

A Review of the Milk Supply Chain

Summary Document



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safefood would like to thank the following individuals for their participation in the External Advisory Group during the course of this review:

John Doody, Agricultural Inspector, Department of Agriculture, Fisheries and Food

Paul Farrell, Regional Trading General Manager, ASDA

Robin Martin, Senior Quality Assurance Officer, Quality Assurance Branch, Department of Agriculture and Rural Development

Martin Mullane, **safefood** Scientific Advisory Committee

Aidan McCarthy, Chief Executive (Retired August 2007), National Dairy Council

Dr Maureen McGowan, Dietitian Manager, Health Service Executive – Dublin Mid-Leinster

Prof Dolores O' Riordan, Director of Teaching and Learning, Department of Food and Health, School of Agriculture, Food Science and Veterinary Medicine, University College Dublin

Ian Stevenson, Policy Officer – Dairy, Animal Health and Welfare, Ulster Farmers' Union

Jackson Wright, Dairy Committee Chairman, Ulster Farmers' Union

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Background, Purpose and Scope

safefood undertook a review of the milk supply chain in order to describe how milk is produced, processed, sold and consumed on the island of Ireland.

The aim of this review is to address consumer concerns and to provide them with the information they need to make informed choices about the food they eat. This review is one of a series of food chain reviews that **safefood** is carrying out over a three-year period. Previous reviews targeted chicken, finfish, fruit and vegetables and beef.

This review shows: the milk supply chain on the island; the basic processes by which drinking milk enters the consumer food chain; the controls in place to protect consumers from potential risks; the nutritional and health benefits of drinking milk.

The main types of milks available on the island of Ireland are whole (full fat), semi-skimmed (low fat) and skimmed (fat free). As part of the review, **safefood**

researched consumer awareness and perceptions of nutrition and food safety issues around milk.

There were few concerns about the safety of milk. In general, consumers said milk was a highly nutritious food and important in the diet, albeit mainly for children. The biggest barrier milk faced, particularly among teenage girls and women, was the perception that it was a high fat food.

This summary gives a brief overview of the findings of the review. A full report is available on the **safefood** website at www.safefood.eu

Consumers and Milk

safefood research shows that nine out of ten adults on the island of Ireland consume milk and dairy products. Over half the adult population drink milk more than once a day.

Lower fat milk varieties are growing in popularity. One in three people drink semi-skimmed milk all the time. New innovations in the milk market are becoming more popular, such as milk flavoured with strawberry and chocolate, and milks with added vitamins and minerals.

Consumers drank milk because it was a healthy food, high in calcium, and therefore good for bone development. The habit of drinking milk started for most in childhood. For some, this continued into adulthood. Consumers who did not drink milk disliked the taste and texture. Some people avoided milk due to perceived allergies.

Consumers had a few minor concerns about milk. These included the long shelf-life, the presence of antibiotics and

hormones, and the risk of contracting tuberculosis. To address their concerns, consumers relied on use-by dates, country of origin and brand names to reassure them.

To further explore the issues raised, focus groups were organised in both the Republic of Ireland and Northern Ireland. While participants said they drank milk every day, it was more likely taken in teas/coffees or with breakfast cereal than to be drunk on its own. Participants were well aware of the benefits of milk for infants and young children as a source of calcium and in bone development; however, there was a strong sense, particularly among women, that milk's benefits were less important as they entered their teens onwards. This was not the case for men; they were more likely to continue drinking milk into adulthood.

Participants considered whole milk to be fattening. Many consumed semi-skimmed/skimmed milk as a healthier alternative. Semi-skimmed milk was seen as having all the benefits of whole milk, vitamins and minerals as well as taste, but without the additional fat. As consumers got older, they tended to move to lower fat milk. One focus group, which included teenage girls, thought that milk was higher in fat than other dairy products like yoghurt. They also did not see any need to keep drinking milk for health reasons as they got older.

Participants had very few concerns about the safety of milk. They did not think unpasteurised milk was safe and did not drink it. Some believed the shelf-life of milk was getting longer and were concerned that this may be due to preservatives/additives in the milk. While some named family and friends with reported dairy allergies, there was little understanding of the difference between such allergies and intolerances and the link with milk.

How Much Fat?

Type of milk	Fat content
Whole milk	3.5% – 3.9%
Semi-skimmed / low fat	1.5% – 1.8%
Skimmed / fat-free	<0.5%

The Supply Chain

In economic terms, the milk industry is one of the most important sectors of agriculture on the island of Ireland.

