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**Submission to the
Inquiry into the Food Standards
Amendment
(Truth in Labelling – Genetically Modified
Material) Bill 2010**

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About IHER

The Institute of Health and Environmental Research Inc. (IHER) is a not-for-profit research institute with an interest in genetically modified (GM) organisms, particularly those destined for food. Its directors hold the following degrees: ordinary degrees in Medicine, Science and Agriculture, Honours Degrees in Agricultural Science and Organic Chemistry, a Master of Public Health, and PhDs in Plant Genetics and Medicine. The Directors have training and expertise in plant science, agriculture, medicine, chemistry, biochemistry, nutrition, epidemiology and biostatistics.

Dr Carman is a Director of IHER and the author of this submission. She has an Honours Degree in Organic Chemistry, a PhD in Medicine and a Master of Public Health. She has taught at an agricultural college, worked at the CSIRO in food and nutrition and was the Senior Epidemiologist in the Communicable Disease Control Branch of the SA government, investigating outbreaks of disease for the SA government, most of which were outbreaks of food-borne disease.

Submission

Introduction

The purpose of the Food Standards Amendment (Truth in Labelling – Genetically Modified Material) Bill 2010 (hereafter called “The Bill”) is to require producers, manufacturers and distributors of food to label all products that contain genetically modified (hereafter called “GM”) material. Dr Carman provided a detailed submission to the Review of Food Labelling Law and Policy (hereafter called “IHER's RFLLP submission”) on behalf of IHER in May 2010. That submission provided a great deal of evidence from the peer-reviewed scientific and medical literature to support the purpose of The Bill. That submission is attached to this document by email.

It is important to note that the current Food Standards Code currently requires all foods containing DNA and protein from a GM organism to be labelled as being GM.

IHER's RFLLP submission provides ample evidence from the peer-reviewed scientific literature that meat and milk (and hence cream and cheese) from animals fed GM feed contain GM DNA from the feed. Indeed, the varieties of GM feed fed to these animals can be determined from measuring the GM DNA in the meat or milk. Therefore, according to the current Food Standards Code, these should be labelled. There is also evidence that there can be metabolic, physiological and immunological responses or differences in animals that eat GM crops. The NZ Commerce Commission has already warned a chicken producer that it risked breaching the Fair Trading Act with claims that chickens fed GM feed contained no GM ingredients. Moreover, the GM industry is now applying for patents on animals fed GM crops on the basis that animals fed a given GM crop are different or special to animals not fed that GM crop. (See Section 5.1 of IHER's RFLLP submission for more information).

Highest level principles

The two highest-level principles that should guide GM food labels are the protection on public health and safety, and enabling consumers to make an informed choice. Other policy drivers, in particular the commercial demands of industry are recognised but should not displace or relegate the two highest-level principles. Evidence is given in IHER's RFLLP submission of how FSNAZ may have been captured by,

or unduly influenced by, the commercial food industry so that it has not given enough weight to the two highest-level principles and that hence, FSANZ may be in breach of its Act. (See Section 8 of IHER's RFLLP submission for more information.)

None of the 63 GM foods currently permitted into the Australian food supply (at the time of IHER's RFLLP submission) has undergone long-term animal feeding studies or human health testing. The long-term effects of these crops on health are therefore unknown. The compliance regime should therefore reflect the high-level principle that consumers should be allowed to make their own informed choice about whether to eat these foods or not. In order to do this, they need to rely on the veracity of labels. Accurate, policed labelling is also required for epidemiological studies into the effects of these crops on human health. (See Section 9 of IHER's RFLLP submission for more information.)

Labelling recommendations

As a result of IHER's extensive investigation into the peer-reviewed literature, IHER made a number of recommendations for GM food labelling in IHER's RFLLP submission. Those recommendations are reproduced here with some discussion and slight modification to better suit the purposes of The Bill and this Inquiry.

