

# **How GM food is regulated in Australia and New Zealand: A story of standards, oil and sausages**

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## **Introduction**

This paper describes the genetically modified (GM) food labelling regulations for Australia and New Zealand (ANZ), how our food authority interprets and polices them and how well they address health and consumer concerns.

GM foods contain ingredients that come from GM organisms. Most of these organisms are GM crops. To make these crops, genetic engineers join sections of DNA that may come from plants, bacteria, animals and viruses into a gene cassette, which they insert into a plant. Genes coding for antibiotic resistance are often included. The aim is to get the plant to produce one or more new proteins. Usually, these proteins are of two types: proteins that are insecticides or proteins that make the plant resistant to herbicides.

Health concerns include those from eating the new, expected proteins, eating possible new substances caused by unintended effects on plants from inserting the genes, and increased herbicides in food.

The vast majority of GM crops grown in the world consist of maize, soy, cotton and canola. They are mostly used for animal feed, however, significant amounts enter the human food supply, including as refined products such as oils, starch and sugars. For example, most Australians eat soy flour on a daily basis in bread.

There is a dire need for long-term safety assessments of these crops by independent researchers using measures that are actually relevant to human health. The possible health implications of these crops are discussed elsewhere.<sup>1</sup>

This paper principally discusses the legal aspects of labelling. The scientific basis for better labelling will be addressed further elsewhere.

## **GM food regulations**

Food Standards Australia New Zealand (FSANZ) regulates the food supply in ANZ and hence also regulates GM organisms for human consumption in ANZ.

GM food regulations are given in the Australia New Zealand Food Standards Code as Standard 1.5.2, Food Produced Using Gene Technology.<sup>2</sup> The Standard prohibits the sale and use of these foods unless they are included in a table in the Standard. As of August 2008, this table contained 55 GM crop varieties of soy bean, canola, corn, potato, sugarbeet, lucerne (alfalfa), and cotton. These

are likely to be found in bread, pastries, snack foods, baked products, oils, fried foods, confectionary, soft drinks, and sausage skins.

Labelling laws for GM foods were introduced in December 2001. According to the Standard, labelling is required for food that is genetically modified or “contains as an ingredient, including a processing aid, a food produced using gene technology which:

- (a) contains novel DNA and/or protein; or
- (b) has altered characteristics”.<sup>3</sup>

This definition is notable for its emphasis on DNA and protein from GM organisms. It indicates a belief that health problems would only occur from ingesting the actual GM DNA inserted into the plant or the GM protein that this DNA codes-for. It ignores all possible unintended effects of genetic engineering.

The Standard then excludes a number of things from labelling, including products (for example, meat, milk, cheese, eggs) from animals fed GM feed, highly refined products (for example, cooking oil, sugars, starches), or food that is prepared and sold from food premises such as bakeries, restaurants and takeaways. The Standard also excludes foods “unintentionally” contaminated by up to 1 percent per ingredient, that are made with processing aids or food additives (for example, using GM microbes) (if no DNA or protein remains), or that contain GM flavours present at more than 0.1 percent. Various aspects of these exclusions are discussed below.

## Vegetable oil

Of the five canola-growing States of Australia, New South Wales and Victoria have recently ended their moratoria to allow unrestricted commercial growth of GM canola. The amount of GM canola oil in the Australian food supply is therefore expected to increase substantially. It will join oil from Australian-grown GM cotton seeds.

According to the Standard, “highly refined food, other than that with altered characteristics, where the effect of the refining process is to remove novel DNA and/or novel protein” does not need to be labelled.<sup>4</sup> FSANZ then interpreted this for oil in other documents and media interviews as: oil in the food supply is highly purified, therefore it contains no DNA or protein and therefore oil from GM crops does not need to be labelled. The only exception is if the GM plant was designed to produce a different type of oil than normal for that plant, for example if a canola plant was engineered to produce fish oils, in which case the oil would still need to be labelled.

Yet it has been known for a decade that there is a small amount of DNA in canola oil.<sup>5</sup> Since both the GM crop industry and FSANZ have long argued that GM DNA behaves the same as “ordinary” DNA, they have also argued, *ipso facto*, that oil from GM canola contains GM DNA and must be labelled.

