



Good Jobs Challenge

Advanced Pharmaceutical Manufacturing and Biotechnology Occupational Profiles



This document is a draft based on labor market information and has not yet been employer-validated.

Table of Contents

- 2** Introduction
- 4** Quality Control Associate
- 10** Quality Assurance Technician
- 17** Chemist
- 23** Packing & Shipping Technician
- 27** Manufacturing Technician
- 38** Biotechnology Laboratory Technician

Introduction

Competency General Functions

For each occupational profile, relevant 'General Functions' were selected from the functions table based on information gathered from the listed sources. This alignment clarifies what a person should know and be able to do to meet job requirements.

The function/competency alignment in the table below can be used in several ways:

- To provide competency information to a job seeker
- To build a more robust competency-based job description
- To assess readiness for the job
- To assess current training needs/upskilling
- To align job competencies with learning outcomes found in educational and training programs and with credentials associated with those programs.

Competency Statements

Competency statements describe the knowledge, skills, and abilities that a worker must demonstrate to perform effectively in a role. Each statement is written in clear, action-oriented language that answers the question, "What must someone be able to do to succeed in this occupation?"

In occupational profiles, competencies:

- Cover industry and occupation-specific technical competencies (knowledge and abilities tied to pharmaceutical manufacturing and the specific requirements of this role).
- Are organized under functions which represent the major areas of responsibility for the role.
- Provide a shared language that can be used by employers, educators, and workers to align hiring, training, and career progression.
- Build on multiple sources of evidence (labor market data, industry input, job analysis, existing frameworks).
- Serve as a foundation for validation from employers confirming, refining, and prioritizing them.

Broad Functions	Related Support Functions (examples)
Design, Product Development, Reading and Interpretation	Mechanical, Electrical, Software and Industrial, Aesthetics, Ergonomics, User Interfaces, Blueprint, Schematics, Manuals
Customer/Client/Patient/Partner Relationships and or Services	Networking, Customer Service, Customer/Patient Care, Partner Development
Equipment	Acquisition, Handling, Installation, Maintenance and Repair, Operation
Facilities Management	Personnel/Customer Support, Space Utilization, Process Management (e.g. Emergency Protocol), Upkeep and Improvement, Technology Integration
Financial Management	
Information Communication/Data Management	Database Management Systems, Database Development, Hardware and Software Installation, Hardware and Software Maintenance, Web Hosting, Privacy and Data Protection
Marketing/Sales	Prospecting/Networking, Product Knowledge, Data Analysis, Upselling and Cross-selling, Negotiating, Relationship Building
Operations/Organizational Management	Cross Walks with Information Management Systems, Production, Product Design, Quality Control, Supply Chain Management, Operational Management
Production	Automation/Robotics, Product Life Cycle Management, Modeling, Simulation, Virtual Prototyping, Quality Control
Project Management	Activity/Resource Planning, Team Organization, Team Motivation, Time Management, Budget Development, Cost Estimation, Customer Satisfaction, Risk Management, Progress Monitoring, Reports and Records
Quality Management	Policy, Planning, Assurance, Control, Improvement.
Safety	Personal (PPE), Facility, Equipment, Product, Personnel, Customer, Patient
Security	Cyber, Data, Personal, Facility, Personnel
Supply Chain Management/Distribution (Intake, Process, Retrieval)/Logistics	Automation, Transportation, Warehousing, Storage and Retrieval Systems, Programmable Logic Controllers, Radio Frequency Identification, Sensors, Scanners, Robotics
Record Keeping	Collect, Store, Extract, Process and Maintain Information, Search and Retrieve Files, Maintain Privacy
Regulation and Policies, Procedures Protocols	Federal, State, Local, Organizational, Departmental, Licensing, Procedural
Talent Management/Personnel	Staff, HR Systems, Training, Development
Troubleshooting/Analysis/Risk Management	Laboratory, Specimen, Data, Diagnosis

Quality Control Associate

Sources

Health & Science Career Hub North East (UK), Biotech Careers, Haleon Pharmaceutical