Recommendation 1 – Animals fed GM feed

As there is ample evidence that products from animals such as meat and milk contain GM DNA if the animal has been fed GM feed. Therefore, all products from animals fed GM feed should be labelled, including meat, milk, cheese and eggs. FSANZ has placed an editorial note defining the meaning of a GMO in the Standard that states: “This definition does not include a food derived from an animal or other organism which had been fed food produced using gene technology, unless the animal or organism itself is a product of gene technology.” This should be replaced with: “This definition includes a food derived from an animal or other organism which had been fed food produced using gene technology.” While no other change may be required in the Food Standards Code, in order to make the situation clear, Section 4 of Standard 1.5.2 should be changed as described in Recommendation 9. For the scientific evidence behind this recommendation, see section 5.1 of IHER's RFLLP submission.

Recommendation 2 – Highly refined food

There is also ample evidence in the peer-reviewed scientific literature that highly refined products also contain GM protein or GM DNA, including oils, highly processed flour, starch, sugars, corn syrup, lecithin, soy protein powder, soymilk, corn chips, tortillas, taco shells, tofu, miso and irradiated and sonicated foods. Therefore, according to the Food Standards Code, these should also be labelled. (See Sections 5.2 and 5.3 in IHER's RFLLP submission for more information and the evidence from peer-reviewed scientific literature.) Honey from bees that have foraged on GM crops has also been shown to contain GM DNA and therefore also needs to be labelled.

Labelling these foods requires no change to the Food Standards Code. It simply requires instructing FSANZ not to wrongly interpret the Code and for FSANZ to tell the food industry that the Food Standards Code requires all foods from GM crops such as oil, starches, sugars and lecithin to be labelled. Honey obtained from bees that have foraged on GM crops should also be labelled.

Recommendation 3 – Processing aids, food additives and flavours

For the same reasons as for highly processed foods, all processing aids and additives from GM organisms should be labelled.

Determining if a food ingredient has come from a GM crop generally involves testing either for GM DNA or for the GM protein that the GM DNA is designed to produce. DNA is generally more robust at surviving food processing and refining processes. Cheap and effective protein-based tests are currently being used in the cropping industry on harvested crops, while more specific and sensitive tests to measure GM DNA are currently available in commercial laboratories in many countries to test for GM content in processed foods. These are currently used in Europe to police GM labelling laws. Moreover, more accurate and cheaper high through-put tests are currently finding their way into routine laboratories. (See Section 5.4 of IHER's RFLLP submission for more information.)

European regulations *Regulation (EC) 1829/2003* and *Regulation (EC) 1830/2003* not only provide for better labelling than occurs in Australia but also provide for traceability of GMOs through the foods chain, including highly refined substances such as oils, sugars, starches, lecithin, etc. The regulations aim to not only inform consumers, but to monitor and check information given on labels, to monitor the effects on the environment, to provide a means of surveillance for any potential effects on human or animal health and to withdraw any GMOs which are found to be potentially dangerous for human or animal health. Animal feed has the same protection as human food. (See Section 5.5 of IHER's RFLLP submission for more information.)

Recommendation 4 – How GM food and feed should be regulated

Food and feed should be regulated in Australia much as they are in the EC by regulations (EC) 1829/2003 and (EC) 1830/2003. This should be done in order not only to inform consumers, but to monitor and check information given on labels, to trace GMOs through the food chain, to monitor the effects on the environment, to provide a means of surveillance for any potential effects on human or animal health and to withdraw any GMOs which are found to be potentially dangerous for human or animal health.

Recommendation 5 – Unintentional presence

The current standards for unintentional presence should remain. (See discussion in Section 6.1 of IHER's RFLLP submission.)

Recommendation 6 – Point of sale labelling

If there is any move to have food from premises such as bakeries, restaurants and takeaways labelled for nutrient content, then labelling should be extended to GM ingredients.

Recommendation 7 – RNA crops

New GM crops are emerging that use RNA rather than DNA methods. While many of these crops will be covered under current labelling laws, techniques that spray RNA onto crops may not be. There are also concerns about how to monitor these crops in the food supply as current detection techniques may not be adequate. (See Section 5.8 of IHER's RFLLP submission for more information.) Therefore,

The Food Standards Code should be changed to incorporate reference to RNA as described in Recommendation 9. Foods using RNA technologies should not be introduced into the Australian food supply until adequate detection tests have been established.

