Section 3

Industry guidelines for seafood health and nutrition messages
3.0 Introduction

The Industry Guidelines for Seafood Health and Nutrition Messages were developed to assist the seafood industry to recognise and promote health and nutrition messages regarding seafood consumption and health. The Industry Guidelines are intended to summarise the relevant regulations, guiding principles and scientific evidence to be considered when using health and nutrition to promote seafood on food labels and in advertising material.

3.1 How to use this guide

This guide is written to assist the seafood industry to recognise and promote health and nutrition messages regarding seafood consumption and health. The guide summarises relevant regulations, legislation and guidelines governing the use of health and nutrition messages to promote seafood on food labels and in advertising material. Although this guide provides the main points that should be considered when promoting the health benefits of seafood, it is recommended that the original documents are referred to when planning any labelling or advertising materials. A list of relevant websites and references are provided at the end of the guide. The guide also summarises scientific evidence regarding the health benefits of seafood consumption.

3.2 Food labels

3.2.1 Food labelling and relevant legislation

What can and can’t be said on food labels and advertising is covered primarily by the Australia and New Zealand Food Standards Code developed by Food Standards Australia & New Zealand (FSANZ). The Code sets out the requirements for food and beverage labels in Australia and applies to all food sold and prepared for sale in Australia, as well as food imported into Australia. Enforcement and interpretation of the Code is the responsibility of Australian State/Territory Health Departments. Food labelling compliance may also be monitored by the Australian Competition and Consumer Commission (ACCC), State/Territory Department of Health Food and Safety units and Local Government food inspectors and Environmental Health Officers.

While FSANZ offers assistance in navigating the Code, they do not provide approval of labels or food compliance of any type. FSANZ can only provide information about the Code and does not provide legal advice or interpretation of the Code. User guides are available; however, these have no legal power. The Code of Practice on Nutrient Claims in Food Labels and in Advertisements, developed by FSANZ, may also be a relevant useful document but is not legally enforceable. States and Territories do not have to accept every part of the Code, and each State and Territory is responsible for ensuring compliance with the Code and State legislation (e.g. Western Australia: Food Act 2008, South Australia: Food Act 2001).

As well as the Food Standards Code and the relevant State or Territory legislation, Part V of the Trade Practices Act (TPA) (Consumer Protection) covers misleading or deceptive conduct and false or misleading representations and should be considered when planning food labels or advertisements. The TPA is Commonwealth legislation which overrides State and Territory laws.

The Trade Practices Act is available from:

3.2.2 Health claims/messages

Health claims can be described as claims, words or statements on food labels or advertising materials that refer to the potential for a component of a food or the food itself to assist in reducing the risk of, or improving existing cases of, a disease or health condition. Currently, health claims are not generally permitted on food labels or advertising in Australia (claims related to folate are the only current exception). However, as noted previously, the relevant websites listed in section 3.2.1 should be consulted for updates and revision made after the completion of these guidelines.

Health claims on food labelling have been under review for several years. However as of the 23rd of October 2009 food labelling law and policy in its entirety is being reviewed, which will further delay any new outcomes for health claims. Health claims are covered by Standard 1.1.A.2 of the Food Standards Code. According to Standard 1.1.A.2, food labels and advertisements for food must not:

- Make a claim or statement that the food is a slimming food or has intrinsic weight-reducing properties;
- Make a claim for therapeutic or prophylactic action or a claim described by words of similar import;
- Include the word ‘health’ or any word or words of similar import as a part of or in conjunction with the name of the food;
Use any words, statement, claims, express or implied, or design that directly or by implication could be interpreted as advice of a medical nature from any person; or

Contain the name of, or a reference to, any disease or physiological condition. There are exceptions to this rule prescribed by the Code (e.g. folate & neural tube defects in babies).

Information on the omega-3 content of fish and seafood can be made available to the public. Pamphlets which include factual information on the benefits of omega-3 can also be made available to the public, but the information must not be linked to seafood (or any food). The consumer must make the link between omega-3 and seafood for themselves (see Figure 3.1).