Associated Credentials

ASQ – Pharmaceutical GMP Professional Certification CPGP; ASQ – Certified Quality Auditor; Bachelor’s degree – Chemist / Biology/ Other related science fields; International Association for Six Sigma Certification (IASSC) – Lean Six Sigma Green Belt; IASSC – Lean Six Sigma Black Belt

Related Job Titles

Quality Control Auditors, Quality Control Technician, Junior Quality Control Analyst

Function	Competencies
<p style="text-align: center;">Equipment</p>	Prepares reagents and standards using Class A volumetric glassware, calibrated pipettes, and sensitive balances to maintain analytical precision.
	Maintains equipment files and PPM database entries to support audit readiness and operational continuity.
	Uses validated laboratory equipment (e.g., HPLC, FTIR, refractometer) according to SOPs to ensure data accuracy.
	Washes and prepares laboratory glassware and testing kits to maintain test reliability.
	Prepares incubators and other lab devices for environmental testing processes.
<p style="text-align: center;">Operations/Organizational Management</p>	Engages with cross-functional teams to align on quality objectives and promote shared accountability for regulatory compliance.
	Rotates through various laboratory and production testing roles to ensure operational flexibility and process understanding.

	Collaborates with team members to enhance skills and promote a culture of shared learning and continuous improvement.
	Adheres to NHS shift models, including 9-5 and 7-day working, to support consistent service delivery across multiple sites.
	Supports safe and effective medicine supply by validating product quality in aseptic and production units for complex or critically ill patients.
	Supports aseptic and production units by delivering validated test results that confirm product safety and suitability.
Quality Management	Assists in analytical method development, validation, and transfer to improve testing accuracy and support new product onboarding.
	Tests raw materials, packaging components, and finished products following Standard Operating Procedures (SOPs) to confirm fitness for release.
	Performs quality inspections throughout multiple manufacturing stages to ensure consistency in product performance.
	Inspects incoming equipment parts from suppliers to verify conformance with quality specifications.
	Operates test instrumentation and computer-based systems to execute chemical testing and data monitoring activities.
	Undertakes container testing using QC specifications and worksheets to confirm packaging integrity.
	Verifies cleanliness of the sterility testing cleanrooms through environmental monitoring.

	Assesses QC test results for validity by reviewing all relevant factors to ensure clinical reliability.
	Participates in maintaining the Quality Control laboratory's Quality Management System to support compliance with GMP and patient safety.
	Undertakes analysis using validated methods such as HPLC, FTIR, auto titrators, pH meters, and other analytical instruments to evaluate product quality.
	Performs stability testing to determine product shelf life and ensure safe expiry dates.
	Performs chemical and microbiological tests on medicines and materials to verify safety for patient use.
	Performs microbiological testing using settle plates, contact plates, and other growth media to validate sterility.
	Tests raw materials for identity and quality to confirm they meet required standards and come from approved suppliers.
	Conducts chemical stability studies on products to verify that they remain suitable for patient use over time.
	Assesses the manufacturing environment to ensure it meets pharmaceutical-grade standards.
	Carries out chemical and microbiological testing on raw materials and finished products using Standard Operating Procedures (SOPs) to confirm fitness for patient use.
	Verifies that products from aseptic and production units are sterile and compliant before reaching patients.
Record Keeping	Evaluates and interprets analytical test results to identify trends, anomalies, and ensure result accuracy.

	Uses Laboratory Information Management Systems (LIMS) to track and monitor testing data in accordance with data integrity standards.
	Writes inspection procedures, checklists, and result documentation to maintain accurate and current records.
	Updates quality control documentation based on testing results or procedural changes to ensure version control and compliance.
	Documents results from all investigations, including out-of-specifications, deviations, and change controls, to ensure traceability and compliance.
	Ensures all GMP documentation is completed, stored, and maintained according to regulatory requirements.
	Logs all samples received by the QC laboratory to ensure accurate traceability.
	Examines microbiological media after incubation and records results according to laboratory standards.
	Collates test data and generates reports for submission to the QC Laboratory Manager.
Regulation and Policies, Procedures, Protocols	Drives continuous improvement initiatives to enhance inspection readiness and overall quality system performance in a cGxP environment.
	Applies working knowledge of current Good Manufacturing Practices (cGMP) to all testing and documentation procedures.
Safety	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.

