Centurion University

Importance of chemical quality control, quality assurance and total quality management in dairy industry

Soma Maji

Assistant Professor

Department of Dairy Technology

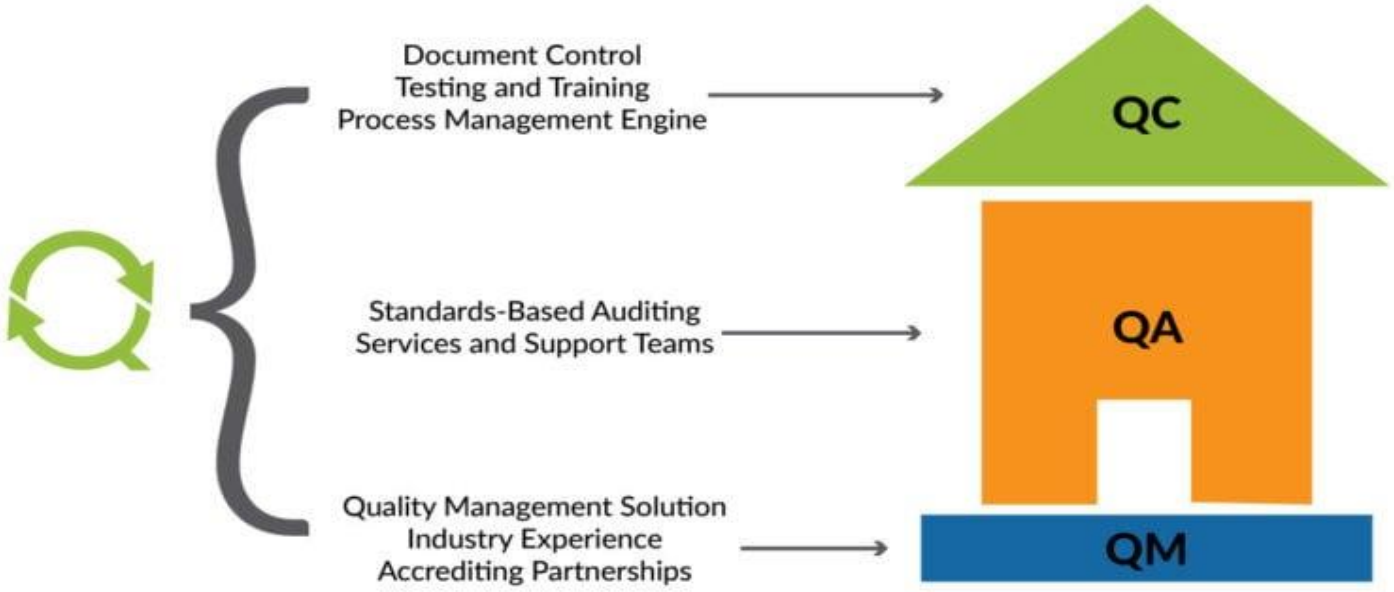
Why Quality for milk?

- Milk group contributes highest to the total output of the agricultural sector
- Rising liberalization of agro-industrial markets and the world-wide integration of food supply chains require new approaches and systems for assuring food safety.
- New hazards and concerns
- Increased consumer awareness
- Stricter regulatory frame works

- Hence, quality management tools like *Hazard analysis and critical control points (HACCP), ISO 22000:2005 - Food Safety Management Systems*, Six Sigma etc. are very much relevant in the present era of Globalization and aware consumers

Three terms..

- Quality control (QC)
- Quality assurance (QA)
- Total quality management (TQM)



Quality control

Definition:

It is the set of activities used to ensure that the products and services meet / fulfil the requirements for quality.

Traditionally Q.C is a laboratory function only and is related to analysis of samples i.e. testing and judging of raw materials/ and finished products for acceptance or rejection.