<table>
<thead>
<tr>
<th>Food labels:</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>This product contains 1500mg of omega-3 per serve.</td>
<td></td>
<td>Seafood contains omega-3 which prevents cardiovascular disease.</td>
</tr>
</tbody>
</table>

**Pamphlet 1**
(Health benefits of omega-3)
Omega-3 may:
- reduce the risk of heart disease
- reduce arthritis symptoms
- reduce the risk of some types of cancer

**Pamphlet 2**
(Foods containing omega-3)
Omega-3 is found in most fish and seafood, including Atlantic salmon, mussels and sardines.

**Pamphlet 3**
(Health benefits and foods containing omega-3)
Omega-3s are good for your health. They can prevent heart disease and are found in fish, other seafood and walnuts.

**Figure 3.1: Example 1 - Dos and don’ts on food labelling.**

### 3.2.3 Nutrition information panels

According to Standard 1.2.8 of the Food Standards Code, most packaged foods are required to display a nutrition information panel (NIP). Some exemptions include foods such as:

- Food that comprise a single ingredient or category of ingredients;
- Unpackaged food;
- Food in a small package (smaller than 100sq cm);
- Food made and packaged on the premises from which it is sold;
- Food that is packaged in the presence of the purchaser; and
- Food delivered packaged, and ready for consumption, at the express order of the purchaser (See Figure 3.2).

| A package of frozen fish with added ingredients (such as crumbed fish) does require an NIP. | Frozen fish which comprises a single ingredient, such as frozen salmon, does not require an NIP. | Fish sold at a deli counter, packaged in the presence of the purchaser does not require an NIP. |

**Figure 3.2: Packaged foods requiring and not requiring NIP.**

These exemptions do not apply if there is a nutrition claim being made in relation to the food (see Section 3.2.4).
NIPs must carry the following information:

- The number of servings of the food in the package expressed as either the number of servings of the food or the number of servings of the food per kg (or other units as appropriate);
- The average quantity of the food in a serving (in grams for solids or millilitres for liquids);
- The unit quantity of the food;
- The average energy content (in kilojoules or kilojoules and kilocalories), of a serving of the food and of the unit quantity of the food;
- The average quantity (in grams) of protein, fat, saturated fat, carbohydrate and sugars in a serving of the food and in a unit quantity of the food;
- The average quantity of sodium (in milligrams or milligrams and millimoles) in a serving of the food and in the unit quantity of the food;
- The name and the average quantity of any other nutrient or biologically active substance in respect of which a nutrition claim is made, expressed in grams, milligrams or micrograms or other units as appropriate, that is in a serving of the food and in the unit quantity of the food.

FSANZ can provide nutritional information for a wide number of foods, however laboratory testing can provide accurate results and protect against legal action. There are some private companies which offer assistance with NIP generation to comply with relevant codes and laws.


The NIP should be set out as outlined in Figure 3.3.

<table>
<thead>
<tr>
<th>NUTRITION INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings per package: (insert number of servings)</td>
</tr>
<tr>
<td>Serving size: g (or ml or other units as appropriate)</td>
</tr>
<tr>
<td>Quantity per Serving</td>
</tr>
<tr>
<td>Energy</td>
</tr>
<tr>
<td>Protein</td>
</tr>
<tr>
<td>Fat, total</td>
</tr>
<tr>
<td>- saturated</td>
</tr>
<tr>
<td>Carbohydrate</td>
</tr>
<tr>
<td>- sugars</td>
</tr>
<tr>
<td>Sodium</td>
</tr>
</tbody>
</table>

Figure 3.3: NIP content and format requirements.

### 3.2.4 Nutrition claims

Nutrition claims are covered by Standard 1.2.8 (Nutrition Information Requirements) of the Food Standards Code. This Standard covers the nutritional information that is required to be provided on food labels, and the specific conditions that must be complied with when making claims. A nutrition claim refers to a representation that states, suggests or implies that a food has a nutritional property. This may be general or specific, and expressed affirmatively or negatively. If a nutrition claim is made in relation to a food, a NIP must be displayed on the label of the food. If the food is not required to carry a label (such as those exemptions listed in Section 3.2.3), a NIP must be displayed on or in connection with the display of the food or provided to the purchaser on request (see Figure 3.4).

As shown in Section 2.3, some foods do not require an NIP. However, if a nutrition claim is made, a NIP must be displayed.