	Maintains clean and organized work areas and follow safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.
	Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.
	Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.
	Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.
	Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.
<p style="text-align: center;">Supply Chain Management/Distribution (Intake, Process, Retrieval)/Logistics</p>	Maintains laboratory stocks of chemicals and reagents to ensure uninterrupted QC operations.
	Undertakes sampling of booked-in raw materials for QC testing to ensure proper intake controls.
	Monitors stock levels of chemicals, filters, syringes, gloves, and other consumables to support uninterrupted testing operations.
<p style="text-align: center;">Troubleshooting/Analysis/Risk Management</p>	Troubleshoots analytical test methods and laboratory instrumentation to resolve technical issues and maintain test continuity.
	Executes testing protocols and evaluates results for non-routine analyses to support technical investigations.
	Investigates product or process deviations to identify causes and recommend resolutions.
	Analyzes test results and system trends to proactively detect potential quality issues.

	Takes initiative to resolve production-related quality problems that affect product safety or performance.
	Identifies microbial growth or anomalies during incubation and testing to flag potential contamination risks.
	Carries out investigations into out-of-specification results, deviations, and change controls to identify root causes and support corrective actions.
	Monitors temperature logs and reports excursions immediately to mitigate risk to sample stability.
	Escalates abnormal results or deviations to Quality Assurance for investigation and corrective action.

Quality Assurance Technician

Sources

Health & Science Career Hub North East (UK), Biotech Careers, The Northeast Biomanufacturing Center and Collaborative (NBC2), Phlow Corporation, Civica Rx, Haleon Pharmaceuticals

Associated Credentials

American Society for Quality (ASQ) – Pharmaceutical GMP Professional Certification CPGP; ASQ – Certified Quality Auditor; International Association for Six Sigma Certification (IASSC) – Lean Six Sigma Green Belt; IASSC – Lean Six Sigma Black Belt

Related Job Titles

Quality Control Auditors, Quality Control Associate, Junior Quality Control Analyst, Quality Assurance and Compliance

Function	Competencies
Customer/Client/Patient/Partner Relationships and or Services	Performs customer qualification and bonafides to validate legitimacy of distribution partners.
	Assists in managing product returns, delegated RP/RPI checks, and distribution-related quality issues to safeguard product integrity.
Operations/Organizational Management	Supports 3rd-party contractor oversight to ensure external operations meet quality expectations and regulatory compliance.
	Supports real-time deviation response and cross-functional investigations to reduce production impact and enhance quality assurance.
	Engages with cross-functional teams to align on quality objectives and promote shared accountability for regulatory compliance.
	Follows designated shift patterns, including extended or weekend schedules, to maintain continuous quality operations across manufacturing or clinical sites.

	Provides QA oversight during manufacturing to monitor batch record execution and ensure regulatory compliance.
	Collaborates with team members to enhance skills and promote a culture of shared learning and continuous improvement.
	Escalates significant GMP or HSE issues to appropriate authorities to ensure timely risk mitigation and regulatory adherence.
	Rotates through various laboratory and production testing roles to ensure operational flexibility and process understanding.
	Supports safe and effective medicine supply by validating product quality in aseptic and production units for complex or critically ill patients.
	Delivers GMP-compliant quality training to operations staff to promote regulatory adherence and process consistency.
	Supports aseptic and production units by delivering validated test results that confirm product safety and suitability.
	Manages a team of quality professionals, including individual contributors and managers, to ensure aligned execution of QA and compliance activities.
Quality Management	Evaluates batch records and supporting data to authorize timely product release in alignment with GMP and corporate standards.
	Compiles Product Quality Reviews (PQRs) to monitor long-term quality trends and highlight areas needing improvement.
	Coordinates New Product Introduction (NPI) efforts to integrate QA requirements during product launch.

