

# The Impact of Quality Management System in Dairy Industry

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## DESCRIPTION

Milk is usually said to as a necessity for everyone's diet. Foods that are derived from milk are referred to as dairy or milk products, or lacticinia. The cow, buffalo, goat are the most popular dairy animals. Dairy products are staples from Western grocery stores including yogurt, cheese, milk, and butter. A dairy is a place where dairy products are made. There are different levels of dairy product consumption around the world. Due to lactose intolerance, veganism, or other health concerns, some people skip all or some dairy products.

As intended by nature, milk is a complex biological fluid made up of numerous substances including water, lipids, proteins, lactose, vitamins, and minerals. Due to its composition, it is very prone to contamination, spoiling, and quality decline. Therefore, milk quality management is essential to protect consumers as well as the dairy sector.

Microbial contamination is one of the main issues in milk quality regulation. Several microbes, including dangerous diseases like Salmonella, *E. coli*, and Listeria, can grow well in milk. It is vital to make sure that milk is free from such toxins because these microorganisms represent serious health hazards.

One of the most important steps in microbial control is pasteurization, which involves boiling milk to eliminate hazardous bacteria. Strict guidelines and routine inspections ensure that milk is pasteurized at the proper temperature and duration, effectively getting rid of pathogenic germs while retaining the nutritional value of the milk.

Dairy farms employ severe sanitation procedures in addition to pasteurization to stop contamination at the source. This include maintaining the cleanliness of the milking machinery and the cows. In order to ensure microbiological control, regular testing and quality checks are also carried out at various phases of milk production, shipping, and processing.

## Milk composition: The balance of nutrients

The essential quality of milk is its nutritional composition. A crucial part of milk quality management is making sure it complies with regulations. Dairy scientists and technicians be working carefully to make sure that milk maintains the ideal ratio of lipids, proteins, lactose, vitamins, and minerals. A lot of times, milk is changed to meet secure standards. For instance, while skim milk is produced by removing the majority of the fat from whole milk, it still contains all the milk lipids. To improve the nutritional content of milk, it is commonly fortified with vitamins like vitamin D.

## Packaging and shelf life

Maintaining milk quality depends heavily on packaging. External variables including light, oxygen, and temperature changes can be very harmful to milk. Milk is often packed in opaque, airtight containers to combat these issues and maintain its nutritious value and freshness.

Furthermore, milk distribution and storage are subject to quality control. To avoid deterioration and preserve shelf life, transport and storage must be conducted at controlled temperatures.

## Consumer expectations: Taste and aesthetics

Milk quality includes sensory qualities such as taste, aroma, and appearance in addition to safety and nutritional value. To ensure customer satisfaction, these qualities must be evaluated by dairy experts and sensory panels.

Numerous elements, such as cow diet, processing techniques, and packaging materials, can affect the flavour profile of milk. The objective is to provide milk that has a reliable, palatable taste for consumers. It is also crucial to consider aesthetic factors like milk colour and visual consistency. Customers expected milk to be creamy, white, and free of any extraneous objects or unnatural

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colours. These visual requirements are upheld *via* quality control procedures. Although milk quality control has come a long way, new difficulties continue to come out. Environmentally friendly practises have been adopted by the sector since sustainability has become a crucial issue. Reducing energy use, greenhouse gas emissions, and water use are all part of this. Transparency is also becoming more and more crucial. Customers want to know the process and from where their milk is produced. In this changing environment, labels like "organic" or "grass-fed" as well as traceability systems and moral agricultural methods are all present. Another aspect of quality control is ensuring the accuracy of these declarations.

## CONCLUSION

Milk quality management is a complex web of industry commitment, oversight from regulators, and scientific expertise. It covers microbial safety, nutritional harmony, packaging, sensory qualities, and the always changing sustainability and transparency challenges. When milk is poured over cereal, steamed into lattes, or consumed in any other way, it is always safe, nourishing, and delectable because of the constant effort of outstanding performance in milk quality management.