Quality Control in Chemical Manufacturing Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Quality Control in Chemical Manufacturing Training Course is designed to equip professionals with advanced knowledge and practical skills required to maintain product quality, regulatory compliance, process consistency, and operational excellence across chemical manufacturing environments. As the chemical industry embraces Industry 4.0, digital quality management systems (QMS), predictive analytics, smart manufacturing, and data-driven quality assurance, organizations require skilled personnel capable of implementing robust quality control frameworks that minimize defects, reduce production risks, and enhance customer satisfaction. This course provides participants with a comprehensive understanding of quality standards, laboratory testing methodologies, process validation, statistical quality control, and regulatory requirements applicable to modern chemical production facilities.

In today's highly regulated and competitive marketplace, chemical manufacturers must ensure compliance with ISO 9001, GMP, Six Sigma, Lean Manufacturing, Environmental Health & Safety (EHS), sustainability standards, and risk-based quality management practices. Through real-world case studies, hands-on exercises, and industry best practices, participants will learn how to establish effective quality control systems, optimize testing procedures, manage non-conformities, conduct root cause analysis, and leverage emerging technologies for continuous improvement. The program emphasizes practical applications that support operational efficiency, product integrity, regulatory compliance, and business competitiveness.

Programme Curriculum

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Course Duration

5 days

Course Objectives

Upon completion of this training, participants will be able to:

1. Understand modern Quality Control (QC) principles in chemical manufacturing.
2. Implement ISO 9001 Quality Management Systems (QMS) effectively.
3. Apply Statistical Process Control (SPC) for process optimization.
4. Utilize Six Sigma methodologies to reduce process variation and defects.
5. Conduct effective Root Cause Analysis (RCA) and corrective actions.
6. Manage laboratory testing and analytical quality assurance programs.
7. Ensure compliance with GMP, REACH, OSHA, and regulatory standards.
8. Apply risk-based quality management techniques in production operations.
9. Utilize digital quality management systems (eQMS) and quality analytics.
10. Improve product consistency through process validation and verification.
11. Implement continuous improvement and Lean Manufacturing initiatives.
12. Monitor key quality metrics using real-time quality dashboards and KPI tracking.
13. Develop quality culture strategies supporting operational excellence and sustainability.

Target Audience

1. Quality Control Officers
2. Quality Assurance Managers
3. Chemical Plant Supervisors
4. Production Managers
5. Laboratory Analysts and Chemists
6. Process Engineers
7. Regulatory Compliance Professionals
8. Operations and Manufacturing Managers

Course Modules

Module 1: Fundamentals of Quality Control in Chemical Manufacturing

- Principles of quality management and quality control
- Quality standards in chemical industries
- Quality planning and quality assurance integration
- Cost of quality and defect prevention
- Building a quality-focused organizational culture
- **Case Study:** Implementing a quality control framework in a specialty chemicals manufacturing plant.

Module 2: Quality Management Systems (QMS) and ISO Compliance

- ISO 9001 requirements and implementation
- Documentation and record management systems
- Internal audits and compliance assessments
- CAPA (Corrective and Preventive Actions)
- Quality policy and continuous improvement practices
- **Case Study:** ISO 9001 certification journey of a global chemical manufacturing company.

Module 3: Laboratory Quality Control and Analytical Testing

- Chemical testing methodologies and validation
- Instrument calibration and maintenance
- Sampling procedures and laboratory best practices
- Measurement uncertainty and data integrity
- Laboratory accreditation requirements
- **Case Study:** Improving laboratory accuracy through calibration and validation programs.

Module 4: Statistical Process Control (SPC) and Data Analytics

- Control charts and process capability analysis
- Process variation monitoring
- Statistical quality tools and techniques
- Data-driven decision making
- Quality performance dashboards and KPIs
- **Case Study:** Reducing production variability using SPC in a chemical processing facility.

Module 5: Process Validation and Manufacturing Excellence

- Process qualification and validation strategies
- Critical process parameters (CPPs)
- Process monitoring systems
- Batch consistency and product integrity
- Continuous process verification
- **Case Study:** Validation of a high-volume chemical production process to improve yield and consistency.

Module 6: Regulatory Compliance and Risk Management

- GMP requirements in chemical manufacturing
- Environmental and safety compliance standards
- Risk assessment methodologies
- Hazard identification and mitigation
- Regulatory inspections and preparedness

- **Case Study:** Managing regulatory compliance during a major facility audit.

Module 7: Root Cause Analysis and Continuous Improvement

- Problem-solving methodologies
- Fishbone diagrams and 5-Why analysis
- Failure Mode and Effects Analysis (FMEA)
- Corrective and preventive action systems
- Continuous improvement frameworks
- **Case Study:** Eliminating recurring product defects through root cause analysis.

Module 8: Digital Transformation and Future Trends in Quality Control

- Smart manufacturing and Industry 4.0 applications
- Digital Quality Management Systems (eQMS)
- Artificial Intelligence in quality monitoring
- Predictive quality analytics
- Sustainability and ESG-driven quality initiatives
- **Case Study:** Implementing AI-powered predictive quality systems in a chemical manufacturing plant.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com