THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212

Popular Article

April, 2025 Vol.5(4), 6871-6873

Establishment of Food Safety System in Milk Processing Plant

Shekhar R Badhe, Kishor Rathod, Mayur Pawshe, Alka Sawarkar, Sujit Kolanghat
Department of Livestock Products Technology
Nagpur Veterinary College, Nagpur
DOI:10.5281/ScienceWorld.15411043

Establishing a **food safety system** in a milk processing plant is crucial to ensure the production of **safe, high-quality** dairy products that comply with food safety regulations. Below is a structured approach to implementing a **comprehensive food safety system** in a milk processing plant:

1.Regulatory Compliance & Standards

- Follow **FSSAI (Food Safety and Standards Authority of India)** guidelines.
- Comply with **Codex Alimentarius, ISO 22000, and HACCP** principles.
- Adhere to **Good Manufacturing Practices (GMP) and Good Hygiene Practices (GHP).**

2. Facility Design & Infrastructure

- **Location & Layout:** Ensure a **hygienic, contamination-free** environment.
- **Zoning:** Separate raw milk, processing, and packaging areas.
- **Ventilation & Drainage:** Proper air circulation and wastewater management.

3. Implementation of HACCP (Hazard Analysis and Critical Control Points)

1. **Conduct Hazard Analysis:** Identify **biological, chemical, and physical hazards** in milk processing.
2. **Determine Critical Control Points (CCPs):** Example:
    - Pasteurization temperature & time
    - Storage conditions (temperature, humidity)
    - Sanitation of equipment
3. **Set Critical Limits:** Example:
    - Pasteurization: **72°C for 15 sec (HTST)**
    - Storage temp: **Below 4°C**

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com

Published 30/04/2025

-

4. **Monitor CCPs:** Use **automated sensors, records, and logs**.
5. **Corrective Actions:** Example:
   - If pasteurization fails, milk should be **reprocessed or discarded**.
6. **Verification & Validation:** Regular **testing (microbiological, chemical analysis)**.
7. **Record Keeping & Documentation:** Maintain logs of **cleaning schedules, batch reports, and audits**.

4. Quality Control & Microbial Testing

- Conduct routine testing for:
  - Total Plate Count (TPC)
  - Coliforms & E. coli
  - Antibiotic residues
  - Aflatoxins
  - Adulterants (starch, urea, detergent, etc.

5. Personal Hygiene & Training

- Train workers in GMP, hygiene, and sanitation.
- Enforce use of gloves, masks, hairnets, and clean uniforms.
- Implement handwashing & sanitation protocols.

6. Cleaning & Sanitation (CIP – Clean-in-Place)

- Use hot water (80-85°C), alkaline & acidic detergents.
- Implement daily cleaning schedules for tanks, pipelines, and equipment.

7. Traceability & Recall System

- Batch-wise tracking of raw milk to finished product.
- Recall procedures in case of contamination.
- Maintain supplier audits and records.

8. Waste Management & Environmental Safety

- Proper disposal of wastewater, sludge, and packaging waste.
- Use of biogas plants or effluent treatment plants (ETP)

9. Internal & External Audits

- Regular self-inspections and third-party audits.
- Review food safety protocols and improve based on audit findings.
-

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 30/04/2025

10. Customer Complaints & Continuous Improvement

- Set up a customer feedback system.
- Address complaints and make data-driven improvements.

Conclusion

Establishing a food safety system in a milk processing plant is essential to ensuring the production of safe, high-quality dairy products that comply with food safety regulations. By implementing regulatory standards, HACCP principles, quality control measures, and strict hygiene protocols, dairy plants can effectively minimize risks associated with contamination and ensure consumer safety. Regular monitoring, audits, and continuous improvement play a vital role in maintaining food safety standards. Additionally, proper facility design, sanitation practices, traceability systems, and waste management contribute to sustainable and responsible dairy processing. By following a comprehensive food safety approach, a milk processing plant can build consumer trust, enhance product quality, and ensure long-term business success in the dairy industry.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 30/04/2025