Meanwhile, it has been known for decades that there is a small amount of protein in vegetable oils<sup>6</sup> and that this specifically includes oils on supermarket shelves.<sup>7</sup> Even FSANZ's own safety assessment of a GM canola variety shows there to be a small amount of protein in the oil.<sup>8</sup> Yet, FSANZ has still concluded that there is no protein in the oil from that crop,<sup>9</sup> and that oils do not

contain protein, particularly novel protein.<sup>10</sup> Moreover, FSANZ has also concluded, by referring to documents given to it by Monsanto that even if there were some protein in oil, there is not enough to cause any health effects, such as allergic reactions. In doing so, FSANZ has managed to miss a significant body of scientific literature and clinical knowledge. For example, in one published oral provocation test, 22 percent of patients allergic to peanuts reacted to peanut oil.<sup>11</sup>

This evidence shows that FSANZ has wrongly interpreted the Standard. Oil from GM crops should be labelled, as is required in the European Union.

## **Meat, milk and cheese from animals fed GM feed**

Due to the amount of GM canola being grown in Australia this year, the amount of GM canola meal eaten by Australian farm animals is expected to increase substantially. Canola meal is the seed waste remaining after the oil has been removed. Like GM cotton waste, it is used as stock feed.

The definition of a GM food in the Standard is accompanied by the following “editorial note” by FSANZ:

*“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.”<sup>12</sup>*

This removes from all GM labelling requirements, meat, milk, cheese and eggs produced from animals that are fed GM feed. Why does this appear as an editorial note? FSANZ is not permitted to develop policy, which remains the domain of the Ministerial committee overseeing FSANZ. Yet, by altering the Standard to address this previously unaddressed issue, it could be argued that FSANZ *has* developed policy.

It is also clear that FSANZ has made this statement in contravention of scientific evidence that these products have been shown to contain GM DNA and/or protein and hence should be labelled. More specifically, a number of studies have now shown that DNA (including GM DNA) can survive digestion and be found in the tissues of animals eating it.<sup>13</sup> Moreover, a recent survey of milk on Italian supermarket shelves found GM DNA in over a third of milk samples tested.<sup>14</sup>

Therefore, FSANZ has wrongly interpreted the Standard. The editorial note should be removed from the Standard and replaced with a note that meat, milk, cheese and eggs from animals fed GM crops should be labelled.

## **Policing the Standard and the 1 percent limit**

Because foods that are “unintentionally” contaminated by up to 1 percent per ingredient can escape a GM label, many food manufacturers believe that they do not need to label a GM ingredient if it is present at less than 1 percent. However, FSANZ has been clear that this exemption only applies “where the manufacturer has actively sought to avoid GM ingredients but GM material is inadvertently present” and that “the food manufacturer needs to be able to demonstrate that they have sought to source non-GM food for their product. Such measures include document

verification, identity preservation systems or batch testing. However if testing shows a GM ingredient is present, labelling is required regardless of whether the level is below 1 percent.”<sup>15</sup>

The only policing of the labelling laws that FSANZ has ever done involved a small pilot survey in 2003.<sup>16</sup> In a study without a suitable sampling rationale, 69 samples of various foodstuffs were taken with only 51 of them tested. Of those tested, 22 percent of samples were positive for GM DNA. The highest proportion of positive results was for soy milk (42 percent of samples), corn chips (15 percent) and tacos (75 percent). None of them had a GM label. FSANZ asked 36 food companies supplying 53 of the samples about their management systems to determine the GM status of the ingredients. Although only 39 percent had suitable systems, FSANZ concluded that there was a “high level of industry compliance with the labelling requirements”<sup>17</sup> and that any future survey could just ask manufacturers for documents rather than testing actual food.<sup>18</sup> The survey results completely contradict this. FSANZ was silent on whether any of the companies with GM content in their food should have been prosecuted for failure to follow requirements for unintentional presence. Yet, assuming random distribution, statistically speaking, four companies should have been prosecuted. FSANZ has done no testing since, even though the proportion of GM material in the food supply has substantially increased since then, so some food manufacturers may now be above the 1 percent limit, which would trigger a GM label regardless of “intention.”