For example, fish which comprises a single ingredient, such as frozen salmon, does not require a NIP. However, if a nutrition claim is made in regards to that item, a NIP must be available to the purchaser. A pamphlet containing a NIP would fulfil this requirement.

Figure 3.4: NIP summary.
If a nutrition claim is made, the NIP must include the name and the average quantity of the nutrient that is in a serving of the food. This quantity must be expressed in grams, milligrams or micrograms (or other units as appropriate).

If an advertisement for food contains a nutrient claim, the label on the food to which the advertisement applies must include a NIP.

The claim must apply to the food in the form in which it is intended to be consumed. If the claim’s accuracy depends on the consumer’s method of preparation then the label must include information that will enable the consumer to prepare the food so that it meets the nutrition claim.

If a nutrition claim is being made about a food which is naturally or intrinsically high or low in the nutrient about which the claim is being made then it must be clear that the claim refers to the class of food and not only the brand on which the claim appears (see Figure 3.5).


Figure 3.5: Example 2 - Dos and don’ts on food labelling.

For more information see the User Guide to Standard 1.2.8 - Nutrition Information Requirements and the Code of Practice for Nutrient Claims in Food Labels and in Advertisements.

3.2.5 Nutrition claims and omega-3

Nutrition claims regarding omega-3, and requirements for NIPs are covered by the Food Standards Code, Standard 1.2.8 clauses 5 and 13.

A nutrition claim may be made in relation to the omega-3 fatty acid content of fish or fish products with no added saturated fatty acids if it contains:

- 200mg alpha-linolenic acid (ALA) per serving; or
- 30mg total eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) per serving.

Products with added saturated fatty acids must also meet the following criteria:

- The total of saturated fatty acids and trans fatty acids must be no more than 28 per cent of the total fatty acid content of the food; or
- The food contains no more than 5g of saturated fatty acids and trans fatty acids per 100g of the food.

A nutrition claim may be made that a food is a ‘good’ source of omega-3 fatty acid if the food satisfies the requirements above and contains no less than 60mg total of EPA and DHA per serving (see Figure 3.6).

Fish or seafood (with no added saturated fat) which contain more than 30mg total of EPA and DHA per 100g can make an omega-3 source claim.

Fish or seafood (with no added saturated fat) which contain more than 60mg total of EPA and DHA per 100g can make a good omega 3 source claim.

This product is a source of omega-3.

This product is a good source of omega-3.

The NIP on products with an omega-3 claim must be set out in accordance with the example in Figure 3.7 (nutrition information declaration).

Figure 3.6: Omega-3 source claim summary.

If the nutrition claim is made, the NIP must indicate the source of omega-3s, namely, ALA, DHA and/or EPA.

When a nutrition claim using the word ‘omega’ is made, the word ‘omega’ must be qualified by the type of omega fatty acid present. This qualification appears immediately after the word ‘omega’ (e.g. ‘omega-3’, ‘omega-6’ or ‘omega-9’).

A nutrition claim must not be made in relation to the omega-6 or omega-9 fatty acid content of a food, unless:

- The total of saturated fatty acids and trans fatty acids content of the food is no more than 28 per cent of the total fatty acid content of the food; and
- The fatty acid in respect of which the nutrition claim is made comprises no less than 40 per cent of the total fatty acid content of the food.

For nutrition claims made regarding omega-3, omega-6 or omega-9 fatty acids the NIP must include declarations of all the trans, polyunsaturated and monounsaturated fatty acids as set out in Figure 3.7.
Fish X contains 2mg of zinc per 150g serving size. For males, the RDI for Zinc is 14mg; for females it is 10mg. The 150g serving of fish contains more than 10% of the RDI for Zinc for both males and females, and Zinc is a listed mineral in the Code. A nutrient claim could be made for fish X.

Fish X is a source of zinc

Figure 3.8: Example 3 - Dos and don’ts on food labelling.

To make a claim that a food is a ‘good’ source of a vitamin or mineral, the reference quantity of the food must contain no less than 25% of the RDI or ESADDI for that vitamin or mineral.