In 2006, the milk sector in the Republic of Ireland (ROI) was valued at €1,323m¹ (£882m). The total dairy sector accounted for 38% of agricultural output. In the same year, the milk sector in Northern Ireland (NI) was worth £327m (€491m). This represented 31% of agricultural output.

Production

In 2006, 1,902 million litres of milk were produced in NI. Fourteen percent of total milk supplies in NI is used in the production of 'liquid milk'. In 2006, 5,083 million litres were produced in ROI. 90% of milk produced in the ROI is used in the manufacture of dairy products, which are mainly exported. The remainder is processed for drinking.

During that year, the ROI was eighth amongst EU-25² producers of milk. Top producers of milk in Europe include Germany, France, Italy and the Netherlands.

Imports

Despite its status as a milk producer, the ROI is becoming increasingly dependent on milk imports, with NI being its sole supplier. In 2006, total imports for liquid milk from Northern Ireland amounted to 104 million litres. Fifty-six percent of these imports were in bulk milk form, with packaged liquid milk making up the rest.

¹ Figure quoted represents milk output at producer prices.

² Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Imported liquid milk, both bulk and packaged, accounted for 18% of the fresh liquid milk market in the ROI in 2006.

In terms of bulk milk imports, NI imported 11.7 million litres of whole milk and 25.8 million litres of skimmed milk in 2006. Figures for packaged milk imports are not available.

Exports

Due to the nature of the liquid milk industry, liquid milk produced on the island of Ireland remains within the island. There are cross-border movements of liquid milk, as discussed earlier. Approximately €2 billion in dairy products were exported from the Republic of Ireland during 2005. Exports of skimmed milk, whole milk and cream from processors in the ROI to NI amounted to 42 million litres in 2006.

In NI in 2006, 595 million litres was exported as raw milk. This was 31% of the annual milk supply. Over 95% of these raw milk exports were to the ROI.

Retail

Market data show that every household on the island of Ireland buys milk. Retailers, especially large supermarket multiples, are now the main supplier of that milk. Seventy-eight percent of all milk purchased in the ROI in 2006 was through retailers. Doorstep deliveries now represent less than seven percent of sales.

Supermarket 'own label' milk is now the leading branded milk sold, with over 50% of sales in the ROI and 95% of sales in NI.

Types of milk available on the island of Ireland

In 2006, sales of whole milk on the island accounted for 73% of fresh milk sales. Sales of semi-skimmed and skimmed milk accounted for the rest. In the UK, over 75% of milk is sold as semi-skimmed and skimmed. New products, such as flavoured and fortified milks, still only account for a small proportion of sales. Organic milk is still only at sales of 1%, but this is growing.

Food Safety and the Food Chain – from farm to fork

Significant investment in the milk supply chain has happened in the last fifty years to ensure confidence in milk.

Pasteurisation and eradication programmes for diseases such as tuberculosis (TB) and brucellosis now mean that diseases once associated with milk are no longer a major cause of human infection.

The safety of the milk supply chain is regulated by legislation primarily enforced by the Food Standards Agency in Northern Ireland and the Food Safety Authority of Ireland in the ROI.

Regulation of the food chain

Hygiene laws for EU Member States, commonly referred to as ‘The Hygiene Package’, cover all aspects of the food chain. These include extensive measures to ensure the safety of the milk supply chain.

In the ROI, the Food Safety Authority has service level contracts with the Health Service Executive (HSE) and the Department of Agriculture, Fisheries and Food (DAFF). These contracts oversee the enforcement of the Hygiene Package and other national and EU legislative and safety programmes. The Department is responsible for the control of all milk and dairy products from primary production through to the point of retail. Its veterinary inspectors enforce EU standards through inspections on the farm. The Health Service Executive (HSE), through its Environmental Health Officers (EHOs), has responsibility at the point where food enters a distribution network. It keeps control until final sale to the consumer.

In NI, dairy farms are registered and inspected by the Quality Assurance Branch of the Department of Agriculture

and Rural Development on behalf of the Food Standards Agency. EHOs, on behalf of the District Councils, have similar responsibility to their counterparts in ROI for the safety of food in the food chain in NI.

Food-borne illnesses associated with milk

There have been no significant outbreaks of illnesses associated with milk on the island of Ireland in recent years. One study that looked at food-borne illness in England and Wales from 1992 to 2002 concluded that only 2% of all outbreaks of food poisoning were associated with pasteurised milk during that period. Of those who became ill from contaminated milk, however, there was a high proportion of children involved and more deaths caused by VTEC (*verocytotoxigenic Escherichia coli*) infection than anything else. As well as VTEC, *Salmonella* and *Campylobacter* are the most frequent causes of milk-related food poisoning within the EU.

