

Ice – The Cold, Hard Facts



144 Local Governments

Ice is a food and, like other foods, has the potential to cause food poisoning if it is not manufactured and handled under hygienic conditions.

Proprietors need to be aware that ice is vulnerable to contamination and should consider the following points.

Is the 'packaged ice':

- Manufactured in a commercial ice factory or made and packed in unhygienic conditions 'out the back' of the local service station or bottle shop?
- Labelled with the manufacturer and batch code details, so it can be identified in the case of a food recall?

Is the 'loose ice':

- Hygienically stored, handled and displayed?
- Dispensed using clean utensils?
- Machine clean and located inside the food premises?

A survey investigating the chemical and microbiological quality of loose and packaged ice was undertaken as part of the Western Australian Food Monitoring Program. Environmental Health Officers (EHOs) from 36 local governments obtained a total of 197 samples from manufacturers, retailers, hotels and so on throughout Western Australia.

Table 1: Overall results

Test criteria	# Samples	Complied	Did not comply
Loose ice			
Microbiological	98	55 (56%)	43 (44%)
Packaged ice			
Microbiological	99	77 (78%)	22 (22%)
Chemical	33	33 (100%)	0 (0%)
Labelling – (initial survey)	27	1 (4%)	26 (96%)
Labelling – (follow-up survey)	20	4 (20%)	16 (80%)

What did the survey find?

Overall, 132 (67%) samples complied with microbiological criteria (see Table 1). All samples of packaged ice tested complied with the appropriate chemical standard.

However, compliance with labelling standards was extremely poor. (See 'How were packaged ice products labelled?')



How has the ice been prepared, stored and handled?

The samples were assessed for compliance with the Australia New Zealand Food Authority Food Standards Code.

Samples of loose ice were assessed for microbiological compliance while packaged ice samples were assessed for microbiological, chemical and labelling compliance. (See 'What are the standards for ice?')

What are the standards for ice?

The Australia New Zealand Food Authority Food Standards Code specifies the following standards for ice:

1. Microbiological standards

Standard S3 Potable Water, Ice – This standard only applies in Western Australia and in this survey was used to assess the quality of loose ice samples. The standard defines ice as the product obtained from freezing potable water. Potable water:

- Shall contain not more than 100 micro-organisms in one millilitre (when determined by the plate count method)
- Shall not contain pathogenic micro-organisms, poisonous chemical constituents or sediment.

Standard S5 Packaged Water and Packaged Ice – This standard was used to assess the microbiological and chemical quality of packaged ice samples. The standard defines the following microbiological requirements:

- Not have a standard plate count exceeding 100 micro-organisms/mL
- Be free from coliforms in 250 mL
- Be free from *Pseudomonas aeruginosa* in 250 mL.

2. Chemical standards

Standard S5 Packaged Water and Packaged Ice – Packaged ice must:

- Not contain more than 10 mg/L of nitrate
- Not contain more than 1 mg/L of nitrite
- Must comply with the provisions of Standard A12.

Standard A12 Metals and Contaminants in Food – This standard was used to assess the packaged ice samples for heavy metal contamination.

- Cadmium: maximum concentration of 0.05 mg/kg
- Copper: maximum concentration of 10 mg/kg
- Lead: maximum concentration of 0.5 mg/kg
- Zinc: maximum concentration of 150 mg/kg

Packaged ice must also comply with the standard labelling requirements in Standard A1 of the Code. (See 'What are the labelling requirements for packaged ice?')

It is an offence under the WA Health (Food Hygiene) Regulations 1993 for a proprietor of food premises or a food vehicle:

- To use ice that does not comply with the above standards, for the purpose of cooling or keeping food cool, or
- Sell ice for human consumption that has been used previously for cooling food or keeping food cool.

Microbiological results:

A summary of microbiological results is shown in Table 2. All samples were examined for Total Plate Count (TPC) and Total Coliform Count (TCC). These tests indicate how well ice has been handled and stored. Samples that did not comply with these standards were unlikely to cause disease but could have been handled more hygienically.