When a claim is made in relation to the presence of a vitamin or mineral in a food, the label or NIP must include a statement containing the following information:

- Serving size;
- Number of servings per package;
- The vitamin or mineral in respect of which the claim is made; and
- The average quantity of the vitamin or mineral in 100g or 100ml of the food as the case may be; and the proportion of the RDI, of that vitamin or mineral contributed by one serving of the food; or the average quantity of the vitamin or mineral for which an ESADDI has been prescribed in the Food Standards Code in a serving of the food (see Figure 3.9).
NUTRITION INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>Quantity per Serving</th>
<th>Quantity per 100 g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Servings per package:</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Serving size:</strong></td>
<td>150g</td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fat, total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- saturated</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carbohydrate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- sugars</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zinc</strong></td>
<td>2mg (16% of RDI)</td>
<td>1.33mg</td>
</tr>
<tr>
<td>^ Percentage of Recommended Dietary Intake (RDI)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 3.9: NIP requirements for vitamins and minerals (example).*

Vitamin and mineral claims cannot make comparison claims (with other foods), unless permitted by the Food Standards Code. A claim must not be made if such a claim is prohibited in the Code.

Listed vitamins and minerals are vitamin A, thiamin (vitamin B1), riboflavin (vitamin B2), niacin, folate, vitamin B6, vitamin B12, biotin, pantothenic acid, vitamin C, vitamin D, vitamin E, vitamin K, calcium, chromium, copper, iron, iodine, magnesium, manganese, molybdenum, phosphorus, selenium, zinc.

3.2.7 Country of origin labelling

Country of origin labelling provides consumers with information on the country/countries where food has been grown, manufactured, produced, or packaged. A country of origin claim is any words or pictures on labels, packages or advertising that makes or implies a statement or claim about the origin of the goods.

Country of origin food labelling is covered by both the Food Standards Code Standard 1.2.11 (Country of Origin Requirements), and the Trade Practices Act. Other pieces of legislation in different states/territories may also cover food labelling. Standard 1.2.11 does not apply to food sold to the public by restaurants, canteens, schools, caterers or self-catering institutions where the food is offered for immediate consumption. According to the Food Standards Code, all packaged and some unpackaged foods must be labelled with country of origin.

Packaged food is required to be labelled with either:

- A statement that identifies where the food was made or produced; or
- A statement that identifies the country where the food was made, manufactured or packaged for retail sale; and
- A statement to the effect that the food is constituted from ingredients imported into that country or from local and imported ingredients as the case may be.

If fish or seafood is sold unpackaged, a label must be displayed on or in connection with the display of the food which:

- Identifies the country or countries of origin of the food; or
- Contains a statement indicating that the foods are a mix of local and/or imported foods.

If fish or seafood is sold unpackaged, and the label is in connection with the display of the food (not on it), the following conditions must be met:

- The size of type on the label must be at least 9mm; or
- If the food is in a refrigerated assisted service display cabinet, the size of type on the label must be at least 5mm.

Refer to Standard 1.2.9 for further information on legibility requirements for food labels. While country of origin claims are not mandatory under the Trade Practices Act, those that are made must be accurate.

The Trade Practices Act prohibits claims that may mislead or deceive, or make false representations about the origins of food. For products to make a ‘Made in country of origin’ claim, the following conditions must be met:

- The goods were substantially transformed in the country claimed to be the origin; and
- Fifty per cent or more of the costs of production must have been carried out in that country.
For goods to make a ‘Product of country of origin’ claim, the following conditions must be met:

- The country of the claim must be the country of origin of each significant ingredient or significant component of the goods; and
- All, or virtually all, processes involved in the production or manufacture of the goods must have happened in that country.

If a product does not comply with the above criteria, other qualifying statements may be used, such as ‘Packaged in Australia’, ‘Made/manufactured in Australia from imported ingredients’ or ‘Australian Owned’.

Sources:


3.2.8 Australian Fish Names Standard AS SSA 5300-2009

The Australian Fish Names Standard was prepared by Seafood Services Australia’s (SSA) Fish Names Committee. The Standard defines standard fish names for use in Australia and specifies when standard fish names are to be used. It is intended to be used by those involved with fish or seafood in Australia.

