# Risk-Based Food Safety Management

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## What is risk-based food safety management?

Food business operators are responsible for the safety and the quality of their products, which have to be guaranteed with a transparent, scientific and documented approach. Since the 1980s, Microbiological criteria (MC)[1] have contributed to improving international food hygiene standards.

The introduction of the risk-based approach in Codex started in 1999 with the adoption of the Codex principles and guidelines for the conduct of microbiological risk assessment. In 2007, the Codex Alimentarius Commission has proposed a structured approach for the management of Food Safety, based on risk. New metrics were established, such as Food Safety Objectives (FSOs), Performance Objectives (POs) and Performance Criterion (PC).

These metrics are useful for establishing a more direct relationship between MC and public health outcomes. The dairy sector is appropriating this approach to guarantee the safety and quality of milk and dairy products.

## Why is it important?

The concept of risk-based food safety management offers many advantages for both control authorities and industry, among which are:

1) Translation of a public health goal to a measurable level of control, upon which food processes can be designed so that the resulting food will be microbiologically safe;

2) Validation of food processing operations to ensure that they will meet the expected level of control.

More globally, it allows all aspects of a food safety system, from farm-to fork (raw material, food processing, consumer behavior, etc), to be taken into account, rather than separating responsibility for any particular component of the chain.

## How is risk-based food safety management structured?

An FSO is the maximum frequency and/or concentration of a hazard in a food at the time of consumption, which is achievable by the application of adequate Good Hygiene Practice (GHP) and hazard analysis and critical control point (HACCP) systems. It provides or contributes to a public health goal: the Appropriate Level of Protection (ALOP), which is an expression of the level of protection in relation to food safety that is currently achieved. Maximum hazard levels at other points along the food chain are called POs.

When FSOs and POs are targets to be met by the food safety system and when they are verified by testing, the sampling plan should consider the consumer risk, the producer risk, or the risk of any other stakeholder of the supply chain.
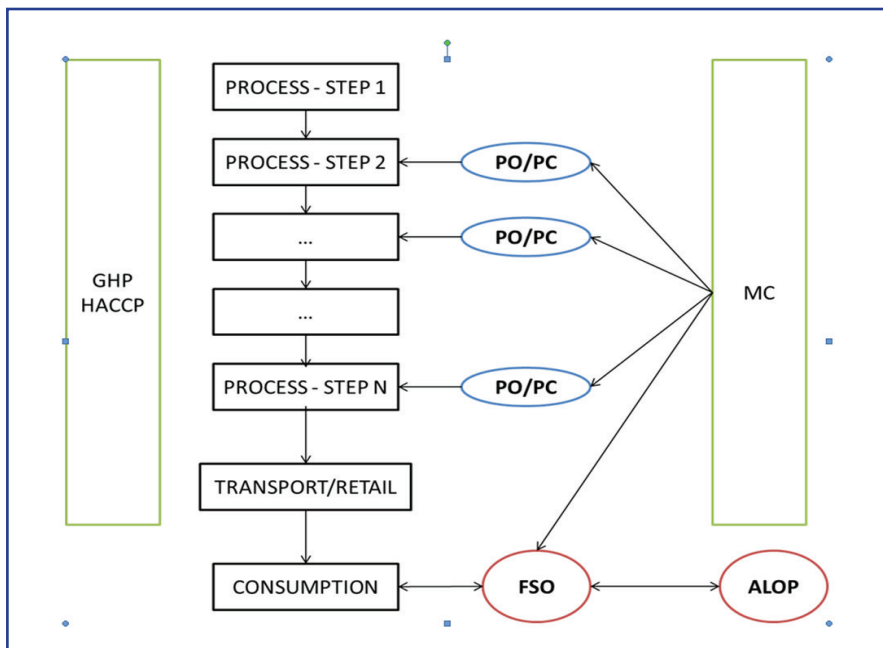
When considering the establishment of MC, a variety of approaches can be used depending on the risk management objectives and the available level of knowledge and data. More recently, advances in quantitative risk assessment have allowed a better estimation of the effects of interventions, regarding a public health goal.

## What is the dairy industry doing?

Historically, the dairy industry has been involved in the supply of safe products to the consumer. New technologies have always been followed worldwide to achieve this objective. Continuing to monitor the evolution of food law, regulations, analytical methods and quantitative risk and exposure assessment techniques, the industry will be continuously implementing this risk-based food safety management approach.

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1   Tools to assess the safety and quality of food by sampling and testing for specific hazards at specified points of the food chain and indicating the acceptability of a food, the performance of either a process or a food safety control system.

Figure - How is risk-based food safety management structured?



## References

CX/FH 12/44/6 – Proposed draft revision of the principles for the establishment and application of microbiological criteria for foods

2006, FAO / WHO Food and Nutrition Paper #87: Food Safety Risk Analysis. A guide for national food safety authorities.

2009, IDF Bulletin 433-2009: A revolution in food safety management

ISO 22000 – Food safety management (http://www.iso.org)

ISO 22000:2005 contains the overall guidelines for food safety management.

ISO/TS 22004:2005 contains guidelines for applying ISO 22000

ISO 22005:2007 focuses on traceability in the feed and food chain

ISO/TS 22002-1:2009 contains specific prerequisites for food manufacturing

ISO/TS 22002-3:2011 contains specific prerequisites for farming

ISO/TS 22003:2007 provides guidelines for audit and certification bodies