Purpose & aim

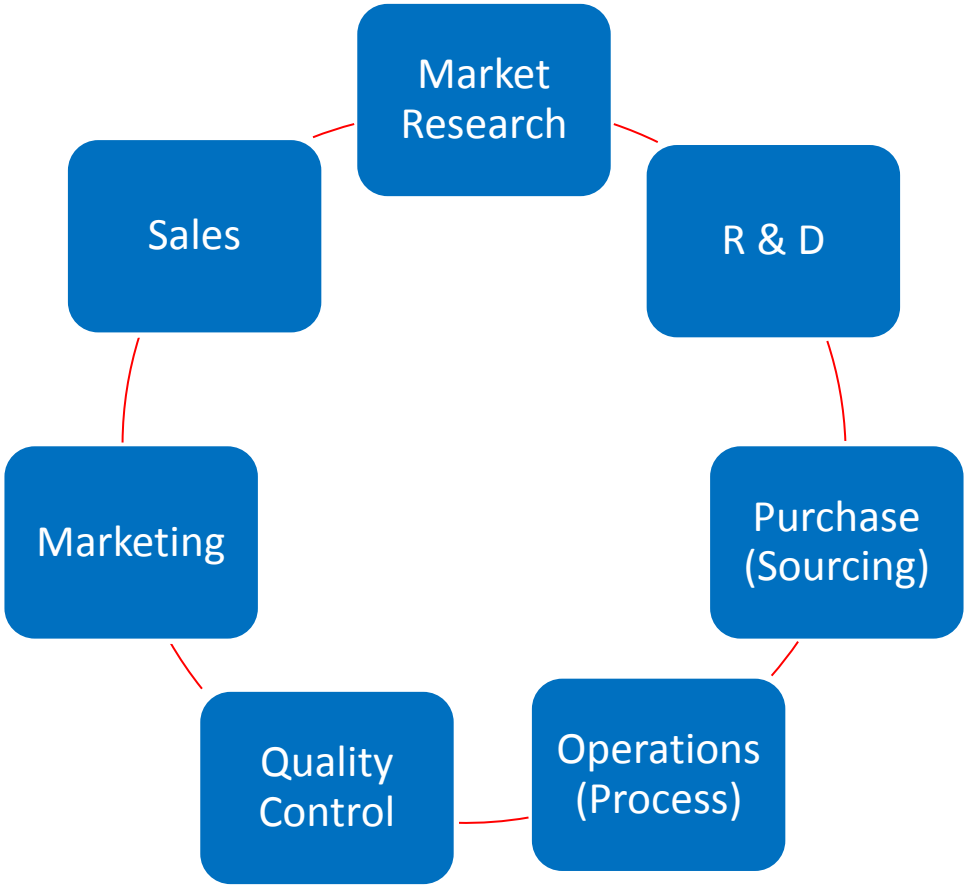
- To ensure that products are within the well defined and accepted standards thereby protecting the legal and health rights of consumers and financial interests of producers / manufacturers.

Limitations

- Recall of products is more because products are tested in the last stage or as finished products. This ultimately wears the impact on reputation of the company.

Total quality control (TQC)

- Quality cant not be achieved only by QC department
- Coordination and cooperation of all functions needed



- An integrated organizational approach to delight customers by meeting their expectations on a continuous basis through involvement of everyone in the organization.
- It helps in minimizing rejection and rework.

Responsibilities of QC Department

- Inspection of supplies and materials
- Inspection of raw products
- Scheduling of operations
- Measurement of production efficiency
- Measurement of equipment efficiency
- Inspection of the finished product
- Warehousing controls
- Shipping and storage controls
- Preparation of specifications and procedures in written handbook form
- Preparation of statistical procedures and schedules
- Sanitation inspections
- Conformance to local and federal regulations
- Waste disposal control

Quality Assurance (QA)

Definition:

It is the set of activities which ensures that the quality levels of products and services are properly maintained and that the supplier and customer quality issues are properly resolved.

Quality assurance gives adequate confidence that product or service will satisfy given requirements for quality.

Purpose/Aim

- **Internal purpose**

Within an organization QA provides confidence to the management.

- **External purpose**

Outside the organization provides confidence to consumers or others. Compared to QC, QA is much wider in the sense, it demands full control over the quality of raw materials, control over the process at different levels and control over distribution set up etc.

