for irradiation food are intended to assist consumers to make an informed choice about the food they buy and not for safety reasons; as only those foods assessed as safe are approved for sale. Hence it is questionable whether labelling from a food regulation perspective has a role to communicate the safety and benefits of a food technology process such as food irradiation. Responsibility for increasing consumers’ acceptability of specific food technology treatments such as food irradiation may more appropriately sit with food industry or other government agencies.

This review has therefore examined evidence on communicating the safety and benefits of food irradiation to consumers as well as identifying other communication approaches. Whilst FSANZ has identified these communication approaches, their effectiveness in reaching consumers’ and impact on consumer behaviour has not been tested.

### 5.5.1 Consumer research

The CHERE literature review (refer to SD1) examined several international studies on the willingness-to-purchase, or willingness-to-pay for irradiated food based on the personal benefits to consumers from food irradiation. The majority of these studies found a positive effect on willingness-to-purchase or pay when consumers’ were presented with information about the benefits of irradiation in relation to food-borne pathogens (information relating to phytosanitary treatment was not considered). There were no studies that examined Australian and New Zealand consumers’ willingness-to-purchase or pay for irradiated food.

The literature review also considered international evidence regarding the role of consumer education and information on food irradiation treatment. Several studies were identified that evaluated educational strategies used or suggested internationally to increase consumers’ knowledge and awareness of food irradiation.

The relevant conclusions from the review are:

* Public education and information programs can increase public awareness of the benefits, costs and risks of food irradiation. Those studies that used a food irradiation benefits statement noted a significant change in acceptance and willingness-to-purchase irradiated foods.
* Point-of-purchase information and handling instructions also played a major role in changing consumer behaviour.
* In general, education has an important role to play, since the more acceptable the food technology, the lower the negative impact involved.

The CHERE experimental study (SD2, and discussed in sections 5.2 and 5.4 above) explored the impact of different information conditions and irradiation labelling attributes in Australia and New Zealand. Different information conditions were presented to respondents varying from simple information about irradiation to information about its safety and benefits and additional information about avoiding the use of chemical treatments. The irradiation labelling presented also varied by: providing no label; stating that the product was irradiated; stating the purpose of irradiation; and stating that irradiation is used as an alternative to chemical treatment.

The results demonstrated that education and the labelling information can influence the acceptability of irradiated foods. The report notes however, that even with increased education and labelling, some individuals will still maintain a strong preference for non-irradiated foods. The report concludes that raising awareness about the safety and benefits of food irradiation processing, combined with a greater understanding of alternative processing treatments, can ameliorate the negative impact of irradiation labelling on food.

### 5.5.2 Approaches currently used in Australia and New Zealand to provide information on the safety and benefits of food irradiation

Currently some government agencies, industry stakeholders and consumer advocacy groups provide consumer information on food irradiation, as described below.

FSANZ’s website[[5]](#footnote-6) includes information about the irradiation process, its safety and purpose, foods that are currently irradiated in Australia and New Zealand, and labelling requirements. In regard to use of this webpage, from January to November 2016, there were nearly 6,000 unique views of the webpage and around 4,700 and 3,500 unique views in 2015 and 2014 respectively.

The New Zealand Ministry for Primary Industries also provides information about irradiated foods on its website[[6]](#footnote-7).This includes a questions and answers factsheet about food irradiation of fruits and vegetables which provides information about the irradiation process and its purpose, food quality and safety, and alternative pest treatments.

In Australia, the Victoria Department of Health and Human Services provides information about food irradiation on its website[[7]](#footnote-8) which includes information on the irradiation process and its benefits and effects.

Information on the safety and benefits of food irradiation can also be voluntarily provided by food businesses, either on the label or by other communication channels. Some positive statements are currently being used on labels (e.g. ‘irradiated for the New Zealand environment’), however, the extent and effectiveness of these statements is not known. The food industry has previously prepared educational materials about food irradiation. For example, when irradiated tomatoes entered the food supply, some of the food industry prepared education information about food irradiation and labelling for retailers and/or consumers. Food industry submitters reported that the reaction of retailers to this information varied from disinterest to some confusion, and that the information did not always reach consumers.

