

Quality Control of Raw materials and Finished products:

Quality control of incoming ingredients is crucial to predicting the quality of a finished feed. A large number of raw materials are considered for the production of cattle feed, based on their chemical composition and current price structure. The processing techniques, such as oil extraction, polishing etc., are the factors, which affect the composition of raw materials. Adulteration of raw materials is also quite common. It is, therefore, desirable to lay down specifications for purchase of standard raw materials and negotiate prices effectively. Sampling of material for analysis should be such that it represents the consignment. Otherwise, the entire purpose of quality control will be defeated. It may be noted that the quality of a cattle feed will be no better than the qualities of the individual ingredients used in the formula. Hence, it is essential to observe strict quality control measures for purchase of raw materials.

- 1.1 Sampling
- 1.2 Evaluation of feeds and feed ingredients for quality.

QUALITY CONTROL OF FINISHED PRODUCTS :

Nutrition, packaging, preservatives, quality control, sensory value, shelf life, toxins, vitamins .

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1. Introduction :

Quality of a finished food product is the most important indicator for the consumer. Finished products have to fulfill all requirements on quality. They should have the appropriate nutritive value, typical sensory characteristics, and above all, fulfill all requirements from a safety point of view. Consumer organizations are also engaged in the food control system and play an important role. For example, these organizations inform consumers about the results of quality comparative studies and draw attention to products that do not fulfill given quality requirements.

2. General Aspects of Quality Control of Finished Products :

It is without doubt that finished products must fulfill all criteria of food quality.

Therefore, such products are regularly controlled not only by the producers but also by state control laboratories. Products on the food market have to be safe and to match all quality criteria.



Food can be made functional by:

- Elimination of a component known or identified as causing a deleterious effect to the consumer (for example, an allergenic compound)
- Increasing the concentration of natural components in foods to reach a concentration able to induce the expected effects (e.g., fortification with vitamins to reach a daily intake higher than recommended but compatible with dietary guidelines for disease prevention), or to increase the concentration of a non-nutritive component for which data are available that it demonstrates beneficial effects (e.g., fiber)
- Adding a component not normally present in foods, but for which beneficial effects have been demonstrated (i.e. nonvitamin antioxidants or prebiotic fructans) .
- Replacing a component, usually a macronutrient, the intake of which is usually excessive and which, consequently, causes deleterious effects (for example, fats) with a component for which beneficial effects have been demonstrated (e.g., a fat replacement) .
- Improving bioavailability, or to modify food components for which beneficial effects have been demonstrated.

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Quality Assurance

What is Quality Assurance?

Quality Assurance (QA) is a set of activities used by food companies to ensure that the process by which products are developed and produced meets a set of standards and specifications. The goal of QA is to prevent defects with a focus on the process used to make the product.⁴ Tools commonly used in a QA program are process checklists, project audits, and developing standard operating procedures.¹²

Increased incidence of foodborne illnesses, large-scale outbreaks and the emergence of new foodborne pathogens and chemical hazards led to the need for food safety programs. Near the end of the 20th century, food had become industrialized. Agricultural production, mass production of food products, and an increase in the number of food service establishments were all important drivers of the increase in food safety incidents.

The Federal Meat Inspection Act (FMIA) of 1906 was the first to address food safety. Quality management systems later evolved under the ISO9000 standards from 1946 to today.

Though the first registration of the ISO900 standard occurred in 1991, it was 1994 before a food manufacturing company achieved registration. ISO 9001 is a management tool that, when integrated into a process, provides documentation and objective evidence to promote consistency throughout the entire operation while focusing on continuous improvement and meeting customers' needs and expectations.

On January 4, 2011, President Obama signed into law the FDA Food Safety Modernization Act (**FSMA**). This act focuses on preventing, rather than responding to, contamination outbreaks.

FDA compliance

The modern approach to food safety management requires participation from government public health and food control authorities.

