



GE Free New Zealand

In Food And Environment Inc.

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Re: Application A1193: Application to amend Standard 1.5.3 of the Food Standards Code, Irradiation of Food, to include irradiation as a phytosanitary measure for all fresh fruits and vegetables.

Dear FSANZ assessment team,

We urge FSANZ to adopt option 2 and delay or reject the approval of A1193

Matters that may be included in standards and variations of standards

We oppose the premise that the irradiation of all fresh fruit and vegetables especially apple, apricot, cherry, honeydew melon, nectarine, peach, plum, rock melon, strawberry, table grape and zucchini is needed for trade reasons, bacterial and pest control. There is no evidence provided that irradiation of all foods will stop the infestation of fruit fly if proper methods of sanitation are not followed. The only need for irradiation conditions is if the foods are already compromised which means they are not in a state that is safe to eat.

We are concerned that A1193 is being inappropriately assessed by FSANZ in isolation from its total dietary context. And urge further evaluation of these concerns.

FSANZ is the Trans Tasman body whose responsibility is to provide a high standard of public health protection throughout Australia and New Zealand. Their purpose set down in the FSANZ Act is to provide

- (a) a high degree of consumer confidence in the quality and safety of food produced, processed, sold or exported from Australia and New Zealand;*
- (b) an effective, transparent and accountable regulatory framework within which the food industry can work efficiently;*
- (c) the provision of adequate information relating to food to enable consumers to make informed choices;*
- (d) the establishment of common rules for both countries and the promotion of consistency between domestic and international food regulatory measures without reducing the safeguards applying to public health and consumer protection.¹*

¹ <https://www.legislation.gov.au/Details/C2018C00243>

The bias toward prior flawed assumptions has never taken into account public health but always sided on the applicant's non-published material. This application lacks any critique and consideration, as pointed out in the submission by Gene Ethics, on labeling, accountable decisions to protect the food, supply safety of consumers.

Are these vegetables going to be routinely irradiated before sale in the Queensland State or only when exported to other states or Nations?

Is there a need for economic for irradiation of fresh horticultural produce?

FSANZ assessment on the need for irradiation should be made on the quality and safety of food, not on trade and market disruption. FSANZ assessment has shown that they have put commerce before food safety. In the prior application 1092, FSANZ makes the argument that there is a risk to market disruption if foods are not irradiated. As stated:

QLD DAFF and the horticulture industry consider trade in these fruits and vegetable at risk of market disruption. The forecast value for total fruit and vegetables in 2012–13 is \$2453 million (mil), with total fruit and nuts accounting for \$1334 mil and total vegetables \$1119 mil (Qld AgTrends 2013). (A1092, Executive summary p. 2)²

This has been shown to be untrue. The current forecast predictions shown above from the current Queensland AgTrends vegetables, fruit and nuts shows that without foods being irradiated there has been a steady economic growth of the state and industry and to regional health. For example –

For 2019–20, Queensland's GVP for fruit nuts and vegetables is forecast to be \$3149 million, 1 per cent lower than for 2018–19 and 2 per cent lower than the average for the past 5 years. (The Queensland AgTrends³ 2019-2020)

The Qld AgTrends 2020-2021 forecast predicts that the total fruit and nuts will be

The total GVP for fruit and nuts in Queensland for 2020–21 is forecast to be \$2982 million. This is 4% higher than DAF's final estimate for 2019–20 and 2% greater than the average for the past 5 years.

The growth in the 7 years from 2012-2019 is substantial and does not support the premise that irradiation of fresh fruit and vegetables is affecting the imports of these foods into New Zealand. Nor has the market or trade suffered from the lack of irradiation of these foods.

² <https://www.foodstandards.govt.nz/code/applications/Documents/A1092-ExecSummary.pdf>

³ <https://www.publications.qld.gov.au/dataset/queensland-agtrends/resource/c9d3c8ba-7a0a-49c7-b763-6d342d8b2b14>

Sanitary Or Phytosanitary Measures And Pests.

There is no evidence provided that irradiation is safer than existing heat treatment methods or that the risks arising from the lack of irradiation will protect humans or animals from contaminants toxins or disease-causing organisms in foods, beverages or feedstuffs; or prevent the establishment or spread of pests.

In 2019, The Ministry of Primary Industries (MPI) New Zealand stated that there have been only 5 Queensland fruit flies found and eliminated in the last decade.⁴ Another 2 were discovered and eliminated in 2020. This means that the existing phytosanitary methods are appropriate for the control and detection of the Queensland Fruit fly and the risks are negligible.

New Zealand consumers value the imported fruits and vegetables that come from Queensland. However, though they support Queensland by buying fresh produce, it is not the obligation for these consumers to eat foods that are unsafe badly assessed and nutritionally compromised to support the trade in irradiated foods.

FSANZ has shown that it is not protecting public health but undergoing a lazy, sloppy and biased assessment toward the applicant by recommending irradiation of such a large range of produce.

Irradiation Dose Safety -

The assessment of fresh fruit and vegetables has not taken into account the anti nutrients or free radicals formed from the pesticides used on the produce when irradiated and their effects on the person health over time. There is no data on the composition of each irradiated vegetable including the maximum amounts of contaminants or pesticide residues that may be present in the food.

However, The applicant is seeking a 6.5 fold range of irradiation dose is especially concerning. It appears that FSANZ has evaluated the minimum dose of 150Gys, purporting no harm, but allowing a range of up 1kGy a 6.5 fold increase with no supporting dietary evidence of nutritional safety.