FSANZ is also aware of some food industry and consumer advocacy websites that provide consumer information about food irradiation. Some of these websites provide opposing information in regard to the safety, benefits and effects of food irradiation. Although the impact of these communications has not been tested, FSANZ notes that the opposing information provided could result in some consumer confusion.

### 5.5.3 Stakeholders views on providing information on the safety and benefits of food irradiation

Through consultation, FSANZ sought views about providing information on the safety and benefits of food irradiation on food labels, and suggestions for approaches other than labelling that could be used to communicate the safety and benefits of food irradiation to consumers. A summary of comments and suggestions received is provided in SD3, with an overview provided below.

Some industry submitters stated that they were comfortable with including information on the safety and benefits of food irradiation on food labels. However, several others (and an academic) considered that labelling is not an effective tool for providing adequate information and increasing consumer knowledge and understanding of food irradiation, and other approaches should be explored.

Some consumer advocacy groups considered that it is not FSANZ’s role or that of other regulators and governments to promote the technology or massage public perceptions to promote acceptance. Two groups also considered that communication about ‘safety’ of the food being treated is irrelevant as irradiation is not being used to treat harmful microorganisms.

Some submitters considered that if information on the benefits is stated, the potential negative impacts and risks of irradiation must also be stated in the interests of fairness, balance and honesty. One consumer and a consumer advocacy group supported the provision of information on the safety and benefits of food irradiation.

Industry submitters made some suggestions for providing further information on labels. Suggestions included providing a short description of the safety and benefits, or including information about the process (e.g. irradiation involves exposure of the produce to Cobalt 60). Some submitters also noted that statements such as ‘irradiated for the New Zealand environment’ and the Radura symbol are currently being used on food labels as communicating positive statements.

Several suggestions were also made, mostly by industry submitters but also by a consumer and academic, on approaches other than food labelling to communicate the safety and benefits of irradiation to consumers (e.g. using information technology (e.g. QR codes, websites), in-store publicity, or running educational campaigns). In regard to education campaigns, various views and issues were raised about how these should be implemented.

### 5.5.4 Summary

* There is limited evidence about the impact of providing information on the safety and benefits of food irradiation to consumers in Australia and New Zealand. The information that is available in overseas literature and from the CHERE study, suggests that further education on the safety and benefits of food irradiation, as well as a greater understanding of food irradiation as an alternative to other processing treatments (e.g. chemical treatments), could increase consumers’ acceptance of irradiated foods.
* There are various approaches that are currently being, or could be, used to provide information on the safety and benefits of food irradiation to consumers. However, further research is needed in the Australia and New Zealand context to analyse and compare the effectiveness of different communication approaches in reaching consumers and their impact on consumer behaviour.

* It is questionable whether labelling from a food regulation perspective has a role to communicate the safety and benefits of a food technology process such as food irradiation. Responsibility for increasing consumer acceptance of specific food technology treatments such as food irradiation may more appropriately sit with food industry or other government agencies.

# 6 Stakeholder views on food irradiation labelling

Submitter comments to the consultation paper and stakeholder comments received through targeted consultation are summarised below. A more detailed summary of submitter and stakeholder views and further detail on the two Food Irradiation Watch campaigns are available in SD3. Copies of each individual submission (in full detail) are provided on the FSANZ website.[[8]](#footnote-9)

## 6.1 Understanding and purchase behaviour

A number of comments from submitters indicated a lack of understanding and acceptance of the safety and benefits of food irradiation. A common theme of consumer submissions was that the long term safety and health benefits from consuming irradiated food was unknown and there is no unequivocal evidence of its safety in relation to human health. Some of these submitters thought that consumption of irradiated food could lead to chronic health problems including concern that irradiation creates unsafe poisons, toxins or chemicals in the food, or radiation changes to DNA in the food and subsequent diseases or conditions in humans as a result of consuming irradiated food. Submitter comments indicated that few consumers understood that food irradiation could be used to control pests, kill pathogens and extend shelf life. Common misconceptions were that irradiation was used to cover up food defects or to clean up foods that are past their use-by or best-before dates.