## **Negative claims, consumer choice and the story of the sausage**

The Standard is silent on negative claims on a food label such as “GM free” or “non-GM”. FSANZ has instead stated that such claims are subject to provisions regarding false and misleading conduct under various legislation.<sup>19</sup> The Australian Competition and Consumer Commission (ACCC) and legal advice to the Network of Concerned Farmers both state that GM-free-labelled food must not contain any trace of GM material whatsoever and that under the *Trade Practices Act 1974* (C’th), the definition of “non” is similar to “no” or “free of.”<sup>20</sup> Therefore, “GM-free” and “non-GM” labels both mean that GM material must not be in the food and that, in fact, the product needs to have “no contact with novel DNA and/or protein during the production process.”<sup>21</sup>

An example of how this can work is given by Bean Supreme, a New Zealand (NZ) maker of vegetarian, soy-based sausages. Only one of 12 of its products was found to test positive for GM material and then only at 0.0088 percent. Yet the NZ Food Safety Authority (NZFSA) referred the case to the Commerce Commission for prosecution. The company was subsequently found to be in breach of the *Fair Trading Act 1986* because it had labelled its sausages as “non-GM”. Rather than face legal bills estimated at \$63,000 the company pleaded guilty and was fined \$4,250 plus costs.<sup>22</sup> If the company had not put this claim on its products, it would not have been prosecuted, as it was easily able to demonstrate that it had worked hard to source non-GM ingredients and that the contamination was well below 1 percent. The role of FSANZ in this prosecution is unknown. While the Standard was determined by FSANZ for both Australia and New Zealand, NZFSA enforces the Standard in New Zealand, but may do so in consultation with FSANZ.<sup>23</sup>

As a result, even though surveys have repeatedly found that a high proportion of consumers do not want to eat GM food, consumers are being denied a choice to source clearly-labelled GM-free food, because food manufacturers are concerned about being fined if tiny amounts of contamination slip through. Meanwhile, uncaring or unscrupulous manufacturers are getting away with putting unlabelled GM ingredients in their food due to a lack of policing and enforcement. Because of this

situation, the best way a consumer can choose not to eat GM foods is to use Greenpeace's *The True Food Guide*.<sup>24</sup>

## **The FSANZ Act**

FSANZ has three objectives, in descending order of priority, as described in Section 10(1) of the *Food Standards Australia New Zealand Act 1991* (C'th). They are:

- (a) the protection of public health and safety;
- (b) the provision of adequate information relating to food to enable consumers to make informed choices; and
- (c) the prevention of misleading or deceptive conduct.

The fact that FSANZ does not require any animal or human safety studies to be done on GM crops appears to breach aim (a). By not requiring labelling of purified products like oils from GM organisms or meat, milk and cheese produced from animals fed GM crops, FSANZ has denied consumers the choice they want, in contravention of aim (b). Also, because FSANZ has done no policing of GM foods on supermarket shelves, it allows manufacturers to get away with putting GM ingredients into foods without labelling, in breach of aims (b) and (c) of its Act. It could therefore be argued that FSANZ is in breach of all three aims of its Act.

## **“May contain” labels**

Finding small sections of GM DNA in food requires skill and specific tools. If one researcher cannot find them, another often can. If FSANZ wishes to argue that other information, including unpublished information from GM companies, indicates there is not enough evidence to label oil, meat, milk and cheese, it should at least consider a “may contain” label until the evidence is clear enough for FSANZ. These labels are required for other foods where traces of certain substances may remain. An example on a current wine label is: “This wine was clarified the traditional way, using dairy and fish products. Traces may remain”, while an example on biscuits is: “May contain traces of nut, dairy, egg or seed”. At least for wine, FSANZ enacted this labelling over protests from wine producers who stated that traces would not remain and that no-one had suffered an adverse reaction to these substances from consuming wine. An equivalent label for GM food ingredients could be: “May contain DNA and/or protein from GM crops”. Such a move would also make FSANZ more compliant with its Act.

