



*"Do the right things right the first time, every time."*



## CONCEPTS OF QUALITY CONTROL, QUALITY ASSURANCE AND FOOD SAFETY

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# Quality and safety of dairy foods

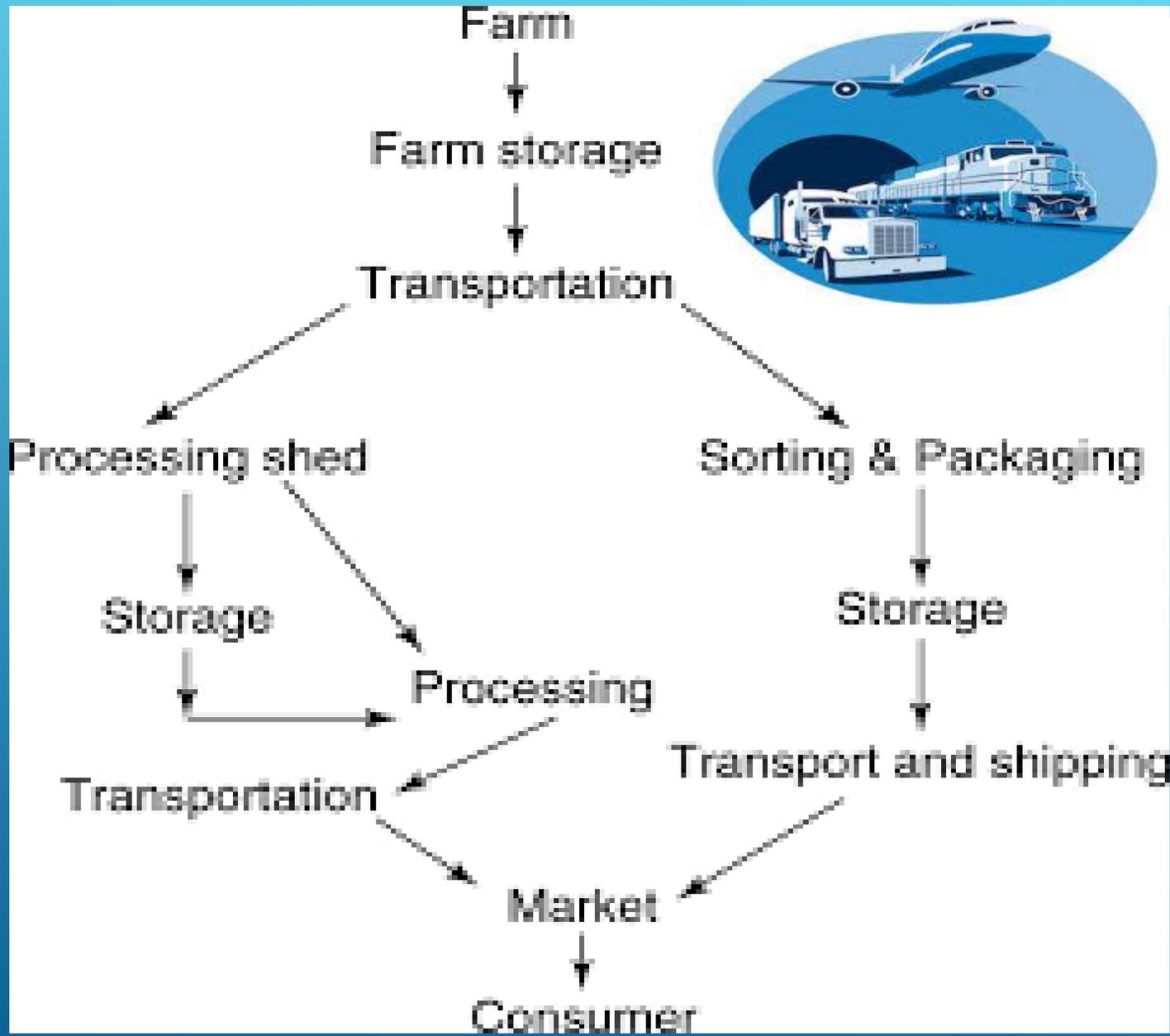
Food quality control is a mandatory regulatory activities of enforcement by national/International or local authorities to provide consumer protection and ensure that all foods during production, handling, storage, processing and distribution are safe, wholesome and fit for human consumption. At the same time, it must conforms to safety, fulfill quality requirements and are honestly & accurately labelled as per the standards / specifications prescribed in food laws.