Notion is that “Prevention rather than Detection”. It is a proactive approach rather than a reactive approach.

Importance of Quality Assurance

- To maintain legal standards and legal requirements
- To fulfil customer's requirement in terms of various attributes
  - Physical (body, texture, colour, etc.)
  - Chemical composition
  - Microbiological
  - Safety
  - Consumers should get what they pay for
  - This leads to increased consumer satisfaction and less complaints
- To check adulteration in incoming material in order to prevent substandard product, hazards or problems in the process
- To check efficiency of processes: heating, cooling, removing hardness from water, effluent treatment etc.
- To safeguard nutritive value of milk and milk products
- To check wastage of material
- To help in research and developments
- To ensure general cleanliness and sanitation in factory premises

Benefits

- Reduction in unit cost of production
- Reduction in wastage and scrape
- Less complaints from customer
- Avoids repeated inspection
- Increases production since rejection reduces
- Efficiency of unit goes up
- Management gets proud place in society
- Boost employee's morale

Roll of Quality Assurance Department

1. Sanitation- defines requirements for cleaning and sanitary activity and their monitoring
2. Sanitation standard operating procedure (SSOP)
3. Standard operating procedure (SOP)
4. Good manufacturing practices (GMP)
5. Foreign material control
6. Quality control- Chemical and Microbiological testing
7. Documentation control
8. Pest control
9. Hazardous material control
10. Allergen Protocol for controlling allergenic material
11. Record control- identification and maintenance
12. Calibration
13. Water quality and water treatment programmes
14. Sensory training and sensory evaluation
15. Supplier certification and on going supplier evaluations

Roll of Quality Assurance Department

16. Receiving, storage and control of raw ingredients and packaging material
17. Handling customer's complaints
18. Labeling- application and control of labels
19. Preventive maintenance
20. Formalized management review process
21. Waste water (effluent treatment programme)
22. Training
23. Corrective/preventive action- root cause analysis and follow up evaluation to confirm effectiveness of action taken
24. Internal auditing

Difference between quality assurance and quality control

Quality Control	Quality Assurance
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

Total Quality Management (TQM)

Definition:

TQM may be defined as an integrated organizational approach in delighting customers by meeting their expectations on a continuous basis through everyone involved with the organization working on continuous improvement in all spheres namely-process, products and service along with proper problem solving methodology.

TQM is a journey- it is the path as well as the goal.

Basic principles of TQM

- **Be customer focused** – place the customer at the centre of everything you do
- **Do it right first time and every time-** quality first and always
- **Continuous improvement –** by using the tool of PDCA in every aspect of work
- **Communicate and educate**

  1. Improve communication means tell the people what is going on
  2. Educate- train the people and retain them

- **Measure and recorded**

  1. While finalizing the goals, the Quality indicators (measurements) should be finalized.
  2. Record the measures as per prescribed documentation
  3. It allows the company to make decisions based on facts, not opinion.

- **Do it together-** introduce team working

  1. Reduces conflict and in-fighting and increases trust and respect
  2. Bitting problems with wider range of skill – therefore better and more balance solution

Elements of TQM and Integrated TQM Model

The TQM model has three major area

1. Total Employee Involvement (TEI)

- Include- transformation, Kiazen (small improvement), Hoshin Kanri (Policy development), small group activity, etc.

2. Total Waste Elimination (TWE)

- Include the concept of segregation, arrangement, cleanliness, maintenance or standard and discipline for everything (men and material) i.e. house Keeping.
- Follow the principle of JIT (Just-In-Time), so minimum inventories are maintained.

3. Total Quality Control (TQC)

- Include – SQC, PDCA cycle, HACCP, QSM (ISO-9000)

Benefits of TQM

For customers

- Greater care
- Value for money
- Greater satisfaction
- Better availability
- Result in better customer loyalty.

For company (organization)

- Continuous improvement in quality
- Better motivated work force
- Defects are reduces
- Reduction in cost
- Increase in productivity
- Faster solution of problems
- Result in increased cash flow and net profit

For employees

- Empowerment
- More respect
- More training and better skill
- Appreciation and recognition
- Work satisfaction

Related theory…

Deming's Philosophy:

Adward Deming proposed his concept of quality assurance.