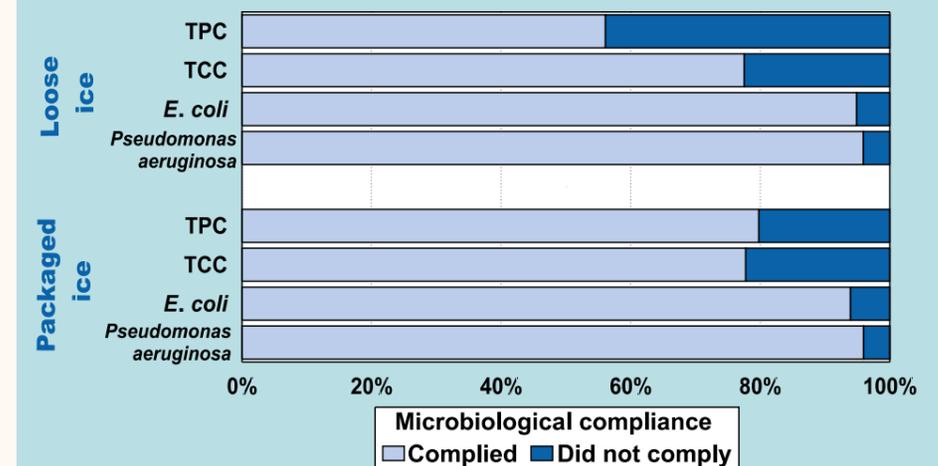
A total of 43 (44%) loose ice samples and 20 (20%) packaged ice samples failed to comply with the TPC standard. Twenty-two (22%) samples of packaged ice and twenty-two (22%) samples of loose ice did not comply with the TCC standard.

Only five (5%) loose ice samples and six (6%) packaged ice samples were found to contain *Escherichia coli* bacteria associated with poor handwashing.

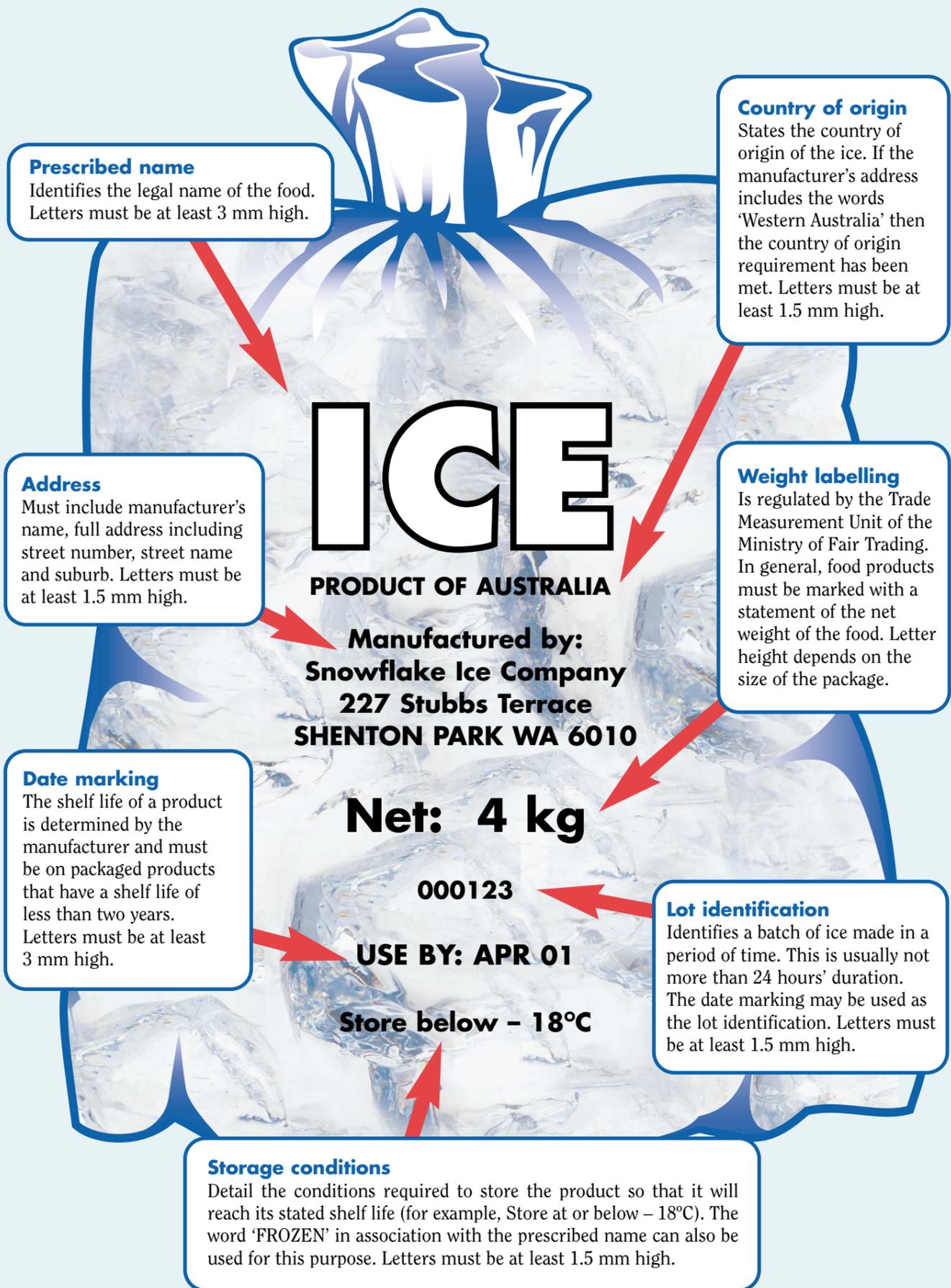
In addition, samples were examined for the presence of *Pseudomonas aeruginosa*. These bacteria do not normally cause disease in healthy people but can cause serious illness in immunocompromised people. Its presence in ice may indicate poor filtration in ice manufacturing systems or poor food-handling practices.