Consumer movement across the globe has also increased in recent past and as a result export / import of food products has become more vulnerable in complying safety requirements of the consumers.

## The challenges for food control authorities include:

1. Increasing incidences of food borne illness and emergence of new food borne hazards
2. Rapid growth of advanced technologies in food production, processing and marketing
3. Application of science-based food control systems with a focus on consumer protection
4. Global increase in food trade and harmonization of food safety and quality standards
5. Changes in education standard awareness and lifestyles including rapid urbanization
6. Growing consumer awareness of food safety and quality issues and increasing demand for better information.





## WHAT IS QUALITY..?

- It is the degree to which a set of inherent characteristics fulfills requirements.
- “Fitness for use”
- Quality is excellence that is better than a minimum standard.
- “Conformance to requirements”
- The ability of product or service to satisfy

Quality control is the evaluation of a final product prior to its marketing, i.e. it is based on quality checks at the end of a production chain aiming at assigning the final product to quality categories such as "high quality", "regular quality", "low quality" and "non-marketable". Since, at the end of the production chain, there is no way to correct production failures or upgrade the quality of the final product, the low-quality products can only be sold at lower prices and the non-marketable products have to be discarded.

Quality control has only a limited potential to increase the quality and efficiency of a multi-step production procedure.

## Quality Assurance

“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”

Quality Assurance is a system for evaluating performance, service, of the quality of a product against system, standard or specified requirement for customers. Planned activity or systematic approach to provide adequate confidence of product and service.



**Quality System, Quality Assurance, and Quality Control Relationships**

## Quality Assurance

Quality assurance can be defined as "part of *quality management* focused on providing confidence that *quality requirements* will be fulfilled." The confidence provided by quality assurance is two fold—internally to management and externally to customers, government agencies, regulators, certifiers, and third parties. An alternate definition is "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."

## Quality Control

Quality control can be defined as "part of *quality management* focused on fulfilling *quality requirements*." While quality assurance relates to how a process is performed or how a product is made, quality control is more the inspection aspect of quality management. An alternate definition is "the operational techniques and activities used to fulfill requirements for quality."

# QUALITY ASSURANCE VS QUALITY CONTROL

## Quality assurance

1. A part of quality management focused on providing confidence that quality requirements will be fulfilled.

2. Planned and systematic activities implemented within the quality system provide confidence that a product or service will fulfill requirements for quality

3. Is a complete system to assure the quality of products or services.

## Quality control

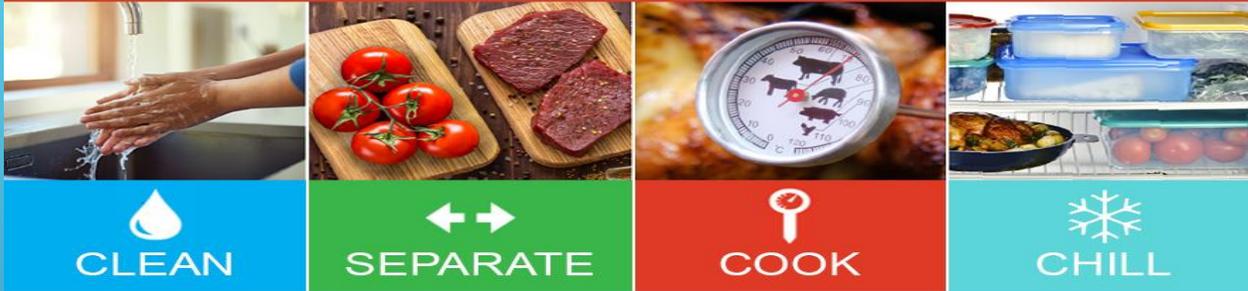
1. A part of quality management focused on fulfilling quality requirements.

2. The operational techniques and activities used to fulfill requirements for quality.

3. Quality Control just measures and determines the quality level of products or services. It is a process itself.

<b>Quality Control</b>	<b>Quality Assurance</b>
Product oriented	Process oriented
Reactive approach	Proactive approach
Corrective action	Preventive action
Focuses on testing for quality	Focuses on building in quality
Detects defects	Prevents defects
Meant for implementing the process developed by a team	Meant for developing and organizing the best quality process
Makes sure that the results of what you have done are what you expected	Makes sure that you are doing the right thing the right way

## 4 STEPS TO FOOD SAFETY



## Food safety



Food safety provides an assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. Safety is a component of quality.