The WHO (1994) report stated that –

“Irradiation of fresh plant products is generally limited to low-dose applications, since higher doses harm these foodstuffs...at doses of 0.25 kGy or less, most fruits and

⁴ <https://www.mpi.govt.nz/news/media-releases/queensland-fruit-fly-in-auckland-situation-update-2/>

*vegetables suffer no discernible damage. Fruits and vegetables are damaged by doses between 0.25 and 1 kGy*⁵.

As cited by WHO Kader (1986)⁶ classified fruits and fruit-vegetables into four groups according to their sensitivity to irradiation as follows:

Slight: apple, cherry, date, guava, longan, mango, muskmelon, nectarine, papaya, peach, rambutan, raspberry, strawberry, tamarillo, tomato.

Variable: apricot, banana, cherimoya, fig, grapefruit, kumquat, lychee, loquat, orange, passion fruit, pear, pineapple, plum, tangelo, tangerine.

Serious: avocado, cucumber, grape, green bean, lemon, lime, olive, pepper, sapodilla, soursop, summer squash.

The groups that are graded as “variable’ and “serious” form free radicals and anti nutrient properties jeopardizing the safety of the foods.

The total diet survey (NZ) found that strawberries, spinach, nectarines, apples, grapes, peaches, cherries, pears, tomatoes, celery, potatoes and sweet bell peppers are grown with a range of fungicides, organochlorine and organophosphate pesticides leaving pesticide residues.

Research by Lepine⁷ (1991) has found that irradiation of pesticide residues in fruit and vegetables at the level of 150 GY and higher produces high levels of hydroxyl radicals.

Mu T et al (2017)⁸ found that hydroxyl radicals In a biological body, attack the cell membrane, causing membrane damage and destroying sugar groups and DNA base sequences, inducing the disintegration of the double-helix structure, even causing cell death and mutations.

Effects of Irradiated foods on Health of animals and humans.

In 2009, The Sydney Morning Herald published a story on the death of 30 cats that ate irradiated food from Canada. The Agriculture Minister, Tony Burke banned the irradiation of cat food after evidence that some cats can suffer fatal neurological damage after eating irradiated dry food.⁹ The Australian RSPCA position is that pet food

⁵ <https://apps.who.int/iris/bitstream/handle/10665/39463/9241561629-eng.pdf>

⁶ <http://ucce.ucdavis.edu/files/datastore/234-401.pdf>

⁷ Lepine, F. (1991). Effects of ionizing radiation on pesticides in a food irradiation perspective: a bibliographic review. *Journal Of Agricultural And Food Chemistry*, 39(12), 2112-2118. <https://doi.org/10.1021/jf00012a002>

⁸ Mu, T., Sun, H., Zhang, M., & Wang, C. (2017) *Sweet potato processing technology*.

⁹ <https://www.smh.com.au/national/catfood-irradiation-banned-as-pet-theory-proved-20090529-bq8h.html>

should not be irradiated.¹⁰ This cat food was irradiated with 1/3 smaller dose than FSANZ is seeking comment to approve on.

New Zealand has a growing number of people who are living below the poverty line. Research by Bhaskaram and Sadasivan (1975)¹¹ in India showed that irradiated wheat caused abnormal mitosis and cellular production leading to polyploidy (doubling of the chromosomes) in cells. This has been shown to lead to genetic disorders and promote tumor growth. There is no scientific evidence conducted on the feeding of children on the health effects that might occur from the ingestion of irradiated foods.

We have been sent a photo of a mango imported from Queensland and irradiated. It did not ripen after 10 days, the flesh was discoloured and dry, there were holes in the flesh (see picture below). After 12 hours in the air the cut mango went black and moldy.

This shows that though the assessment considered the extended shelf life of irradiated fruit and vegetables, it did not consider quality, nutritional and anti nutrient in the individual fruit.



Conclusion: A1193 Must Be Reconsidered

¹⁰ <https://kb.rspca.org.au/knowledge-base/what-is-rspca-australias-position-on-the-irradiation-of-imported-pet-food-products/>

¹¹ Bhaskaram, C., & Sadasivan, G. (1975). Effects of feeding irradiated wheat to malnourished children. *The American Journal Of Clinical Nutrition*, 28(2), 130-135.
<https://academic.oup.com/ajcn/article/28/2/130/4732887>

- Irradiation for fresh fruit and vegetables shows a decline in nutrition and quality.
- Queensland horticultural producers will lose valuable market share if their quality produce is irradiated.
- There is little scientific research examining the changes, which occur in the nutrient content of foods following irradiation to determine whether the bioavailability of nutrients is in any way altered, and whether changes if they do occur, would have possible adverse nutritional consequences.
- Further irradiation of fresh fruit and vegetables in A1193 offers no benefit whatsoever to New Zealanders or Australians.
- Consumers want fresh produce that maintains a high level of nutrients.

We urge FSANZ to:

1. Delay approval for the irradiation of apples, apricots, cherries, nectarines, peaches, plums, honeydew, rockmelon, strawberries, table grapes, zucchini and squash
2. Undertake 90 day ingestion studies, ethically approved, examine the changes which occur in the nutrient content of foods following irradiation;
3. Determine whether the bio availability of nutrients would have possible adverse nutritional consequences examine the changes which occur in the nutrient content of foods following irradiation;
4. Establish whether changes would have possible adverse nutritional consequences on vulnerable member of the community, especially children to assess the RDI,
5. Place labeling warning on the foods for vulnerable population to avoid eating fruit and vegetables that are irradiated.

We wish to be heard.

We support and endorse all the point made by the submissions of Gene Ethics and Friends of the Earth.

Regards,
Jon Muller
Secretary GE Free NZ in Food and Environment