Pasteurisation is the single most significant step in controlling milk-borne infections. Improper handling and storage of milk after pasteurisation, however,

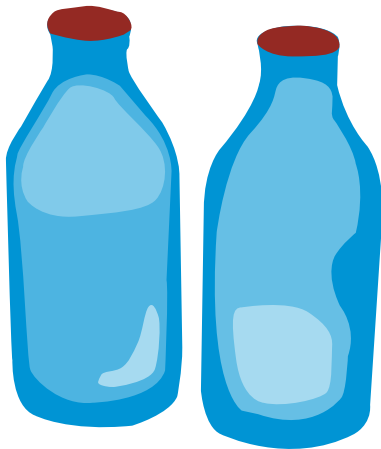
can cause recontamination. In spite of the evidence supporting pasteurisation, some people, and in particular farm families, continue to use unpasteurised or raw milk. Even more worryingly, 66% of families who use raw milk acknowledge the risks in doing so.

The shelf life of pasteurised milk varies from only a couple of days in some countries to over 20 days in the US. The shelf-life of milk on the island of Ireland is approximately 12 days. Some focus group participants believed shelf-life was longer due to additives. This, however, is not the case. The reasons for both the variation in shelf-life between countries and the extension in shelf life here are local legislation and technological factors. These factors include raw milk quality, processing methods, hygiene in filling, and the quality of the cold chain. Centralisation of the dairy industry, increased competition among dairy companies and less frequent shopping cycles have all necessitated the need for milk's longer shelf-life. This has led to the development of processes and packaging concepts that increase the shelf-life in cold chain distribution.

The temperature of storage and distribution is central to the milk's shelf-life. For pasteurised milk, in general, every 2°C increase in storage temperature will reduce the shelf-life by 50%.

Contaminants and Residues

Chemical residues and contaminants can exist in milk. Monitoring programmes in the ROI and NI routinely test for all chemical contaminants such as dioxins, furans and dioxin-like PCBs. They also test for veterinary residues and growth hormones. Results of these ongoing tests show no cause for concern about chemical contamination.



Nutrition and Health

Benefits

Milk contains many essential nutrients including protein, calcium and the water-soluble B vitamins required for a healthy diet. It is a key component of the diet on the island of Ireland.

Dietary guidelines in the ROI recommend three portions of dairy a day for the general population. Five portions are recommended for teenagers and pregnant or breastfeeding mothers. In NI, recommendations are based on the 'eatwell' plate; this says that one sixth of daily food intake should be from milk and dairy products. This equates to approximately three portions per day for adults.

As a primary source of calcium in the diet, milk and dairy foods provide the essential substrates for bone metabolism and health. Other dietary factors are now known to be involved in bone health, such as vitamin D. Physical activity is also important.

Increasing evidence shows a positive role for milk and dairy products in other diet-related conditions such as cardiovascular disease, colorectal cancer and weight control.

safefood research found that many saw milk as a high-fat food. In fact, this is not the case³. According to the Codex Alimentarius, milk is neither a high fat nor a high saturated fat food. The availability of semi-skimmed and skimmed milks on the market offers choice to consumers who either want a low-fat option or who drink a lot of milk.

³ A food with a fat content greater than or equal to 20 percent is classified as a high-fat food, while a food with a fat content less than or equal to 3 percent is classified as a low-fat food. A food with a saturated fat content greater than or equal to 5 percent is classified as a high-saturated fat food, while a food with a saturated fat content less than or equal to 1.5 percent is classified as a low-saturated fat food. Milk contains 3.9 percent fat.

Adults

Adults on the island of Ireland consumed, on average, 150g/d of whole milk and 88g/d of semi-skimmed milk, according to the North South Ireland Food Consumption Survey. Overall, women tended to consume less milk (210g/d) than men (280g/d). Women, however, consumed more semi-skimmed, skimmed and flavoured milk than men. In general most milk is used at breakfast time.

Milk and yogurt contribute significantly to the intake of both calcium and other important micronutrients on the island of Ireland. Twenty-three percent of women and 11% of men, however, are currently not meeting their recommended daily intake of calcium.

According to the Eating for Health study in NI, non-manual and higher income households were more inclined to use semi-skimmed milk than those in lower income groups. Also, households with children consumed more whole milk compared to those without.

In recent years, slightly more milk is being consumed, but there has been an overall decline in the amount consumed per head on the island of Ireland, and indeed in the EU. Trends show consumers tend to favour water, juices and soft drinks over milk.