- <sup>1</sup> Carman, J. 2004, 'Is GM Food Safe to Eat?' in *Recoding Nature Critical Perspectives on Genetic Engineering*, ed. Hindmarsh, R. & Lawrence, G, UNSW Press, Sydney, p. 82-93;
- Smith, J. 2007, *Genetic roulette: The documented health risks of genetically engineered foods*. Yes! Books, Iowa, US.
- <sup>2</sup> The Food Standards Code can be found at <http://www.foodstandards.gov.au/thecode/foodstandardscode.cfm>.
- <sup>3</sup> Ibid.
- <sup>4</sup> Ibid.
- <sup>5</sup> Hellebrand, M., Nagy, M., Morsel, J-T., 1998, *Determination of DNA traces in rapeseed oil*. *Z Lebensm Unters Forsch A*, 206, 237-242.
- <sup>6</sup> McCance and Widdowson, *The composition of foods* (various editions), The Royal Society of Chemistry and Ministry of Agriculture, Fisheries and Food, The Royal Society of Chemistry, Cambridge, UK.
- <sup>7</sup> Moneret-Vautrin, DA., Rance, F., Kanny, G., Olsewski, A., Gueant, JL., Dutau, G., Guerin, L., 1998, 'Food allergy to peanuts in France – evaluation of 142 observations', *Clin Exp Allergy*, vol 28, pp. 1113-1119.
- <sup>8</sup> Draft risk analysis report. Application A363. Food produced from glyphosate-tolerant canola line GT73. FSANZ, Canberra, 2000.
- <sup>9</sup> Ibid.
- <sup>10</sup> GM foods. Safety assessment of genetically modified foods. FSANZ, Canberra, 2005; The Food Standards Code can be found at <http://www.foodstandards.gov.au/thecode/foodstandardscode.cfm>.
- <sup>11</sup> Moneret-Vautrin, DA., Rance, F., Kanny, G., Olsewski, A., Gueant, JL., Dutau, G., Guerin, L., 1998 'Food allergy to peanuts in France – evaluation of 142 observations'. *Clin Exp Allergy*, vol 28, pp. 1113-1119.
- <sup>12</sup> The Food Standards Code can be found at <http://www.foodstandards.gov.au/thecode/foodstandardscode.cfm>.
- <sup>13</sup> Schubbert, R., Renz, D., Schmitz, B., Doerfler, W., 1997, 'Foreign M13 DNA ingested by mice reaches peripheral lymphocytes, spleen and liver via the intestinal wall mucosa and can be covalently linked to mouse DNA', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 94, pp.961-966;
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- <sup>14</sup> Agodi, A., Barchitta, M., Grillo, A., Sciacca, S., 2006, 'Detection of genetically modified DNA sequences in milk from the Italian market', *Int J Hyg Environ-Health*, vol. 209, pp.81-88.
- <sup>15</sup> GM foods. Safety assessment of genetically modified foods. FSANZ, Canberra, 2005.
- <sup>16</sup> Australian pilot survey of GM food labelling of corn and soy food products by the TAG Working Group on GM food labelling. FSANZ, Canberra, 2003.
- <sup>17</sup> GM foods. Safety assessment of genetically modified foods. FSANZ, Canberra, 2005.
- <sup>18</sup> Australian pilot survey of GM food labelling of corn and soy food products by the TAG Working Group on GM food labelling. FSANZ, Canberra, 2003.
- <sup>19</sup> GM foods. Safety assessment of genetically modified foods. FSANZ, Canberra, 2005.
- <sup>20</sup> The Network of Concerned Farmers website: [http://www.non-gm-farmers.com/news\\_details.asp?ID=1761](http://www.non-gm-farmers.com/news_details.asp?ID=1761).
- <sup>21</sup> Ibid.
- <sup>22</sup> The Network of Concerned Farmers website: [http://www/non-gm-farmers.com/news\\_details.asp?ID=1866](http://www/non-gm-farmers.com/news_details.asp?ID=1866) and [http://www/non-gm-farmers.com/news\\_details.asp?ID=1873](http://www/non-gm-farmers.com/news_details.asp?ID=1873).
- <sup>23</sup> The NZFSA website: [http://www.nzfsa.govt.nz/about-us/profile/december-2007/index.htm#P60\\_4833](http://www.nzfsa.govt.nz/about-us/profile/december-2007/index.htm#P60_4833).
- <sup>24</sup> The True Food Guide website: <http://www.truefood.org.au/guide2.html>.