They are responsible for the following:

- Foresee all infrastructures and public health services that are necessary for good food safety management, such as public health laboratories, water supply, and sanitation;
- Promulgate laws and regulations that give priority to public health but can also address other societal and environmental factors;

- Enforce legislation through the provision of advice to trade and the commercial sector, inspection and monitoring of food supply, and, where necessary, prosecution of offenders;
- Provide education to caregivers, consumers, travelers, health professionals, and the public at large

The FDA has established regulations for food safety under the Good Manufacturing Practice and Preventive Controls.⁶ Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Human Food can be found under 21 CFR part 117.⁵

Application

The goal of quality assurance is to establish a system that will reduce and eliminate defects and risks in food manufacturing. QA can be defined as all the planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a product or service will fulfill requirements for quality.⁴

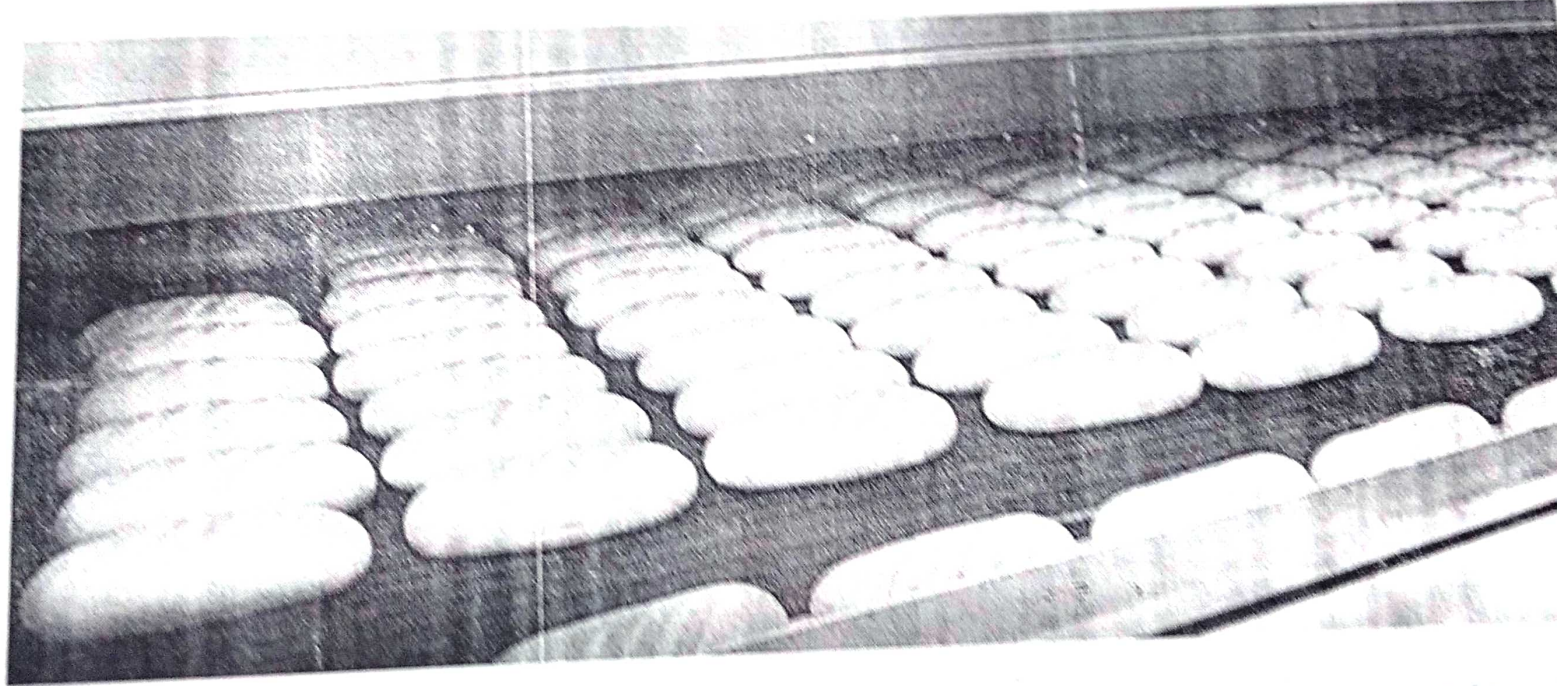
As new products and processes are developed, quality analysis is performed to determine best practices for food safety. A QA program would verify suppliers, co-manage plant trials from a safety perspective, oversee production activities for best safety practices, and establish quality control steps.