	Performs microbiological testing using settle plates, contact plates, and growth media to confirm sterility.
	Conducts stability studies to verify shelf life and confirm products remain safe for patient use over time.
	Monitors cleanroom environments through environmental sampling to verify compliance with sterility standards.
	Executes chemical and microbiological testing on raw materials, packaging, and finished products using SOPs to confirm they meet quality standards.
	Operates validated instruments (e.g., HPLC, FTIR, pH meters) to analyze product quality per test protocols.
	Interprets test results to confirm accuracy and clinical relevance, ensuring reliable decision-making.
	Inspects containers using QC specifications and worksheets to verify packaging integrity.
	Audits in-process materials and stages to confirm consistent product performance during manufacturing.
	Evaluates manufacturing and cleanroom conditions to ensure pharmaceutical-grade standards are upheld.
	Manages the validation documentation lifecycle for equipment, processes, and systems to maintain regulatory compliance.
	Develops and transfers analytical methods to improve accuracy and support new product testing.

Record Keeping	Documents results from all investigations, including out-of-specifications, deviations, and change controls, to ensure traceability and compliance.
	Updates quality control documentation based on testing results or procedural changes to ensure version control and compliance.
	Maintains documentation of complaint investigations, trending analysis, and resolution timelines to support continuous improvement.
	Uses Laboratory Information Management Systems (LIMS) to track and monitor testing data in accordance with data integrity standards.
	Examines microbiological media after incubation and records results according to laboratory standards.
	Supports the creation, review, and maintenance of quality system records to ensure data integrity and audit readiness.
	Maintains accurate validation documentation to support lifecycle traceability across systems and processes.
	Ensures all GMP documentation is completed, stored, and maintained according to regulatory requirements.
	Oversees site documentation systems to ensure controlled management of SOPs, forms, protocols, and reports.
	Provides weekly and monthly quality system metrics to maintain visibility into compliance status across key functions.
	Collates test data and generates reports for submission to the QC Laboratory Manager.

	Evaluates and interprets analytical test results to identify trends, anomalies, and ensure result accuracy.
	Writes inspection procedures, checklists, and result documentation to maintain accurate and current records.
	Logs all samples received by the QC laboratory to ensure accurate traceability.
Regulation and Policies, Procedures, Protocols	Reviews and supports approval of Technical Terms of Supply or Quality Agreements to ensure external quality expectations are clearly defined.
	Assesses and updates quality documentation to maintain alignment with current regulations and company policies.
	Supports implementation of Quality Management System (QMS) strategies to ensure compliance with employer standards and regulatory frameworks.
	Ensures validation activities meet FDA, ICH, and global quality guidelines through regulatory-aligned planning and oversight.
	Applies working knowledge of current Good Manufacturing Practices (cGMP) to all testing and documentation procedures.
	Drives continuous improvement initiatives to enhance inspection readiness and overall quality system performance in a cGxP environment.
	Authors, reviews, and approves batch records, SOPs, and related documentation to ensure alignment with cGMP and regulatory expectations.
	Assesses regulatory bulletins and implements corrective actions to maintain compliance with emerging quality expectations.

	Coordinates Change Control processes and chairs the Change Control Committee to ensure quality impact is managed.
	Conducts gap analyses and risk assessments on quality system policies to identify compliance issues and define corrective actions.
Safety	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.
	Maintains clean and organized work areas and follow safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.
	Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.
	Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.
	Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.
	Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.
Supply Chain/Equipment	Manages inventory of laboratory materials using standard stock control methods to maintain operational efficiency and ensure test readiness.
Talent Management/Personnel	Designs and maintains compliance-focused training programs to support quality system understanding and inspection readiness.

	<p>Assigns and monitors compliance training through training matrices and curricula to ensure role-based knowledge is maintained.</p>
	<p>Tracks training KPIs and supports action planning to address gaps in personnel qualification.</p>
	<p>Partners with SOP owners and SMEs to ensure training content aligns with policy and regulatory expectations.</p>
<p>Troubleshooting/Analysis/Risk Management</p>	<p>Leads or participates in quality risk assessments to proactively identify and mitigate process and compliance issues.</p>
	<p>Identifies microbial growth or anomalies during incubation and testing to flag potential contamination risks.</p>
	<p>Carries out investigations into out-of-specification results, deviations, and change controls to identify root causes and support corrective actions.</p>
	<p>Troubleshoots analytical test methods and laboratory instrumentation to resolve technical issues and maintain test continuity.</p>
	<p>Monitors temperature logs and reports excursions immediately to mitigate risk to sample stability.</p>
	<p>Escalates abnormal results or deviations to Quality Assurance for investigation and corrective action.</p>
	<p>Leads risk escalation processes and represents the site during risk board meetings to communicate quality concerns and mitigation strategies.</p>
	<p>Executes testing protocols and evaluates results for non-routine analyses to support technical investigations.</p>