Most consumer submitters specified they would not purchase irradiated foods, although some indicated that they would in certain circumstances, e.g. if non-irradiated options were unavailable.

## 6.2 Support for removal of the current labelling requirement

When asked whether they thought the current labelling requirement for all foods permitted to be irradiated should be removed, all campaign submitters (those 287 that answered the question) were strongly opposed to the idea. Of the individual submitters, the majority were against the suggestion that the current labelling requirement should be removed.

Some submitters thought that non-disclosure of food irradiation information would indicate deception and a ‘cover up’. Others noted that the loss of labelling would affect transparency in the food supply, and this would adversely affect consumer trust in the food industry and the regulators. The view was expressed that the government was responsible for clear and transparent labelling and removing this information should not be an option. Also that given that all current permissions for irradiation in the Code have been considered and approved in the context of mandatory labelling, its removal could be perceived as a ‘breach of faith’ and reduce confidence in the Code, FSANZ and food regulation more generally.

The remaining submitters supported the removal of food irradiation labelling. Some of these submitters stated that they would support its removal if consumers accept that irradiated food is safe to consume. Reasons for supporting the removal of mandatory food irradiation labelling were often linked to views that irradiation is safe not a new treatment and removal of the labelling requirement may increase the use of irradiation of food as a treatment, with subsequent benefits such as increased availability of exotic fruits.

A consumer advocacy group believed that FSANZ has a responsibility in relation to preventative health (with respect to consuming irradiated food over a lifetime) as illustrated in the Food Labelling Hierarchy. In contrast, two industry submitters believed that food irradiation labelling should be captured under ‘consumer values issues’ in the Food Labelling Hierarchy, as there are no associated food safety issues (the Food Labelling Hierarchy is discussed in section 3.5.2).

## 6.3 Mandatory irradiation labelling for restaurant meals containing irradiated ingredients

With respect to individual submitters, most representing consumers, consumer advocacy groups and NZ-based industry stakeholders considered that the requirement for restaurant meals containing irradiated ingredients should continue. For those campaign submitters that answered this question, the majority also strongly supported this labelling requirement. Their support was primarily based on the consumers’ right to know how the food has been produced and/or treated in order to make an informed choice.

Of the individual submitters, 10 submitters and seven campaign submitters considered that the requirement for restaurant meals containing irradiated ingredients should not continue. Reasons provided for this view included cost implications and consistency with other labelling requirements, e.g. GM food, allergens.

Two submitters suggested that if food irradiation labelling requirements continue for restaurant meals, some form of threshold could apply, for example, labelling not required for minor ingredients.

## 6.4 Mandatory labelling of irradiated ingredients used in packaged food

Most individual submitters representing consumers, consumer advocacy groups and NZ-based industry, a government agency and a public health organisation believed that irradiation labelling should continue to be required for irradiated ingredients in packaged foods. For those campaign submitters that answered this question, the majority were in favour of retaining food irradiation information on packaged food labels.

Reasons given for maintaining labelling on packaged foods were similar to those mentioned for restaurant meals. Consumers also believed that labelling was justified because packaged food was processed and labelling itself is a simple process.

A number of stakeholders, including several consumers, agreed that irradiated ingredients used in packaged food did not need to be labelled. Their reasons were similar to those described for exempting restaurant meals containing irradiated ingredients from irradiation labelling. One industry submitter also noted that it would not be possible to prove that an unlabelled multi-ingredient food does not contain an irradiated ingredient used in trace amounts (e.g. spices, which could even be a mixture from irradiated and non-irradiated sources).

Five individual submitters suggested that a threshold or other approach for irradiated ingredients in packaged food could be considered. Exempting irradiated herbs and spices, when used as ingredients, from irradiation labelling was also suggested as an alternative approach. One submitter said that suppliers of herbs and spices viewed labelling as a barrier to using irradiation to control microorganisms. Other treatments such as heat or steam were used instead of irradiation and could have a major effect on the quality of the spices.