Recommendation 8 – How labels should look

The food industry appears to be concerned about the size of the panel used to describe the ingredients in foods. Currently, the words “genetically modified” are required after each GM ingredient. These could be removed and replaced by the commonly-accepted abbreviation “GM” in order to save room. An example of how labels for meat from animals fed GM feed could appear is, using the example of chicken: “Ingredients: chicken (fed GM feed)”. An example of how milk, eggs, cheese etc from animals fed GM feed could appear is: “...from animals fed GM feed”. An example of how processed goods could appear is, using the example of beef sausages: “Ingredients: beef (fed GM feed), wheat flour, soy (GM)”.

Recommendation 9 – How the above recommendations should appear in the Food Standards Code

Section 4 (1) of the Food Standards Code should be changed to:

genetically modified food means food that is, or contains as an ingredient, including a processing aid, a food produced using gene technology which –

- (a) contains novel DNA and/or novel RNA and/or novel protein; or
- (b) has had genes silenced or removed using gene technology; or
- (c) has altered characteristics;

including –

- (d) highly refined food obtained from a genetically modified organism;
- (e) a processing aid or food additive from a genetically modified organism;
- (f) flavours obtained using a genetically modified organism;
- (g) products (including meat, milk, cream, cheese and eggs) from animals fed genetically modified organisms;
- (h) products from bees foraged on genetically modified organisms or fed genetically modified organisms;

but does not include –

- (i) a food, ingredient, or processing aid in which genetically modified food is unintentionally present in a quantity of no more than 10g/kg per ingredient.

Accurate qualitative (present/not present) and quantitative (percent present) tests for GM DNA are available in a number of countries including Australia to monitor the labelling laws. Cheaper qualitative testing can be used to test for unauthorised GMOs in the food supply. (See Section 6.1 of IHER's RFLP submission for more information.)

There may be a move by the GM industry and its supporters to argue that if consumers want to avoid GM foods, they can use “non-GM” or “GM free” labels, and that therefore there is no need for GM labels. However, this will reduce consumer choice. This is because of concerns from food manufacturers that if they label their foods as non-GM or GM free, they could be fined if tiny amounts of GM materials slip through, as occurred for a maker of soy-based sausages. (See Section 6.2 of

IHER's RFLLP submission for more information.)

Recommendation 10 – GM and non-GM labels

Both GM and non-GM labels should remain. There is evidence that if GM labels showing the presence of GM ingredients were dropped in favour of allowing only non-GM labels, consumer choice would be greatly reduced.

Recommendation 11 – Unauthorised GM organisms

GMOs that are not authorised to enter the Australian food supply may enter this country from overseas imports. At present, there seems to be no monitoring or surveillance for these. (See Section 7 of IHER's RFLLP submission for more information.) Therefore, the Australian Quarantine inspection Service (AQIS) should routinely test a proportion of foods entering Australia to determine if unauthorised GMOs are present.

Recommendation 12 – The FSANZ Board

It is recommended that FSANZ be re-structured so that it and the membership of its Board reflect a public commitment to the two highest-level principles. This would require a Board on which the majority of members are experts in medicine, public health, nutrition or food-borne disease and are independent of commercial food companies.

Recommendation 13 – GM testing body and schedule

To reflect the current lack of evidence, and the possibility of future epidemiological investigations, it is recommended that:

- All commercially-available manufactured foodstuffs be tested, **at least biennially** for the presence or absence of genetically-modified ingredients, and the results compared against the labelling of the product. Where labels are found to be inaccurate, there should be similar treatment, for enforcement purposes, of both positive and negative claims of GM status.
- The schedule of testing be revised on a regular basis to reflect risks that may be identified from specific GM ingredients, including that based upon any evidence which may emerge in scientific and medical journals.
- Monitoring for compliance with the Food standards Code should be conducted on a national level as many food companies in Australia are national companies that produce their product in one State or Territory and export it to others. A national compliance body should therefore be established to monitor compliance. This should not be done by FSANZ as IHER and others have lost trust in FSANZ's ability and willingness to be impartial.

Very recent information from the peer-reviewed literature

GM crops are engineered to contain GM DNA that causes the plant to produce a GM protein that generally either makes the plant (1) resistant to a herbicide or (2) causes the plant to produce a protein that is toxic to certain insects that eat it. The latter class of GM proteins are insecticides and are made by so-called “Bt” crops. Many GM crops are now engineered to do both at once by having “stacked” genes in them.

