Food Safety Management EBook

Limble

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Why write this EBook?

Large-scale manufacturing companies are multifaceted operations. For those in highly regulated fields like food and beverage production, strict and rapidly evolving safety requirements add additional layers of complexity to every aspect of the job.

With so many processes, machines, staff, and facilities involved in food production, contamination and other safety risks pose a consistent threat. A comprehensive Food Safety Management System (FSMS) provides a clear and well-defined method for tackling food safety hazards to guarantee safe products for consumers.

We'll share how in this comprehensive guide.

What is food safety?

Food safety is the process of ensuring that food is **produced**, **handled**, and **prepared** in a manner that prevents contamination and promotes a high-quality end product. Good food safety management is essential for ensuring the health and safety of consumers and the reputations of food and beverage manufacturers.

Given this broad definition, food safety is a consideration that all organizations across the food supply chain must build into their business models. From restaurants and grocery stores to farms and manufacturing or packaging facilities, **the entire path** food products take to reach consumers involves strict guidelines for food safety.

Hazards prevented by food safety practices

We have all heard of—and likely experienced—the consequences of common microbiological hazards to food safety. Outbreaks of illness and food recalls caused by bacteria such as E. coli or salmonella regularly appear on the news. The Centers for Disease Control and Prevention estimates that **48 million Americans** get sick from food poisoning every year - that is about 1 in every 6 people - leading to **128,000 hospitalizations** and **3,000 deaths**.

	Annual Infections	Annual Hospitalizations	Annual Deaths
Listeria	1,600	1,500	260
Salmonella	1,350,000	26,500	420
E. coli	265,000	3,600	30

Centers for Disease Control and Prevention on listeria, salmonella, and E. coli

Chemical hazards

pose a risk to public health and often originate from chemicals used in agriculture and food production, such as pesticides, industrial chemicals, natural toxins, and food additives. Monitoring, regulation, and enforcement measures are essential for ensuring the appropriate use and management of these chemicals to minimize risk of contamination at unsafe levels.

Physical contaminants

can enter food during the production, processing, and packaging stages. These may include glass or metal fragments, plastic, wood, stones, and other materials that may cause injuries or choking hazards. These types of contamination have the potential to lead to serious legal, financial, and reputational consequences for food producers and distributors.

Proper hygiene practices and maintenance activities that ensure equipment integrity, along with stringent quality control measures, are crucial for maintaining food safety standards throughout the supply chain. Regular inspections, thorough employee training, and ongoing analysis and mitigation of each potential hazard are non-negotiable measures for safeguarding consumer health.

The role of maintenance in food safety

The consolidation of food processing and production is rapidly increasing the scale of operations within the industry. As the system continues to rely on heavy machinery and automation, the maintenance procedures that keep those machines clean and functional will play a significant role in minimizing food safety hazards.

Maintenance professionals are well-positioned to apply preventive maintenance (PM) principles to hazard control in the food industry. By borrowing from the concepts of PM and failure analysis, maintenance teams can support their organizations in integrating strict measures for identifying and preventing safety risks into day-to-day operations.

What is a food safety management system?

A food safety management system or FSMS is an organization's program or strategy for ensuring food safety and quality during production and throughout all stages of the supply chain. An FSMS goes beyond the ideas or even the practices needed to achieve food safety. It involves taking measures to ensure the **systematic application** of food safety practices, and **consistent oversight** of those practices to ensure their effectiveness.

A complete and effective FSMS encompasses policies, procedures, analyses, and oversight activities designed to keep a close eye on food production practices.

Any business involved in food production, packaging, or preparation must have an FSMS. The components of an organization's food safety program will depend on the specific hazards present for that particular operation.

Why are food safety management systems important?

A food safety management system ensures strict oversight of all aspects of food manufacturing to keep consumers safe and minimize legal and reputational risk for the business. In addition, a well-executed food safety management system provides **numerous other benefits to businesses**.

1 Compliance

In addition to local health and safety agencies, federal agencies such as the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture, the U.S. Food and Drug Administration (FDA), and the Centers for Disease Control and Prevention (CDC) all play different roles in ensuring food safety in the US by holding businesses accountable.

A solid FSMS supported by industry-standard best practices helps ensure your organization has done its due diligence to comply with established requirements.

2 Consumer safety

The most direct reason that food safety management systems are important is because they ensure the safety of consumers. All other risks and benefits aside, businesses involved in the food production system exist to serve their communities by providing safe and healthy products. A good FSMS ensures that your company can deliver on its mission.