To comply with the Standard, fish sold directly to consumers must be identified at the point of purchase by the Standard Fish Name (SFN) for that species. The scientific name also may be specified in addition to the SFN. When fish are not sold directly to consumers, the fish may be identified by either the SFN or the scientific name for that species. Publications written by scientists, recreational fishers, chefs, media, teachers, fisheries managers, and others must use either the SFN or the scientific name for that species to comply with the Standard. A SFN ‘may cover a single species or all species in a particular scientific family or group of fish’. According to the Standard it is recommended that fish are identified by the SFN for that particular species only. However there are some circumstances that the SFN for the scientific group or family to which a fish belongs may be used instead. These are:

- The fish does not have a SFN for that particular species; or
- The fish is in a batch of different species of fish, all of which are from the same scientific group or family; and
- Using the SFN for the scientific group or family to which a fish belongs does not mislead, misrepresent or confuse the identification of the fish.

A group name may be capitalised to indicate that it is a group name. If a group name in the Standard shows a pluralisation in brackets, this indicates that the group name is shared with an individual species name. If a species does not have an SFN specified in the Standard, it may be identified by a name that is in common use for that species in Australia or overseas. If an alternative fish name is used, SSA must be notified within 30 days. Obsolete fish names may be used if the correct SFN is displayed more prominently and in larger text above the obsolete name. The obsolete name must be contained in brackets.

The Australian Fish Names Standard can be found at: http://www.seafood.net.au/fishnames/standard.php

3.2.9 Glycaemic Index (GI)

There is currently no reference in the Food Standards Code regulating Glycaemic Index (GI). GI ranks the extent to which blood sugar levels are raised after consumption of carbohydrates in a food. High GI foods are those which are digested faster and cause a spike in blood sugar levels. To be considered ‘low GI’, the GI value of the food must be below 55. To be considered ‘medium GI’, the GI value of the food must be between 56 and 69. Foods with a GI value of 70 and above are considered ‘high GI’. A GI claim is voluntary and currently requires no additional information for the NIP. The GI level of foods can be tested by a food laboratory.

More information on GI and GI testing can be found at:

3.2.10 Other labelling considerations

3.2.10.1 Trade Practices Act

There are several areas to consider for food labels and advertisements to comply with the Trade Practices Act. These can be summarised as: words, images and the overall impression; target audience; and qualifying claims, fine print and disclaimers.

For compliance with the Trade Practices Act, the ACCC considers that food and beverage labelling descriptors fall broadly under the following categories:

- **Food type assurance claims:** These claims refer to specific assurances about the quality or characteristics of particular foods (e.g. kosher, vegan).

- **Process/preparation/production claims (similar to previous):** Claims regarding the specific processes which the food has undergone must be represented accurately to the consumer. This may refer to production claims (e.g. organic), preparation claims (e.g. chilled), and process claims (e.g. non-sweetened).

- **Origin claims:** Food labels or advertisements which contain claims regarding the origin or source of food should be accurate. This includes claims that a food is a ‘Product of’, ‘Made in’, and ‘locally grown’ and also claims regarding the origin of a product from a geographical area. Consider what the consumer may decide when reading this claim. For more information when making an origin claim, read the Food and Beverage Industry: Country of Origin Guidelines to the Trade Practices Act guideline.

- **Standard/style/select claims:** The ACCC describes these claims as those which imply a relationship with a particular standard, style or product selection. If there is an objective component to the claim it must be substantiated before it is made to consumers.

Claims that foods are pure, fresh or natural may be considered misleading or deceptive if the food is not what a consumer would understand to be ‘pure’, ‘fresh’, or ‘natural’. For example, the word ‘pure’ implies that there are no added ingredients. This would apply to a single ingredient food. The word ‘fresh’ would imply that the food had not been canned, cured, dehydrated, frozen, processed or preserved. The term ‘natural’ (or similar words or combinations of words which include ‘natural’) may suggest to consumers that the product is made of natural ingredients, with no added chemicals. The use of the words is still misleading if used as the brand name of a food that would not be considered ‘pure’, ‘fresh’ or ‘natural’. The ACCC also flags the use of the terms ‘real’, ‘true’ and ‘genuine’, as these terms may suggest that other similar foods or products may not have the same qualities as the one referred to in the advertisement/label.