## 6.5 Adequacy of current labelling requirements

The majority of submitters believed the current labelling requirements are inadequate to make an informed decision. Submitters considered that the terminology used in the statement is confusing, alarming and seen as a warning. The lack of information about the reasons for, or benefits of, irradiation was also seen to impede consumers’ ability to make an informed decision. Absence of label information about other treatments (e.g. fumigation, chemical sprays) was also viewed by industry submitters as a hindrance, because consumers had imperfect information on which to base their purchase decisions.

## 6.6 Wording of the statement

Most consumer submitters, consumer advocacy groups and some industry submitters considered that the actual wording of the statement should be prescribed and suggested specific statements such as ‘irradiated’ or ‘treated with irradiation’ be mandated. It was considered that these statements would be more honest, clearer and less confusing that statements that refer to ‘ionising radiation’.

Some consumer and industry submitters thought the wording ‘treated with ionising radiation’ was prescribed and were either supportive or ambivalent about it.

Other suggestions for improving the current requirements included:

* for the statement to include information about the irradiation dose, the ‘levels of radiation exposure’ (e.g. roentgens), the dose range or the source of irradiation
* for the statement to state the reason for irradiation (e.g. phytosanitary) for enforcement purposes
* prescribing the statement location and font size
* requiring loose produce to be individually labelled.

Several industry submitters were comfortable with the lack of prescription of the statement. Reasons included that retaining wording flexibility was helpful for industry and undue cost implications could be avoided.

Some submitters believed that positively worded labelling statements (e.g. ‘Irradiated to protect the New Zealand environment’) should be prohibited unless the risks such as potential allergenicity or nutritional compromise are also disclosed.

## 6.7 Voluntary use of the Radura symbol

Most consumer advocacy groups and consumers opposed the voluntary use of the Radura symbol. Reasons for this included that it is unconnected to irradiation and is therefore meaningless or unfamiliar to consumers and it may be misleading, for example, it may indicate that the food is fresh or has health benefits.

Industry and academic submitters that supported the voluntary use of the Radura symbol thought that it promotes the positive impact of irradiation and it can be a helpful signal to advertise the quality of irradiated products.

Some industry submitters considered it would be practical to use the symbol in place of a statement. One industry submitter and a government submitter believed that a consumer education campaign would be needed to ensure its meaning was understood.

## 6.8 Summary

Comments from some stakeholders, in particular consumers and consumer advocacy groups, indicated there were heightened concerns about the use of irradiation technology and a lack of understanding and acceptance of the safety and benefits of food irradiation. A common theme of consumer submissions was that the long term safety and health benefits from consuming irradiated food was unknown and there is no unequivocal evidence of its safety in relation to human health.

The majority of submitters did not support the removal of the mandatory irradiation labelling requirement. A number of these submitters were consumers, who were concerned about provision of information to enable an informed choice. Additionally, a number of submitters suggested strengthening the labelling requirement, for example prescribing the actual wording of the statement to be used or providing more information on the label about the irradiation process, its safety and the risks (if any) and benefits.

There was also limited support for removing the mandatory requirement to label irradiated ingredients in restaurant meals and packaged foods. Some submitters suggested that a threshold approach could be used to exempt the labelling requirement of ingredients present below a certain level in the food.

There was some minority support for the removal of the mandatory irradiation labelling requirement. Reasons provided for this included that there are no public health or safety risks and that removal of the labelling requirement may increase uptake or the use of irradiation as a technology, with associated benefits.