3 Greater production efficiency

The high degree of oversight involved in an FSMS has the benefit of improving production efficiency. Improved preventive maintenance of food production equipment, well-researched policies and procedures, and thorough staff training not only help maintain food safety standards but also improve uptime and efficiency.

4 Risk management

Food recalls and lawsuits are some of the most costly events a food production organization can experience. Simply having an FSMS and following it closely can drastically reduce the legal risk for a food production company. In addition, better adherence to hygiene practices and sanitation reduces contamination events and recalls.

5 Reputation management

An FSMS can not only help organizations avoid recalls and other incidents that may be catastrophic to their reputations but also publicly demonstrate their commitment to food safety and quality.

The foundation for food safety

Before implementing some of the more complex components of food safety management systems, organizations must have a good food safety foundation in place. The elements that make up this foundation are referred to as **prerequisites** and include the following:

- **Food safety plans:**

  The primary documentation of food safety activities taken during the manufacture, processing, packaging, and storage of food to minimize safety hazards.

- **Good Manufacturing Practices (GMPs):**

  Manufacturing practices that conform to guidelines established by food safety oversight agencies.

- **Good Agricultural Practices (GAP):**

  Oversight of agricultural practices that reduce the risk of microbial contamination of fruits, vegetables, and nuts.

- **Good Hygienic Practices (GHP):**

  Basic hygiene practices applied across the food production system that serve as the foundation for safe food handling.

- **Good Storage and Distribution Practices (GSP and GDP):**

  Protocols for the storage and distribution of food and drug products that ensure their safety and integrity.

- **Standard operating procedures (SOPs) and Sanitation Standard Operating Procedures (SSOPs):**

  Standard procedures for operations and sanitation that are specific to each organization and allow for internal accountability, consistency, and oversight.

- **Facility and equipment maintenance:**

  Consistent practices for the upkeep of the facility and equipment used in food production that ensure productivity and quality output.

- **Pest control:**

  Measures to prevent contamination from pests during food production, storage, and transportation processes.

- **Waste management:**

  Steps taken to remove waste from production environments and reduce the risk of pests, microbial growth, and other risks for contamination.

- **Allergen control:**

  Methods that ensure the accurate identification of potential allergens in the food supply chain.

Ensuring these basic food safety practices are in place provides the infrastructure for a comprehensive food safety management system that **properly accounts for and minimizes common hazards**.

Components of a successful food safety management system

Once the basic prerequisite programs are in place, organizations can integrate them into a comprehensive food safety management system. The FSMS must include a few key components to ensure successful implementation and ongoing effectiveness.

Food safety team

In order to ensure a food safety program is tailored specifically to the needs and functions of a particular business, it is important to assemble an internal team. This group of knowledgeable stakeholders will be responsible for establishing, implementing, and monitoring your FSMS.

By starting with an internal food safety team, you ensure that every aspect of your FSMS carefully considers your business's unique risks and hazards while leveraging the right strengths to mitigate them.

Hazard analysis and control frameworks & certifications

An established hazard analysis framework will provide the structure needed to systematically reduce risks within food production systems. Numerous approaches define well-researched standards for hazard analysis. Here are some of the most common:

- **Hazard Analysis Critical Control Points (HACCP):** The foundational method for numerous standards and certifications, this method relies on a strictly managed process for the identification of hazards and implementation of prevention controls.
- **Hazard Analysis and Risk-Based Preventive Controls (HARPC):** Considered an upgrade to HACCP, this method places additional emphasis on preventive control plans recommended by the FDA.
- **ISO 22000:** These guidelines were defined to establish a set of global standards for food safety based on the HACCP methodology.
- **FSCC 22000:** This certification builds off of ISO 22000 standards and includes additional requirements for food safety.
- **Safe Quality Food (SQF):** This institute provides an internationally recognized certification for food safety and quality and is also based on HACCP principles.

Monitoring infrastructure

Ensuring a clear monitoring infrastructure for food safety standards creates accountability within food production systems. No system will work without clearly defined areas of accountability. By building methods to monitor compliance with internal food safety practices, your organization is more likely to adhere to them consistently.

Recall and traceability

If and when contamination does occur, pulling products off the shelves and issuing recalls helps protect consumers. Organizations must have clear methods for tracing and recalling impacted products to minimize the fallout and impact on consumers.

Training

Food safety procedures are only effective if employees are trained in how to follow them. Proper training programs not only provide awareness of critical protocols and procedures, but they also include ongoing training to address updates to procedures and areas where compliance is lacking.