- **‘Puffery’:** The ACCC describes a fifth category, ‘puffery’. This describes claims which may be fanciful, vague or exaggerated and would not reasonably be considered meaningful to consumers or their intentions to purchase.

3.2.10.2 Images and pictures

When using images and pictures on labels or in advertisements, consideration should be given to the impression that may be made on the consumer. Images which are considered to give a misleading impression of the product may breach the Trade Practices Act.

3.2.10.3 Checklist: To avoid breaching the Trade Practices Act

When designing or reviewing food labelling and advertisements, the following points should be considered:

- What impression is given to consumers about the predominant ingredients of the product? Is this impression accurate?

- Are there any aspects of the labelling or packaging which need stronger emphasis to accurately reflect the product?

- What overall impression do the words and images used create? How will your target audience interpret this? What conclusions might consumers draw from your words and images?

- What might consumers miss or not understand?

- If your label uses a disclaimer or qualification, is it prominent and clear? Will it be sufficient to dispel any misleading impressions?

- How would a reasonable consumer react to your label/advertisement?

The ACCC Food Labelling Guide can be found at: http://www.accc.gov.au/content/index.phtml/itemId/877504.
3.3 Evidence relating to health conditions and seafood consumption

The following provides an overview of evidence from studies published in peer-reviewed journals associated with seafood consumption and health. Table 3.1 shows the criteria used to estimate the level of evidence supporting each health issue:

Table 3.1: Criteria used to estimate level of evidence.

<table>
<thead>
<tr>
<th>Level</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Further research is very unlikely to change our confidence in the estimate of effect</td>
</tr>
<tr>
<td></td>
<td>Several high-quality studies with consistent results</td>
</tr>
<tr>
<td></td>
<td>In special cases: one large, high-quality multi-centre study</td>
</tr>
<tr>
<td>B</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate</td>
</tr>
<tr>
<td></td>
<td>One high-quality study</td>
</tr>
<tr>
<td></td>
<td>Several studies with some limitations</td>
</tr>
<tr>
<td>C</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate</td>
</tr>
<tr>
<td></td>
<td>One or more studies with significant limitations</td>
</tr>
<tr>
<td></td>
<td>Any estimate of effect is very uncertain</td>
</tr>
</tbody>
</table>

3.3.1 Strongest evidence (A)

- Regular fish consumption is associated with a significantly reduced risk of total mortality for both men and women.
- 1-2 serves fish/wk, especially those high in n-3 polyunsaturated fatty acids (PUFAs, omega-3s), decreases the risk of total mortality by 17%.
- 20% decreased risk in total mortality is associated with at least 1 serve fish/wk in men.
- Fish intake is beneficial to heart health.
- Adequate intake of n-3 PUFAs decreases the incidence of cardiovascular disease (CVD); furthermore 2-3 fish meals/wk is protective against CVD.
- There is good evidence that fish consumption protects against CVD and chronic respiratory disease in males.
- 1 serve fish/wk (20gm/day) reduces the risk of coronary heart disease (CHD).
- Decreased risk of CHD by:
  - 31% if fish consumed 3-4 meals/wk; and
  - 32% if consumed at least 5 meals/wk.
- 1-2 serves fish/wk (especially species high in n-3 PUFAs) reduces the risk of:
  - coronary death by 36%;
  - coronary heart failure by 20%;
  - arterial fibrillation (28% reduced risk for 1-4 serves/wk, 31% decreased risk for at least 5 serves/wk); and
  - myocardial infarction.
- Higher levels of fish consumption are associated with a lower risk of CHD in diabetic women.
- 1 serve fish/wk (white or oily fish) reduces risk of stroke.
- Reduced risk of ischemic stroke:
  - 1-4 serves fish/wk decreases risk by 27%.
  - At least 5 serves fish/wk decreases risk by 30%.
- However, there is a 44% increased risk of ischemic stroke for more than 1 serve/wk of fried fish or fish paste.
- For women, oily fish intake was significantly lower in those who subsequently experienced a stroke.
- Evidence that fish consumption is protective against rheumatoid arthritis and ulcerative colitis in males.
At 30yr follow-up, men who ate no fish had a 2-3 fold higher frequency of prostate cancer than those who ate moderate or high amounts of fish.