Chemist

Sources

ONET, American Board of Clinical Chemistry; CareerOneStop; Tuning Educational Structures in Europe; National Careers (gov.uk); Target Jobs (UK); Doleta.gov, Northeast Biomanufacturing Center, Biotech Careers.org, American Chemical Society

Associated Credentials

American Society for Quality (ASQ) – Pharmaceutical GMP Professional (CPGP); Center for Professional Innovation & Education (CfPIE) - Chemistry, Manufacturing & Controls (CMC) Certified Professional (CMCCP); Bachelor's degree – Chemistry, Chemical Engineering, or related field; Master's degree – Chemistry, Medicinal Chemistry, Chemical Engineering; Doctor of Philosophy (Ph.D.) – Chemistry, Pharmaceutical Sciences

Related Job Titles

Analytical Chemist, Formulation Chemist, Medicinal Chemist, Laboratory Chemist, Quality Control Chemist, Chemical Laboratory Scientist

Function	Competencies
Customer/Client/Patient/Partner Relationships and or Services	Collaborates with scientists and engineers to design experiments, interpret data, and solve complex research problems.
	Presents scientific findings through written reports and oral presentations to share conclusions with peers and experts.
	Coordinates project updates and expectations with customers, suppliers, and research staff to ensure shared understanding and timely progress.
	Translates lab results into visual summaries and plain language explanations to inform both technical and general audiences.
Design, Product Development, Reading and Interpretation	Conducts chemical tests and lab experiments with standardized methods to support product development or quality control.

	Invents new drug compounds by combining chemicals and testing their effects to solve health problems.
	Examines environmental samples with lab instruments to identify pollutants and trace their sources.
	Develops, improves, or customizes products, equipment, formulas, processes, or analytical methods.
	Plans, designs, and executes research investigations, from the problem recognition stage through to the evaluation and appraisal of results and findings.
	Designs and performs lab experiments with scientific methods to test chemical theories or formulas.
	Develops testing methods by selecting materials and techniques to detect specific chemical components.
	Creates and justifies validation procedures through repeated trials to confirm test accuracy.
	Analyzes organic or inorganic compounds with chromatography or spectroscopy to determine structure and properties.
	Processes lab data with computational methods and chemical models to draw research conclusions.
	Performs calculations with units, conversions, and error checks to support accurate analysis.
	Prepares test solutions, compounds, and reagents by following chemical recipes to support lab work.
	Induces chemical changes by applying heat, light, or catalysts to observe reactions.

	Interprets clinical findings and laboratory data, including basic Therapeutic Drug Management (TDM) and toxicology to inform medical decisions.
	Operates instruments like spectrophotometers and chromatographs to separate and identify compounds.
	Handles samples with protective procedures to limit contamination before analysis.
	Combines substances into solutions or compounds by following lab procedures to support testing.
	Tests chemical samples with lab-based methods to confirm identity, purity, or concentration.
	Formulates new products or processes by adjusting production steps or materials for better performance.
	Designs industrial processing systems by selecting equipment and mapping workflows for scaled-up production.
	Interprets data derived from laboratory observations and measurements in terms of their significance and relates them to appropriate theory.
	Identifies unfamiliar problems and plans step-by-step strategies for solving them with chemistry knowledge.
	Integrates sustainability principles into lab practices to reduce waste and limit harmful byproducts.
	Performs headspace analysis, gas chromatography, or mass spectrometry to measure chemical compounds with precision.
Equipment	Maintains lab instruments by cleaning, checking performance, and replacing worn parts to ensure consistent operation.