Key documentation

Similar to training programs, key documentation is critical for the visibility of the execution of food safety procedures. Posters, SOPs, logs, checklists, and documented hazard control plans provide a record of the organization's efforts. Ensuring all these documents are easily accessible to staff and consumers is a necessary part of any FSMS.
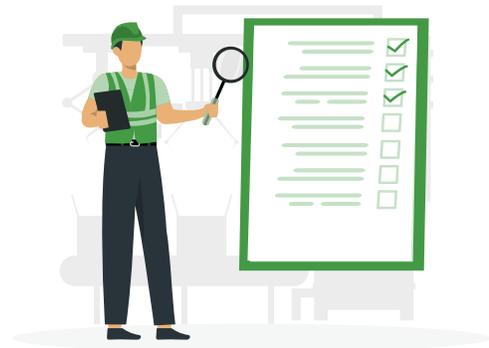
Steps for implementing an effective food safety management system

Step 1: Assemble a food safety team

Bring together a multidisciplinary group of internal stakeholders who can help guide your food safety management system. This team should include individuals from all areas of the business, including operations, maintenance, quality assurance, and more. This team will guide every aspect of your program and be responsible for monitoring, improving, and ensuring accountability for the program over time.

Step 2: Evaluate operations to determine the scope of FSMS

As with any major process implementation, the first step is to assess your organization's needs and define the scope of the project. This process will determine which products, business units, staff, and procedures must be involved in your FSMS.

Step 3: Develop food safety policies and goals

Food safety policies and goals will be the guiding documents that inform day-to-day safety procedures. They will outline areas of responsibility and program intent while establishing a commitment to maintaining food safety.

Step 4: Identify and implement a method for hazard analysis

HACCP is an important place to begin, but your organization may choose to apply a different method of hazard analysis depending on its needs. Conducting a hazard analysis is a significant step and will form the basis of your control plans.

Thoroughness is a critical component of this process and every part of an organization's operation must be considered, from procurement of raw materials to distribution of your final product.

Step 5: Establish hazard controls

By following the HACCP methodology, your team will have identified each potential hazard and evaluated it based on severity and likelihood. Using severity and likelihood as a guide, the team will then identify points in the production process where controls can be applied to prevent those hazards from occurring. These controls are then worked into day-to-day protocols and introduced through training to promote process compliance.

Step 6: Validate and verify hazard controls

Prior to implementation, your team must conduct research to validate the controls outlined in your hazard control plan. This ensures that any temperatures set or actions recommended to minimize hazards are likely to be effective.

After implementing some of your controls, it is then critical to verify that your controls are having the intended impact. For instance, measuring bacteria levels before and after storage, or testing pathogens on surfaces after cleaning can verify that your actions are indeed preventing contamination.

Step 7: Establish systems for record-keeping, tracing, and documentation

Once the primary components of the food safety management system have been outlined, organizations must ensure there is a sufficient documentation system in place for record-keeping. Thorough documentation of all activities outlined in FSMS policies and procedures helps minimize risk to the organization if contaminations occur, makes recalls and tracing easier, and can help identify root causes of contamination incidents.

Step 8: Establish a system for oversight, auditing, and corrective action

Every FSMS should include plans for systematic internal and external audits. Internally evaluating compliance with FSMS policies and procedures on a regular basis creates a mechanism for identifying opportunities to improve processes and training. Working with external agencies to audit also provides an objective level of oversight that is critical for identifying deep-seated deficiencies.

Once deficiencies or opportunities for improvement are identified by an audit, organizations must also have a clear process for corrective action. Documentation of audit findings and action plans including timelines, training, and policy updates make up a critical part of FSMS records.

How a CMMS supports effective food safety management systems

Implementing and running a food safety management system is a complicated undertaking, regardless of the size of the operation. The right tools can make all the difference.

With features that create accountability, CMMS software helps ensure all required maintenance activities are completed on time and in accordance with proper food safety protocols. The central repository of maintenance information also keeps histories and other documentation accessible, organized, and audit-ready.

CMMS software helps achieve this with four key characteristics that enable food safety compliance:

01 Easily accessible maintenance records and asset history for audits

03 Tools and reminders to ensure adherence to required policies and procedures

02 Easily accessible checklists and policies for staff

04 Reporting that supports internal auditing practices and protocol verification

Proper maintenance practices are critical to the success of food safety management systems. By strategically applying the right management tools, food production facilities can ease many stressors involved in implementing a comprehensive FSMS.

Want to see how Limble can support your maintenance and food safety systems?

> > Learn more at Limblecmms.com