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From: [redacted]
Sent: Sunday, 6 December 2020 8:44 PM
To: submissions
Subject: Submission on A1193 Irradiation of all fresh fruit and vegetables

Categories: [redacted]

Opposition to Submission on A1193 Irradiation of all fresh fruit and vegetables

To Whom it May Concern:

I am writing to express opposition to the 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, A1193 Irradiation of all fresh fruit and vegetables.

I am a resident of New South Wales, a 10,000 acre certified organic primary producer including an apple orchard and vineyard, hotel and restaurant licensee, a consumer of fresh food, and an autoimmune disorder sufferer.

Only today have I become aware of this application from the Queensland Department of Agriculture and Fisheries. As such my time is limited, but the brevity of my submission is in no way indicative to the absolute objection I have to the application.

I oppose the A1193 submission for the irradiation of all fresh fruit and vegetables.

- I have serious concerns about the wholesomeness of irradiated food as well as the environmental and social impacts of irradiating our food, especially our fresh fruit and vegetable supply.
    - Exposing food to ionizing radiation disrupts its molecular make-up, producing free-radicals and potentially other **toxic chemicals such as benzene and formaldehyde**.
    - Ionising radiation also creates new chemicals called "**radiolytic products**", some of which do not usually occur naturally in food. The impacts of these have not been adequately studied.
        - 2-ACBs, has recently been found "to promote the cancer-development process in rats, cause genetic damage in rats and cause genetic and cellular damage in human and rat cells."
    - Irradiation **destroys and disrupts vitamins, proteins, essential fatty acids** and other nutrients in food – sometimes significantly. It can destroy up to 80 percent of vitamin A in eggs and 48 percent of beta-carotene in orange juice.
    - Irradiation **produces free radicals in food** and has been linked to health problems such as nutritional deficiencies, immune system disorders, and genetic damage.

- The scientific substantiation in this **proposal over-generalises the consequents** of the potential impact of this expansion of irradiated foods on nutrition and public health. Some of my concerns elaborated further below are:
    - The proposal states that only impacts on vitamin C and beta-carotene are relevant. However, the applicant should provide peer-reviewed published evidence that the **critical folate** integrity is maintained in irradiated fresh vegetable produce.

- The proposal fails to address critically **important flavonoids**. These compounds are found in vegetables and fruits and have been linked to risk reduction/prevention of a range of cancers and coronary heart disease. This application provides no evidence that flavonoids are not modified when exposed to irradiation.
- The proposal fails to address new research indicating that irradiation has the potential to **modify the tertiary structure of proteins**, representing the risk of **generating allergenic epitopes**.
- Irradiation may cause food poisoning by killing microorganisms which normally cause meat to look or smell spoiled. Without those queues for consumers, **treated foods may be contaminated but appear fresh**.
    - Hardier bacteria may survive to poison, while some organisms may mutate when irradiated, forming radiation-resistant strains.
- It is unreasonable to presume that all fresh fruits and vegetables will react in the same way to irradiation. Each of their differing organic structures and compounds indicate the probability of differing reactions. Even if the scientific substantiation of the applicant were of an acceptable level, applying it to all fruits and vegetables as if there was no difference between them would be **haphazard at best and negligently harmful at worst.**
    - Safety cannot be presumed. Having no safe consumption data for each food to be effected by the submission is unacceptable, speculative, and puts public health at risk in exchange for unproven commercial expectations.

- I am alarmed at apparent regulatory bias expressed through the lack of scientific rigour applied to the submission to irradiate all fresh food flora.
    - The Queensland government has a clear conflict of interest by being both the applicant for A1193 and being one of the final arbiters of the decision on its own application. As such, it **should be recused** from A1193's presentation, influence, and assessment processes.

- I do not believe that the applicant has proven there is a technical need for the approval of irradiation of these foods.
    - I question the benefit of irradiation as a market access tool for producers and I believe that any **perceived benefits for consumers are outweighed by externalised costs** to consumers and governments.
    - No reduction in pesticides.
        - The assertion that irradiating food provides choice to consumers wanting to **avoid exposure to food production chemicals is erroneous**, given irradiation is a post-harvest process and will be used in conjunction with chemical treatments/ pesticides in the planting through harvesting phases of crop production. Irradiation will be used on top of pesticides and be followed by other food transport and processing treatments/practices.

- I have further concerns were the submission accepted, that mandatory **irradiation labelling requirements** will not be sustained.

In addition I firmly believe and attest that:

- The nutritional and safety assessment process submitted by the **applicant lacks scientific rigour**, relying heavily on unpublished – non-peer-reviewed research.

