Dairy foods have been a staple food for centuries because they are nutritious, wholesome, and tasty. Through advances in technology and processing, dairy products are readily available and can be enjoyed in all parts of Australia. The Australian dairy industry produces over 9,000 million litres of milk a year. The Australian dairy industry accounts for about 12–16% of global dairy trade, while Australians consume nearly 100 litres of milk, about 12kg of cheese and almost 7kg of yogurt each year.

This leaflet explains some of the processes, new technology and farming methods that are used to produce dairy foods in Australia today.

**Pasteurisation and ultra heat treatment (UHT)**

By law in Australia, cow’s milk is required to undergo treatment to destroy harmful bacteria before it can be sold. During pasteurisation, milk is heated to approximately 72ºC, held at this temperature for no less than 15 seconds and then cooled immediately to 4ºC or less. This process ensures that the milk is safe for consumption and extends its shelf life. Pasteurised milk always requires refrigeration.

Ultra heat treatment (UHT) is a more powerful method of heat treating milk. In the UHT process, milk is heated to 135–150ºC and held for a few seconds. This produces ‘long life’ milk which, when packaged in sterile containers under strict hygiene control, can be stored unrefrigerated for extended periods of time. Long life milk must be refrigerated once the package is opened.

Both pasteurised and UHT milk are rich sources of at least 10 essential nutrients, including calcium, phosphorus, potassium, riboflavin, vitamins A and B12, magnesium, carbohydrate, protein and zinc. Nutrient losses due to pasteurisation are minimal. Less than 10% of the thiamine and vitamin B12 is lost during pasteurisation. Ultra heat treatment results in slightly greater losses of these vitamins.

**Homogenisation**

In the days of milk bottles and aluminium tops, cream would separate and rise to the top of the milk. Today, most milk is homogenised by passing it through very fine nozzles under high pressure. This process reduces the size of the fat particles and distributes the uniformly sized small fat globules evenly through the milk, producing a product with uniformly smooth texture and taste. Although the size of fat particles in milk is reduced through homogenisation, there is no change to the nutritional value of the milk.

**Organic and biodynamic dairy foods**

Organic products are produced without the use of synthetic chemicals, fertilisers or genetically modified organisms. Organic farming also ensures that animals are reared free-range (cows are permitted to graze or forage rather than being confined to a feedlot).

Biodynamic farming is a specific type of organic farming, based on the principles of Austrian philosopher Dr Rudolph Steiner, that uses particular biodynamic soil preparations.

A number of niche dairy farms are now producing organic or biodynamic milk and milk products. Nutritionally, these products are comparable to dairy products produced by regular farming methods. These products offer an alternative for consumers who support the philosophy of organic farming.

**Chemical residues**

The Australian dairy industry has an excellent track record of producing residue-free dairy products. Strict systems operate to ensure the safety of dairy foods. Only chemicals (i.e. medications) that have been registered with the Australian Pesticides and Veterinary Medicines Authority can be given to dairy cows. Milk intended for human consumption from a cow being treated must be discarded and the cow’s milk not used until the specified ‘withholding period’ has lapsed. Like all foods in Australia, milk must comply with the maximum residue limits set out in the Australia and New Zealand Food Standards Code. All of these measures are monitored and regulated through on-farm quality assurance programs and approved food safety programs.
Producing Australian dairy foods

Antibiotics
The Australian dairy industry uses antibiotics responsibly. Antibiotics that are used to control bacterial infections in cows must be prescribed by a veterinarian. Milk for human consumption from any cow which has been treated with antibiotics is disposed of on the farm until the end of the required ‘milk withholding period’.

In addition, dairy companies test milk for antibiotic residues when it is collected from each farm, and may also test the finished product. The industry as a whole participates in national testing programs which are overseen by state and federal government agencies.

Hormones
A hormone called bovine somatotrophin (BST) is used in some countries to increase milk production. BST is prohibited for use in Australia. The use of steroidal hormones such as oestrogen, progesterone and testosterone for growth promotion is not permitted in dairy farming in Australia.

Genetic modification
Currently, little genetic modification is involved in dairy production or manufacture. Genetically modified (GM) foods are produced by changing certain characteristics of the animal or plant that the food is produced from by introducing genetic material from another source by means other than natural breeding. In Australia, GM foods must undergo stringent safety assessments before being approved for sale. Since December 2001, the Australia and New Zealand Food Standards Code has required that GM foods or foods that contain GM ingredients must be labelled as such.

During processing, some cheeses are produced with an enzyme (chymosin) that is derived from GM bacteria or yeasts as an alternative to the chymosin derived from calf rennet. These products may be suitable for consumers who adopt a vegetarian diet. This chymosin is structurally and chemically identical to the chymosin obtained from calf rennet. It is used as a processing aid and, as such, no GM organisms or genetic materials are present in the final product. Consequently the Food Standards Code does not require additional labelling.

Cows in Australia are primarily pasture fed. At present, virtually all supplementary grain feed that may be used in Australia is from non-GM sources. Nevertheless, there is no scientific evidence to indicate that milk from cows fed GM stockfeed is any different to milk from cows that consume non-GM feed.

Three serves of Australian dairy foods every day for good health...
The Australian dairy industry prides itself on the safety and quality of the dairy foods it delivers. So Australian’s can be confident in enjoying the huge variety of dairy foods available to suit every lifestyle, palate and occasion.