The following outline exemplifies a QA management program.⁷

- **Supplier Verification**
 - Allergen declaration
 - Certificate of Analysis (COA)
 - Raw material specifications
- **R&D Plant Trials**
 - Formula development
 - Rework use
 - Batch sheets
 - Finished product specifications

- **Production**
 - Statistical Process Controls (SPC)
 - HACCP
 - Good Manufacturing Practice (GMP)
- **Quality Control**
 - Non-conforming materials or products
 - Root cause analysis
 - Quality reference card
 - Metal detection monitoring

What Quality Controls Do You Have in Your Bakery?



Looking around the production floor of a bakery, there are many areas to increase safety and quality for products. Mold, pathogens, and food borne illnesses are just a few things bakers actively avoid. Taking steps to keep products and processes safe can also increase the overall quality and consistency of your baked goods.

As bakers, we know ovens provide a kill step against pathogens.^{2,5} Quality check points for raw materials, employee training, allergen controls, and finished product analysis can reduce the risk of

product recalls and ensure a safe and consistent finished product. Here are our top tips for bakery quality and safety:

- Quality check points for incoming raw materials
 - Magnets at the flour silo to remove metal objects in flour
 - Flour Screens for flour going into the mixer to remove foreign (non-metal) objects
 - Infestation or pest control checks on incoming bagged ingredients
 - X-ray sorting system for mixed seeds and grain blends
- Recording lot numbers of raw ingredients on every batch mixing sheet
- Training for employees on getting injured on the job.
- Using brightly colored gloves for different departments or allergens.
- Final metal detection after the packaging process.
- Trained QA personnel to watch for food safety issues.

Making it work

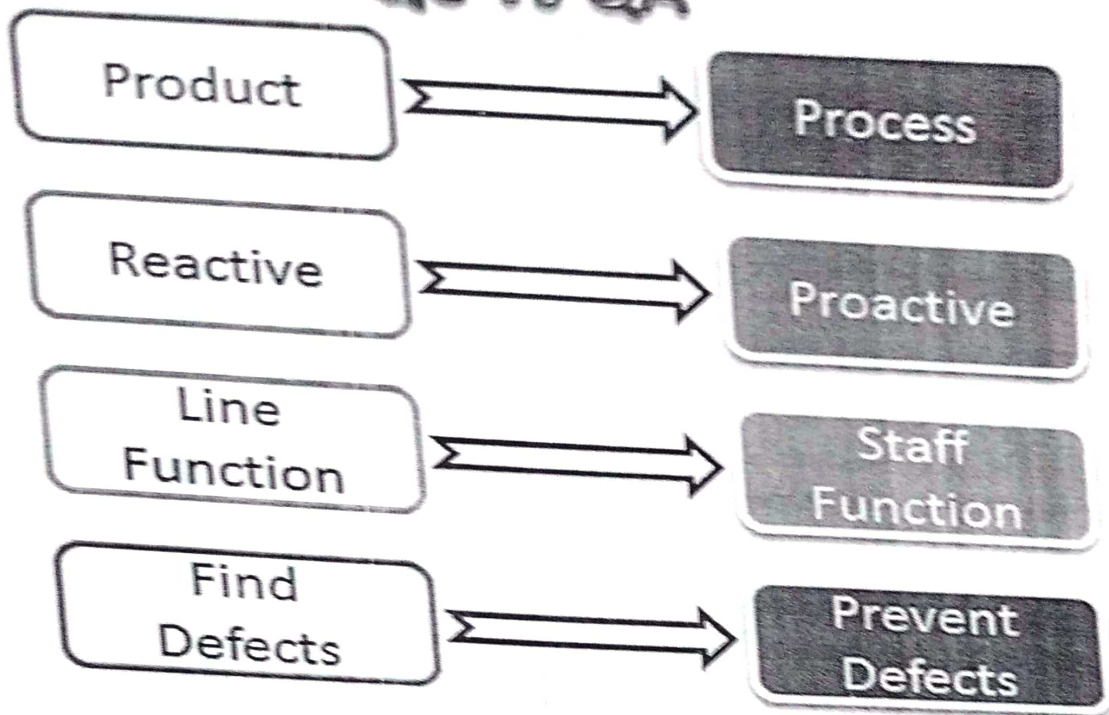
Regular training and updates for all staff will remind employees that safety and quality are part of the job. Bakeries with quality controls can improve product quality, drive business performance and supply chain efficiency and compliance with legislative requirements.