# 7 Conclusions

* There are differences in the use of food irradiation and the nature of the domestic markets for irradiated foods between Australia and New Zealand. However, in both countries, there is only a small quantity of irradiated produce available.
* Barriers identified by food industry stakeholders to the uptake of irradiation as a technology, included the cost of transporting to an irradiation facility, the cost of labelling and the need for product segregation. Also, major supermarkets not selling irradiated produce due to a perceived lack of consumer support was another barrier identified in both countries.
* From the limited evidence available, consumer awareness in Australia and New Zealand of food irradiation and food irradiation labelling is low. This is likely related to the limited exposure that consumers have to irradiated food and labelling in the market. Best evidence available suggests that consumers generally prefer non-irradiated products and would be prepared to pay an extra $2 for non-irradiated chicken or fruit (or be compensated by $2 to purchase the irradiated version). The level of compensation needed reduces if additional information is provided about the benefits of irradiation and its use as an alternative to chemical treatments.
* There is evidence to suggest that consumers use labelling, such as mandatory irradiation labelling, in making trust judgements about the overall food system. Consumers’ ‘right to know’ whether food is irradiated goes beyond enabling consumers to select or not to select foods in line with their preferences. Therefore, removal of labelling may lead to an erosion of trust in the food industry and the food system generally for some consumers. Some comments received from stakeholders reflected this by noting that the loss of labelling would affect transparency in the food supply, and this would adversely affect consumer trust in the food industry and the regulators.
* Qualitative consideration of the costs and benefits of removing mandatory irradiation labelling indicated differing effects between stakeholder groups, and within subgroups of each stakeholder group. This makes it difficult to conclude if removing the mandatory irradiation labelling requirement would have an overall net benefit to the Australian and New Zealand communities without quantification. Further, impacts depend on the extent to which mandatory labelling requirements are removed; for example, removing labelling requirements for only irradiated ingredients in processed foods versus removing labelling requirements for all irradiated food.
* There is limited evidence about the impact of providing information on the safety and benefits of food irradiation to consumers in Australia and New Zealand. The available information suggests that further education on the safety and benefits of food irradiation, as well as a greater understanding of food irradiation as an alternative to other processing treatments (e.g. chemical treatments), could increase consumers’ acceptance of irradiated foods.
* Various approaches to communicate the safety and benefits of food irradiation have been identified. However, further research is needed to analyse and compare the effectiveness of these approaches in the Australian and New Zealand context. It is also questionable whether labelling from a food regulation perspective has a role to communicate the safety and benefits of food irradiation. It may be more appropriate for food industry or other government agencies to play this role.
* In general, submitters and targeted stakeholders consulted strongly opposed the removal of the mandatory irradiation labelling requirement because of heightened concerns about the use of irradiation technology and a lack of understanding and acceptance of the safety and benefits of food irradiation. There were also concerns about providing information to enable informed choice. Suggestions were also made to strengthen the existing requirement, including prescribed words for the statement or providing more information on the label about the irradiation process, its safety and the risks (if any) and benefits. In contrast, there was some minority support for either the complete removal of the labelling requirement for all foods, or an exemption for irradiation labelling of irradiated ingredients in restaurant meals and packaged foods.

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1. In subsection 1.1.2—2(3), component means a substance that is present as a constituent part of the food (as distinct from an ingredient) [↑](#footnote-ref-2)
2. <http://www.health.gov.au/internet/main/publishing.nsf/Content/foodsecretariat-policy-guidelines#2> Accessed 8 November 2016. [↑](#footnote-ref-3)
3. The ‘low’ information group were informed that irradiation was a preservation technique similar to pasteurisation. The medium information group were informed that irradiation is a safe process and provided information about the benefits of irradiation, such as extended shelf-life and reduced spoilage. The ‘high’ information group were provided with the same information as the ‘medium’ group, and also informed that irradiation avoids the use of chemical treatments. [↑](#footnote-ref-4)
4. <https://stats.oecd.org/glossary/detail.asp?ID=3177> Accessed 11 November 2016 [↑](#footnote-ref-5)
5. <http://www.foodstandards.gov.au/consumer/foodtech/irradiation/Pages/default.aspx> Accessed 3 November 2016 [↑](#footnote-ref-6)
6. <http://www.foodsafety.govt.nz/industry/general/labelling-composition/applying-requirements/various.htm> Accessed 3 November 2016 [↑](#footnote-ref-7)
7. <https://www.betterhealth.vic.gov.au/health/healthyliving/food-irradiation> Accessed 3 November 2016 [↑](#footnote-ref-8)
8. Submissions to the consultation paper can be found at the following link: <http://www.foodstandards.gov.au/consumer/labelling/review/Pages/Labelling-review-recommendation-34irradiation-labelling.aspx> (accessed 11 November 2016) [↑](#footnote-ref-9)