At least 4 serves fish/wk is associated with a decreased risk of prostate cancer. Strongest association with metastatic cancer (Relative Risk (RR) 0.56).

Evidence that fish consumption is associated with a decreased risk of lung cancer mortality in men (independent of cigarettes, animal fat minus fish fat, vegetable and fruit consumption).

Higher consumption of fish is associated with a lower risk of islet autoimmunity precursor for type 1 diabetes in children at increased risk of type 1 diabetes.

Negative association between a diet rich in fruit, vegetables and fish, and the risk of Congestive Obstructive Pulmonary Disease (COPD).

Women of childbearing age should consume at least 2 serves of fish/wk.

Pregnant and lactating mothers should consume up to 12oz of a variety of fish each week (including shellfish low in mercury).

Fish consumption does not adversely affect infant gestation and birth size at a population level.

Evidence that at least 340g/wk maternal seafood intake is beneficial to child cognitive development.

Low maternal seafood intake during pregnancy could lead to adverse effects on neurodevelopment.

Occurrence of preterm delivery varied from 7.1% in the group who never consumed fish, to 1.9% in those consuming fish at least 1/wk.

Low maternal fish consumption is a strong risk factor for preterm delivery and low birth weight.

Small amounts of n-3 PUFAs (provided as fish or fish oil) are protective against preterm delivery and low birth weight.

Consumption of n-3 PUFAs during pregnancy is essential for optimum foetal neural development.

Moderate evidence (B)

Evidence that increased consumption of n-3 PUFAs reduces risk of all-cause mortality.

Ingestion of n-3 PUFA supplements has consistently shown a reduction in joint tenderness and the amount of morning stiffness in those with rheumatoid arthritis.

Good evidence that regular fish intake is beneficial for management of inflammatory diseases.

Moderate to high intake of fish appears to be protective against rheumatoid arthritis.

Fish consumption in the first year of life lowers the risk of asthma and allergic rhinitis in childhood.

Risk of allergic rhinitis is substantially lower in children who had fish during the first year of life (RR 0.025) compared with children who had fish later in life (RR 0.060).

Early introduction to fish shows consistent negative association with the risk of allergic rhinitis.

Results suggest that early intake of fish protects against airway disease in early life.

For children born to mothers with a history of asthma, the Odds Ratio (OR) for asthma was 0.20 (20% lower risk) when mothers ate oily fish at least once a month during pregnancy compared with no consumption.

In contrast, fish sticks (source of trans fats) consumption during pregnancy increased asthma risk in children (OR 2.04 - more than twice the risk).

Traditional fish-based diets appear to be protective against CVD.

Daily intake of marine fatty acids associated with 24% decreased risk in metastatic cancer.

Slightly reduced risk of colorectal cancer in fish consumers, more pronounced in women.

Higher consumption of fish is associated with a decreased risk of colorectal cancer in women.

Maternal intake of very-long-chain-fatty-acids during pregnancy and lactation may be favourable for mental development of children.

Compared with low intake (21mg/d), high intake (407mg/d) of n-3 PUFAs was associated with fewer depressive symptoms in adults (OR 0.46).
The level of pollutants in Australian seafood was, in general, very low.

Benefits of seafood consumption far outweigh the risks associated with possible pollutants.

Fish low in mercury and high in n-3 PUFAs are recommended.