Product specifications and standard operating procedures (SOPs) should be implemented and understood by all employees. No matter the size of your bakery it is never too soon to implement quality control points that.

Difference between Quality Control and Quality Assurance?

Sometimes, QC is confused with the QA. Quality control is to examine the product or service and check for the result. Quality assurance is to examine the processes and make changes to the processes which led to the end-product.

QC Vs QA



Software quality assurance

Software quality assurance (SQA) consists of a means of monitoring the software engineering processes and methods used to ensure quality. The methods by which this is accomplished are many and varied, and may include ensuring conformance to one or more standards, such as ISO 9000 or a model such as CMMI.⁽¹¹⁾ It is a set of methods that try to ensure the quality of all projects in the software process. This includes standards and procedures that administrators may use to review and audit software products and activities to verify that the software meets standards. According to ISO/IEC 15504 ~~v.2.5 (SPICE)~~, it is a supporting process that has to provide the independent assurance in which all the work products, activities and processes comply with the predefined plans and ISO 15504. ~~(citation needed)~~

SQA encompasses the entire software development process including processes such as requirements definition, software

design, coding, source code control, code reviews, software configuration management, testing, release management, and product integration. It is organized into: goals, commitments, abilities, activities, measurements, and verification.

Purpose

- To ensure quality in a software product, an organization must have a three-prong approach to quality management:
 - Organization-wide policies, procedures and standards must be established.
 - Project-specific policies, procedures and standards must be tailored from the organization-wide templates.
 - Quality must be controlled; that is, the organization must ensure that the appropriate procedures are followed for each project.
- Standards exist to help an organization draft an appropriate software quality assurance plan.
 - ISO 9000-3 (original), now ISO 90003
 - ANSI/IEEE standards
- External entities can be contracted to verify that an organization is standard-compliant.

Activities

- Application technology to manage quality
 - Analysts use application technology to achieve high-quality specifications and designs
- Conducting formal technical reviews
 - Technicians find problems with related software quality through a series of meetings
- Testing strategy
 - To ensure effective error detection, technicians use the use case design method to test
- Enforcing standards

- Some standards that need to be followed and tested during implementation
- Controlling change
 - Applied during software development and maintenance
- Measurement
 - Track software quality and assess the ability of methodological and procedural changes to improve software quality
- Metrics and reporting mechanisms
 - SQA information needs to be collected and disseminated, this activity gives the procedures for it

The advantages include.

- After a rigorous and complete software quality audit, the software itself will be greatly reduced in that could have been avoided. vulnerabilities and risks, and the software will be more efficient. In addition, the quality of the software can be improved to avoid spending a lot of time on testing and maintaining the software. On some errors
- Through software quality control, customer satisfaction can be greatly improved, because most customers do not have a strong software professional background, they only need a reliable tool.
- Software maintenance is a large part of the development and use of the software, so improving software quality also means reducing maintenance costs.
- Not only is the maintenance cost reduced, but a reasonable software quality assurance strategy can also reduce the total life cycle of the software.

While the disadvantages:

- SQA is the whole process of software development, so it is a project that consumes manpower, time and money.
- Due to it has many standards and requires a lot of testing, there are certain requirements for the corresponding auxiliary programs.