Safety differs from many other quality attributes since it is a quality attribute that is difficult to observe. A product can appear to be of high quality, i.e. well colored, appetizing, flavorful, etc. and yet be unsafe because it is contaminated with undetected pathogenic organisms, toxic chemicals, or physical hazards. On the other hand, product that seems to lack many of the visible quality attributes can be safe.

Salmonella contagion of peanut butter in the US, melamine contamination of milk in China and high pesticide content of aerated drinks manufactured in India – has significantly enhanced the concern for food safety and its impact on health, marketing and foreign trade.

Protecting consumer health from food borne hazards has become a compelling duty for policy makers across the globe.

Specific concerns about food hazards have usually focused on:



1. Microbiological hazards;
2. Xenobiotic residues including synthetic (manmade) pesticides, drugs, antibiotics, plastics etc.
3. Misuse of food additives
4. Chemical contaminants, including biological toxin
5. Adulteration, artificial foods; and
6. Genetically modified organisms, allergens, veterinary drug residues, radio nucleides and growth promoting hormones which are used in the preparation of animal products



## Responsibilities of QA

- The QA department is responsible for ensuring that the quality policies adopted by a company are followed.
- It helps to identify and prepare the necessary SOPs related to the control of quality.
  - It must determine that the product meets all the applicable specifications and that it was manufactured according to the internal standards of GMP.
- QA also holds responsibility for quality monitoring or audit function.
- QA functions to assess operations continually and to advise and guide them towards full compliance with all applicable internal and external regulations.
- QC is responsible for the day-to-day control of quality within the company.
- This department is responsible for analytical testing of incoming raw materials and inspection of packaging components, including labelling.
- They conduct in-process testing when required, perform environmental monitoring, and inspect operations for compliance.
- They also conduct the required tests on finished dosage form.

## Control of Quality Variation 1. Raw material control

- Good raw material specifications must be written in precise terminology, must be complete, must provide specific details of test methods, type of instruments, and manner of sampling must be properly identified.
- Each raw material is sampled according to standard sampling procedures and is sent to the quality control laboratory for testing according to written procedures. If acceptable, it is moved to the release storage area, after being properly stickered to indicate the item no., material name, lot no., release date, re-assay date and sign of QA inspector.
- QA personnel should keep preservation samples of active raw materials that consists of at least twice the necessary quantity to perform all tests required, to determine whether the material meets the established specifications. Approved material should be rotated so that the oldest stock is used first. Raw materials may be classified into 2 groups:
  - Active or therapeutic
  - Inactive or inert

# In-process Items Control

- Conformance to compendial standards as the sole basis for judging the quality of a final dosage form can be grossly misleading. As the final dosage forms are produced in millions of units, the no. Of units assayed at the end is not likely to be representative of more than a small fraction of the actual production.
- The regulations emphasize environmental factors to minimize cross- contamination of products and errors, however, they do little to minimize within-batch and batch-to- batch variation. Therefore, it is important to follow a programme which help to ensure that the final products have uniform purity and quality.
- QA before start-up: - Environmental and microbiologic control and sanitation - Manufacturing Working Formula Procedures - Raw Materials - Manufacturing Equipment
- QA at start-up: - Raw Material Processing - Compounding - Packaging Materials Control - Labels Control - Finished Product Control



# Manufacturing Variation Control

- Monitoring environmental conditions under which products are manufactured/stored
- Monitoring of air and water systems to prevent contamination– Air Handling Units
- Monitoring of personnel
- Feedback and follow-up



<b>Stage</b>	<b>Activities contributing to increased/ decreased occurrence of the hazard</b>
Receiving of raw materials	Biological hazards in the raw material
Storage of raw materials (cold storage)	Microbial growth: insufficiently low temperature and time control will result in microbial growth
Processing	Contamination with biological hazards during storage (includes cross-contamination)
	Contamination via manual handling and personnel
	Contamination between raw and cooked/RTE products (includes cross-contamination)
Packaging	Microbial growth: insufficient temperature and time control will result in microbial growth
	Contamination between raw and cooked/RTE products (includes cross-contamination)
Selling	Microbial growth: insufficient temperature control will result in microbial growth
	Contamination to food products via handling and personnel, e.g. due to money exchange (includes cross-contamination)



**QUALITY**

*...is everyone's  
responsibility.*

(Deming, W. Edwards)

**Quality**

**Be Proud of the  
job you do.**



*Thank  
you*