	Troubleshoots instrument malfunctions by running diagnostics and reviewing error logs to restore proper function.
	Monitors controlled lab equipment like incubators, ovens, or fume hoods by checking settings and alerts to maintain safety and precision.
	Performs instrument calibrations using standard reference materials to ensure measurement accuracy before tests.
	Tracks inventory of chemicals, reagents, glassware, and tools to ensure labs stay stocked for testing and experiments.
	Operates laboratory instruments with proper safety procedures and physical chemistry knowledge to conduct accurate chemical tests.
Information Communication/Data Management or Regulation	Writes technical papers, procedures, and specifications to document methods and ensure standardization.
	Summarizes scientific literature and translates technical data for non-expert audiences to support public communication.
	Operates analytical, CAD, and data management software to process results, design experiments, manage records, and support scientific reporting.
Project Management	Directs lab personnel in test procedures by assigning tasks and reviewing methods to ensure accurate results.
	Coordinates interdisciplinary teams by managing communication and deadlines to complete research or development projects.
	Advises staff on technical procedures and problem-solving strategies to support project goals.
	Prepares protocols and technical reports with experimental designs and data analysis to support project documentation and decision-making.

Quality Management	Evaluates experimental data and documents results in reports to verify findings and support review processes.
	Performs quality control tests on raw materials and finished products to confirm they meet technical and regulatory specifications.
	Conducts quality assurance checks by applying lab statistics and process evaluations to monitor system performance.
	Implements lab quality systems by reviewing records and verifying that procedures follow required standards.
	Reviews Material Safety Data Sheets (MSDSs) to ensure safe handling, storage, and disposal of chemicals.
	Writes and updates Standard Operating Procedures (SOPs) to guide lab activities and maintain compliance.
	Follows clinical lab management guidelines to ensure all procedures meet regulatory and accreditation standards.
	Establishes standards for products, processes, and tests by aligning procedures with industry regulations and quality systems.
	Implements Good Laboratory Practice (GLP) and Quality Assurance (QA) principles by checking documentation and lab workflows for consistency and accuracy.
Safety	Disposes of sharps and chemical waste using approved containers and labeling systems to prevent contamination or injury.
	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.

	Maintains clean and organized work areas and follow safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.
	Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.
	Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.
	Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.
	Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.
Talent Management/Personnel	Supervises laboratory technicians by assigning tasks, reviewing work, and providing guidance to ensure accurate results and support skill development.
	Conducts risk assessments for chemical substances and lab procedures by identifying hazards and control measures to prevent accidents.
	Investigates unexpected test results or abnormal parameters by checking methods, equipment, and materials to identify root causes.
	Responds to troubleshooting requests from customers by reviewing reported issues and recommending corrective actions.
	Performs preventive maintenance on lab equipment according to schedules and manufacturer guidelines to reduce breakdowns and maintain accuracy.
	Analyzes test data and equipment logs to assess process efficiency and diagnose performance issues or system malfunctions.

Packing & Shipping Technician

Sources

abbVie.com; Biomarin.com; ZipRecruiter; ONET; Gemini ai, U.S. Bureau of Labor Statistics

Associated Credentials

High School Diploma or GED; Manufacturing Skill Standards Council (MSSC) – Certified Logistics Associate (CLA); MSSC – Certified Logistics Technician (CLT)

Related Job Titles

Materials Coordinator, Materials Planner, Logistics Coordinator, Logistics Management Specialist, Shipping Coordinator

Function Selected	Competencies
Production	Performs basic packaging tasks by following SOPs and batch records to ensure consistent product presentation and accuracy.
	Operates labeling, sealing, and blister packing machines by setting up and monitoring controls during active production runs.
	Conducts in-process visual inspections to detect packaging defects or labeling issues that could affect quality.
	Cleans and performs basic disassembly of equipment during line changeovers to avoid cross-contamination.
	Executes repetitive manual tasks like loading, sorting, and labeling materials to maintain production flow.
	Follows precise written and verbal instructions when working on the packaging line to minimize errors.

	Supports upstream and downstream processes by preparing materials, staging components, and transferring packaged goods.
	Adapts to fast-paced production rhythms by maintaining manual dexterity and stamina throughout extended shifts.
Quality Management	Completes batch records, logbooks, and documentation with accuracy to meet compliance requirements.
	Verifies that product labels, seals, and packaging match specifications to maintain integrity.
	Conducts reconciliation of incoming components and finished products to ensure counts are correct.
	Identifies and reports deviations or irregularities on the packaging line to support quality investigations.
	Monitors packaging output continuously to detect and resolve issues that could affect product quality.
	Supports audits and inspections by maintaining accurate records and a clean, organized workspace.
Safety	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce the risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.
	Maintains clean and organized work areas and follows safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.