According to which, it involves both process monitoring and eliminating the causes of unsatisfactory performance at all stages.

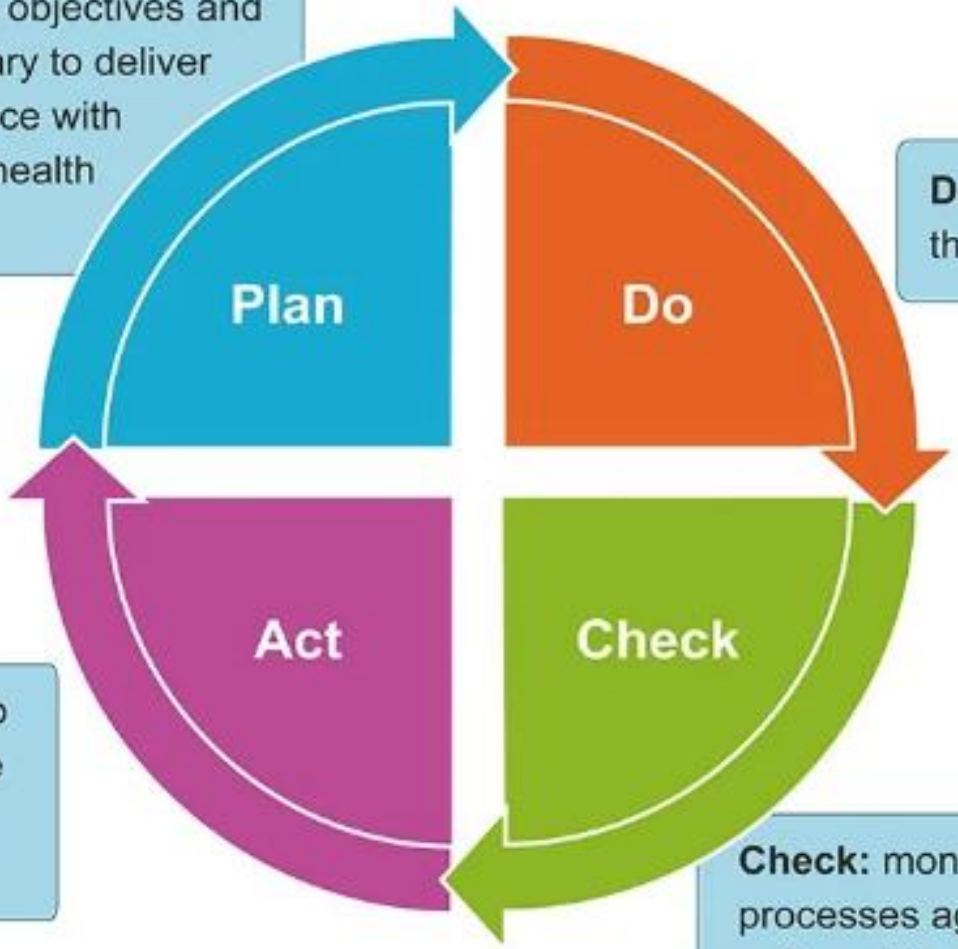
- It is the name given to entire cycle of activities through which the fitness for use of process, product or service is achieved, with a view to carry out a company's quality function in accordance with the laid down quality objective and policies.

It has divided quality control into four activities i.e.

1) Plan
2) Do
3) Check and
4) Act.

Which is known as Deming's PDCA cycle/wheel.

Plan: establish the objectives and processes necessary to deliver results in accordance with the organisation's health and safety policy.



Do: implement the process.

Act: take actions to continually improve health and safety performance.

Check: monitor and measure processes against health and safety policy, objectives, legal and other requirements, report the results.

Thank You


QUALITY
brand
verification
guaranty
DESIGN
inspection
merchandise
management
engine
analysis
price
Requirements
warranty
customers
zero Defects
improvem
success