- The scientific evidence on irradiated foods is unresolved in its conclusions on their safety or not. New research and real-life experience in Australia suggests that **irradiation can have serious health impacts**, at the very least on domestic animals. The precautionary principle should, therefore, be rigorously applied. No monitoring or long-term studies have been conducted on the human consumption of irradiated foods yet a clear health impact has been demonstrated in cats in Australia.
    - Between 2008 and 2009, approximately 100 Australian cats developed neurological disorders which led to their paralysis and, in some cases, death. The cause was identified as the consumption of irradiated cat food.
    - The onus is on the irradiation industry to prove food irradiation is safe. This Queensland Government application fails this test.
- This proposal would constitute a material reduction in the nutritional value and safety of the human food supply, yet A1193 is being assessed in isolation from its total dietary context.
- Providing Australians with nutritionally depleted and potentially harmful foods in order to expand interstate or overseas trade is unacceptable. It creates and puts upon the government and consumers cost externalities associated with healthcare impacts from nutritional depletion, allergenicity, and other identified and yet to be identified health and existential risks.
- Irradiation is a produce import-enabling tool. Australian producers cannot compete with cheaply produced irradiated products from overseas, reducing local farm viability, employment, and Australian food security.

I am aware of the submissions against this application submitted by Gene Ethics and Food Irradiation Watch. I fully support these submissions as if they were my own. As well as generally supporting their whole submissions, I highlight the following statements on the subject of irradiation of food flora:

1. *We previously have raised the concern that whilst high irradiation will obliterate food proteins, at the lower dosages proposed, irradiation has the potential to modify the tertiary structure of proteins presenting the risk of generating allergenic epitopes. A recent study has shown that smaller irradiation dosages (~1 Gy) can render protein more allergenic than either non-irradiated protein, or protein irradiated at a higher dosage. It has been speculated that this effect may be due to increased exposure of conformational and linear epitopes resulting from the formation of partially unfolded and aggregated species in response to irradiation.*

2. *FSANZ has belatedly acknowledged the feline pathogenic model for toxigenicity related to consumption of irradiated food despite providing no insight into the exact mechanisms involved in this toxic effect. To arrive at the conclusion that these effects are indeed cat-specific, other animal models would need to have been tested. It is incumbent upon FSANZ to present these data to substantiate their conclusions). Until the specific mechanisms of toxicity are elucidated, it is irresponsible to declare these observations "not relevant" to humans. A pertinent analogy is that thalidomide is not teratogenic in rodents, but is devastating for humans in utero. On this basis, it is remarkable, and indeed irresponsible, that FSANZ categorically deems this model to be irrelevant to human health.*

3. *Prevalence of allergies to vegetables and fruits are low, but not insignificant, and most likely due to reactions to glycoprotein food components. FSANZ and the applicant have still not adequately addressed this concern in either the application or the various responses. We also have previously identified serious misinterpretation of dietary intake studies which FSANZ has not adequately addressed.*

4. *Irradiated food is not "chemical free" since irradiation causes the accumulation of radiolytic compounds, such as alkylcyclobutanones, to levels not seen in untreated food. There are at least five radiolytic biomarkers available to test for irradiated food (namely n-pentadecane, 1-hexadecene, 1,7-hexadecadiene, n-heptadecane and 8-heptadecene). The chemical changes to meat in response to irradiation are detectable, repeatable and specific.*

5. *Claims that no significant change to fruit occurs due to irradiation are also misleading. Delayed ripening – an acknowledged and sometimes sought-after outcome of irradiation - is indicative of major, biologically significant compositional change. Claims that macronutrient content are unaffected is also incorrect and misleading. Irradiation causes substantial documented changes to both proteins and lipids.*

In closing my submission against application A1193, I can envision some broad positive outcomes of refusing it. By not ceding to one specific lobbied risk-ridden technology (irradiation):

1. There is no chance of unwittingly creating a public health catastrophe 'down the road'.
    - No need to say 'sorry' for irreversible damage to human wellbeing, cognitive ability, immune system, and fertility.

2. Investment in Australian research and development of non-chemical non-radiation-sourced solutions to quarantine matters remain commercially viable.
    - Non-chemical and non-radiation solutions are what parents around the world are demanding for their children and hoping for themselves.

3. Australia's prized reputation as a leader in clean, green food production remains intact.
    - This is a unique and invaluable asset that provides competitive advantage to Australian primary producers.

Thank you for the opportunity to make this submission against the Queensland Department of Agriculture and Fisheries application A1193.

Sincerely,

[redacted]
Managing Director

Wiser Equity Pty Ltd

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