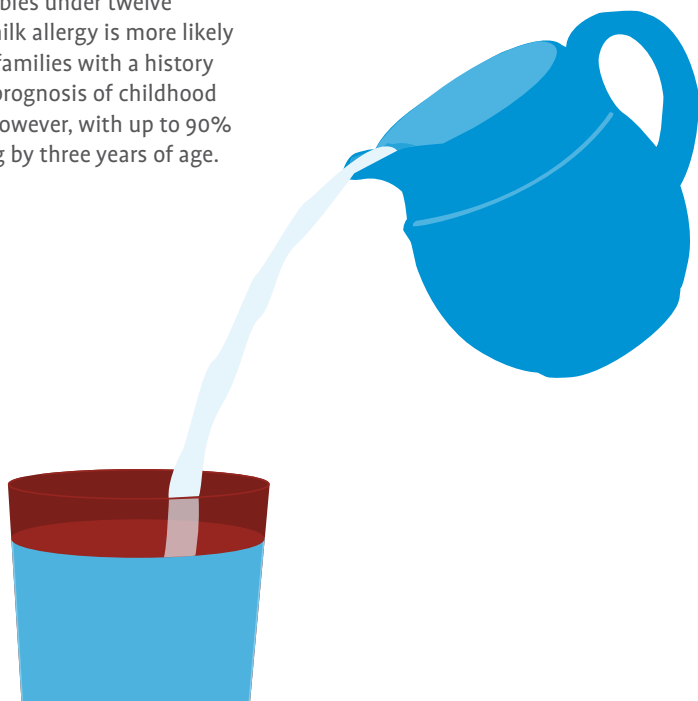
Children and Adolescents

In ROI among 5 to 12-year-olds, the consumption of whole fat milk was 238 g/d; the consumption of semi-skimmed and skimmed was 28 g/d, according to the National Children's Survey. Children in this study had inadequate intakes of calcium due to low dairy consumption. This affected 28% of boys and 37% of girls on the island of Ireland.

The Eating for Health study in NI showed that older girls were five times more likely to consume no milk compared with younger children and adolescent boys. Five percent of girls aged 12 to 17 years consumed no milk at all. This was also highlighted in the **safe food** focus group with teenage girls. Preliminary data from the National Teens Survey in the ROI shows that 42% of teenage girls have inadequate calcium intakes.

Allergy and intolerance

Milk allergy and lactose intolerance are often confused. Milk allergy is an immune system dysfunction. Lactose intolerance is due to a deficiency in the enzyme lactase and is more common in adults. Allergy to cows' milk is the most common food allergy in childhood. It affects between 2% and 7% of babies under twelve months. Cows' milk allergy is more likely in children from families with a history of allergies. The prognosis of childhood allergy is good, however, with up to 90% of cases resolving by three years of age.



Key Facts

- Milk is a rich source of calcium, vitamins and protein.
- Nine out of ten adults on the island of Ireland consume milk and dairy products. Nevertheless, teenage girls and young women are less likely to drink milk than teenage boys and young men. This impacts negatively on their calcium intake.
- Contrary to common belief milk is not high in fat.
- For those concerned about their overall fat intake, reduced fat milks such as semi-skimmed and skimmed milks, have lower energy content but without significant nutrient loss.
- Cows' milk is not suitable as a drink for infants under twelve months. From six months onwards, cows' milk can be added in small amounts to foods, in order to soften them.
- In children's diets, semi-skimmed (sometimes called 'low-fat') milk should not be introduced until two years. Provided that the child is a good eater and has a healthy diet, skimmed milks may be introduced gradually from five years onwards.*
- Milk and water are healthier options than soft drinks.
- Flavoured milks offer a good option for children who do not like the flavour of plain milk. Their higher sugar content, however, can affect dental health, so they should be consumed with meals.
- Pasteurised milk should be stored at a temperature of 5°C or less.

* Consult your GP if you are concerned that your child is not eating or growing well.

safefood

7 Eastgate Avenue, Eastgate, Little Island, Co. Cork.

7 Ascaill an Gheata Thoir, An tOileán Beag, Co. Chorcaí.

7 Aistyyett Avenue, Aistyyett, Wee Isle, Co. Cork.

Tel: +353 (0)21 230 4100 **Fax:** +353 (0)21 230 4111

Email: info@safefood.eu **Web:** www.safefood.eu

HELPLINE
NI 0800 085 1683
ROI 1850 40 4567
www.safefood.eu