Pseudomonas aeruginosa was found in eight (4%) samples (four loose ice and four packaged ice).

Table 2: Microbiological results



What are the labelling requirements for packaged ice?



How were packaged ice products labelled?

A total of 27 manufacturers' labels were initially assessed for compliance. Only one label fully complied with the required standards. Table 3 shows the reasons for failures.

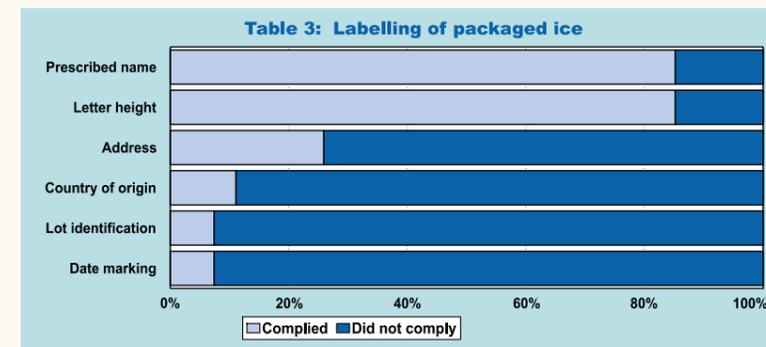
In response to the poor labelling standards a letter explaining the requirements of the Code was forwarded to ice manufacturers and to every local government throughout Western Australia.

A follow-up survey of labels from 20 ice manufacturers was undertaken to determine if compliance had improved. Only

four (20%) manufacturers fully complied with the Food Standards Code requirements.

The information provided on packaged ice labels not only provides consumers with useful information, but can also assist ice manufacturers in the event of a food complaint or food recall.

During a food recall, if specific batches cannot be identified, all products must be removed from the marketplace. This could cost a business considerable time, effort and money.



How can the safety of ice products be maintained?

Manufacturers, retailers and EHOs can all contribute to the safety of ice used in or sold by the food industry.

Ice manufacturers and retailers should develop food safety programs based on Hazard Analysis Critical Control Point (HACCP) principles for example, FoodSafe Plus, which will minimise hazards in the ice manufacturing process. These should include:

- Regular cleaning and sanitising of ice storage facilities and ice machines
- Regular replacement or sanitising of filters
- Monitoring samples of supply water and final products to assess the effectiveness of food safety programs
- Storing scoop handles so they do not contaminate ice
- Training staff in food hygiene to ensure hands are washed

regularly and utensils are used appropriately.

Environmental Health Officers should:

- Encourage the introduction of food safety programs into ice manufacturing premises and conduct regular audits to ensure compliance with the hygiene and labelling requirements
- Ensure that only ice made from potable water is used in food premises.



Has the ice been made from potable water?

Who was involved in this survey?

Country local governments (17):

Albany, Broome, Busselton, Carnarvon, Chittering, Dardanup, Denmark, Gingin, Greenough, Katanning, Nannup, Narrogin (Town), Northam (Town), Roebourne, Wagin, Wongan-Ballidu, Wyndham-East Kimberley.

Metropolitan local governments (19):

Armadale, Bassendean, Bayswater, Cambridge, Canning, Cockburn, Cottesloe, Fremantle, Kalamunda, Kwinana, Melville, Mundaring, Perth, Rockingham, Serpentine-Jarrahdale, South Perth, Stirling, Subiaco, Victoria Park.

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