Some sections of the food industry and FSANZ have repeatedly argued that food processing removes most of these GM proteins, and that highly refined products from these GM crops (such as starches and sugars) contain no GM proteins. Section 5.2 of IHER's RFLLP submission debunks these myths. Moreover, FSANZ has then argued that if any proteins remain in the food, the digestive system of people would completely break-down those proteins so that none would enter the body.

However, a recent paper, published in the last week or so, has provided peer-reviewed scientific evidence that this is profoundly incorrect. Specifically, Aris and Leblanc in Canada (Aris A, Leblanc S. Maternal and fetal exposure to pesticides associated to genetically modified foods in Eastern Townships of Quebec, Canada. *Reprod Toxicol* (2011), doi10.1016/j.reprotox.2011.02.004), looked for a particular GM protein, called Cry1Ab, produced by certain GM corn/maize crops to kill grubs that eat the crop, in the blood of non-pregnant women, pregnant women and their just-born babies. They found this GM protein toxin in 93% of pregnant women, in 80% of their babies and in 69% of the non-pregnant women. Of the pregnant women who had this protein in their blood, 86% had passed it to their baby when the baby was in their womb. For this to have happened, the GM protein in certain GM corn varieties must have survived grinding, heating, cooking and other food processing methods, before also surviving the human digestive system (which is designed to break-down proteins), to then enter the woman's blood, to then cross the placenta to enter the developing baby.

Importantly, the authors of this paper suggest that these women may have been exposed by eating meat contaminated with this protein. Therefore, they are suggesting that this GM protein in GM corn, when fed to cattle, survives digestion in the animal to enter the meat of that animal, then survives cooking and the woman's digestive system to enter her blood, where it then crosses the placenta to enter her developing baby.

The effects of this protein on women, the developing baby and the growing child are unknown. No health studies of this protein have been done on people.

Furthermore, there is no biological reason why this protein should behave differently in men eating GM corn, than women. Therefore, this study indicates that between 69% and 93% of the entire Canadian population may have this GM protein toxin in their blood. Furthermore, as it is unlikely that all of these women would have eaten GM corn containing this GM protein toxin within hours of their blood test, the results also indicate that once the GM protein toxin enters the body, it may be quite long-lived there, and may in fact accumulate in the body over time.

It is therefore important for the Food Standards Amendment (Truth in Labelling – Genetically Modified Material) Bill 2010 to succeed in order to provide food labels that are truthful about their GM content. Not only does it provide for consumer choice, but it also allows for full investigations into the effects of GM foods on human health, investigations that are sadly lacking.

Specific recommendations for the Food Standards Amendment (Truth in Labelling – Genetically Modified Material) Bill 2010

It is IHER's submission that The Bill should be supported.

However, it is also IHER's submission that The Bill reads as if only GM crops can contain GM material. That is, it focusses on labelling GM crops and the products derived directly from them. Evidence from the peer-reviewed literature is presented here, in IHER's RFLLP submission (attached) and in the appendix to IHER's RFLLP submission, that products from animals fed GM feed, such as meat, milk, cheese and eggs, should also be labelled.

Moreover, evidence is also given in IHER's RFLLP submission that purified products from GM crops should also be labelled.

To ensure both of these points, it is recommended that the words “containing genetically modified material” in line 12 of section 16C of The Bill be changed to “containing material from genetically modified organisms and products from animals fed genetically modified organisms” as information presented in this submission and IHER's RFLLP submission show that these products can also contain GM DNA and GM proteins.

IHER also recommends that The Bill be changed to include a definition that genetically modified material also includes material containing RNA (ribonucleic acid) from GM organisms.

Finally, in the interests of avoiding legal cases in Australia like that of Bean Supreme in New Zealand (see section 6.2 of IHER's RFLLP submission for more information), IHER also recommends that The Bill provides some protection from prosecution for producers, manufactures and distributors of food who provide sound evidence that that they have sourced non-GM ingredients for their food, but who's food has been found to contain tiny traces of GM DNA or GM protein.