3.3.3 Some evidence but more research required (C)

- Fish is more beneficial than fish oil in combating CVD and all-cause mortality.
- Fish oil acids may reduce potentially fatal arrhythmias in people at high risk.
- The influence of dominant males (whether child or adult) within the family unit should be considered in any intervention to increase regular seafood consumption.
- Nutritional education for pregnant women is required.
- Fish consumption is associated with increased length of gestation in women with a low risk of adverse pregnancy outcomes.
- High shellfish intake is associated with a higher risk of small for gestational age births.
- Higher maternal fish intake during pregnancy is associated with longer gestation, increased birth weight, reduced risk of intrauterine growth retardation and lower prevalence of pregnancy-induced hypertension.
- An average intake of 400mg/d of n-3 PUFAs may reduce depression.
- Fish consumption may be associated with slower cognitive decline with age.
- Greater seafood consumption predicted lower lifetime rates of bipolar disorders.
- There is limited evidence around seafood, fish oil or supplements in the management of attention disorders such as ADHD, however available evidence is promising.
- Brains of patients with Alzheimer's Disease have lower DHA in gray matter. N-3 PUFAs retard the decline in cognition over time.
- Mercury levels in Alaskan women who had a greater fish intake were well below World Health Organization effect levels.
- National fish advisories overemphasise risks and undervalue benefits of fish consumption.
- Interventions seeking to promote seafood as an integral part of a healthy diet should address existing negative attitudes and beliefs around the storage and preparation of seafood.
- Strategies directed at parents and children should include experimental hands-on components to encourage experimentation, particularly focussing on use of, preparation of and the variety of lower cost seafood available.
- Involvement in food preparation and cooking is correlated positively with increased levels of both intention to purchase and consumption of fish.
- Dietary fish and weight loss had significant independent and additive effects on 24 hour ambulatory blood pressure and heart rate in overweight persons.

3.3.4 Consumer behaviour in relation to fish and seafood consumption

- Perceived cost, freshness, quality, availability, taste and easy preparation were considered to be the main influences in consumer choice of fish and seafood products. (B)
- The lowest income households had the lowest fish consumption frequency. (B)
- The highly processed product varieties (battered and crumbed fish, and fish in sauce dishes) were often popular among families and perceived as easy and convenient to cook. (B)
- Odours common to fish and seafood are often a deterrent to consumption. (B)
- Fresh fish and seafood are preferred to alternative products (processed, smoked, canned and frozen products). (C)
- Presence of bones and price influence purchase type but not intention to purchase. (C)
- The presence of children in the households led to lower fish consumption. (C)
3.3.5 Marketing and advertising

- Food advertising directed at children predominantly featured Snack foods/fast foods and confectionery. (A)
- Modern marketing techniques have a strong influence on food choice. (B)
- Changing the food advertising environment during children’s television viewing time to an environment where nutritious foods are promoted and less healthful foods unrepresented would lead to the normalisation and reinforcement of healthy eating. (B)

3.4 Useful contacts

The Industry Guidelines are reproduced in section 3 of the appendices. This includes a list of useful contacts on pages 28 and 29 of the guidelines.

3.5 Bibliography

- Food Standards Australia and New Zealand (1995), Code of Practice on Nutrient Claims in Food Labels and in Advertisements, Canberra, Food Standards Australia and New Zealand.
- Food Standards Australia and New Zealand (2001), User guide to Food Labelling and Other Information Requirements, Canberra, Food Standards Australia and New Zealand.
- Food Standards Australia and New Zealand (2009), Australia New Zealand Food Standards Code, Canberra, Food Standards Australia and New Zealand.
- Food Standards Australia and New Zealand (unknown), Food Labels: What do they mean? Canberra, Food Standards Australia and New Zealand.
- Mooney BD, Nicholls PD & Elliot NG (2002), Seafood the Good Food II: Oil Profiles for Further Australian Seafoods and Influencing Factors, Collingwood, Fisheries Research and Development Corporation, CSIRO.
- Nichols PD, Virtue P, Mooney BD, Elliot NG & Yearsley GK (1998), Seafood the Good Food: The Oil Content and Composition of Australian Commercial Fishes, Shellfishes and Crustaceans, Collingwood, Fisheries Research and Development Corporation, CSIRO.
3.6 Websites

- The ACCC http://www.accc.gov.au/content/index.phtml/itemId/142
- For information on RDIs http://www.nrv.gov.au/nutrients/index.htm
- Australian Fish Names http://www.fishnames.net.au

3.7 Access to report

The Industry Guidelines for Seafood, Health and Nutrition Messages document was reviewed by the CESSH Industry Advisory Group, Western Australian Fishing Industry Council (WAFIC), Seafood Services Australia (SSA) and other key stakeholders within the seafood industry. Legal advice was received from a lawyer conversant with the food labelling laws and regulations plus Food Standards Australia & New Zealand.

The Industry Guidelines for Seafood Health and Nutrition Messages (see Figure 3.10) is now available on the CESSH website at http://cessh.curtin.edu.au/resources/industry.cfm.

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Figure 3.10: Industry Guidelines for Seafood Health and Nutrition Messages.