	<p>Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.</p>
	<p>Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.</p>
	<p>Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.</p>
	<p>Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.</p>
Equipment	<p>Operates automated and manual packaging equipment (e.g., fillers, cappers, cartoners) to support production runs.</p>
	<p>Sets up machines for product changeovers by adjusting components and verifying readiness.</p>
	<p>Disassembles and clean packaging equipment between runs to prevent contamination.</p>
	<p>Performs basic maintenance and troubleshooting on packaging machinery to keep operations running smoothly.</p>
	<p>Inspects equipment during operation to detect abnormal sounds, jams, or irregular performance.</p>
Regulation and Policies, Procedures, Protocols	<p>Follows current Good Manufacturing Practices (cGMP) and Standard Operating Procedures (SOPs) during all packaging and shipping activities.</p>
	<p>Applies FDA and company-specific compliance rules when handling, labeling, and storing pharmaceutical products.</p>
	<p>Documents activities and deviations clearly to ensure regulatory traceability.</p>

	Supports regulatory audits by demonstrating adherence to written policies and cleanroom standards.
Operations/Organizational Management	Coordinates daily tasks with team members to keep packaging and shipping activities on schedule.
	Organizes materials, tools, and documentation to support efficient workflow on the packaging line.
	Assists supervisors by communicating progress, issues, or delays during shifts.
	Adapts to shifting priorities, such as urgent orders or line reassignments, to maintain productivity.
Supply Chain Management/Distribution	Prepares packaged products for shipment by labeling, sealing, and staging them for transport.
	Verifies shipping documentation and product identification to ensure accuracy before distribution.
	Uses inventory systems (e.g., SAP or similar) to record, track, and reconcile packaged goods.
	Coordinates with supply chain or warehouse staff to move finished goods to storage or shipping areas.
	Follows handling and storage requirements to maintain product safety and regulatory compliance during transit.

Manufacturing Technician

Sources

Indeed, ZipRecruiter, Glassdoor, O*NET, Lightcast, Civica, Phlow Corp., Haleon, AMPAC Fine Chemicals, Community College Consortium for Bioscience Credentials, Northeast Biomanufacturing Center and Collaborative, Biotech Careers, and InnovATEBio

Associated Credentials

High School Diploma or Equivalent, Associate's in Biotechnology, Biomanufacturing, Chemical Technology, or Life Sciences, BioWork Certificate, Pharmaceutical Manufacturing Technician Certificate or Biomanufacturing Certificate, and cGMP Training Certificate

Related Job Titles

Manufacturing Technician, Process Technician, Biomanufacturing Technician, Production Technician, Chemical Technician, Biological Technician, Chemical Equipment Operator/Production Operator, Aseptic Manufacturing Technician/Aseptic Technician, Batch Technician, Manufacturing Associate, Manufacturing Operator, Plant Technician, and Quality Technician

Function Selected	Competencies
Safety	Wear appropriate personal protective equipment (PPE) based on the materials and environment to prevent injury or contamination.
	Work in controlled environments using environmental procedures to minimize contamination and ensure product integrity.
	Participate in emergency drills and emergency response teams to stay prepared for incidents and respond effectively.
	Identify unsafe conditions through observation and checklists to take prompt corrective action and prevent hazards.
	Access production equipment using proper procedures and tools to prevent injury and damage.

	Handle, label, and dispose of hazardous or biohazard materials using company protocols to ensure regulatory compliance and safety.
	Use Material Safety Data Sheets (MSDS) to understand chemical hazards and apply safety instructions during work.
	Perform permitting procedures using established guidelines to ensure work is authorized and tracked.
	Carry out operations in compliance with OSHA, EPA, and applicable state and federal regulations to protect workers and the environment.
	Maintain clean work areas and keep safety equipment organized to support a safe and efficient workspace.
	Participate in company safety training and audits to stay compliant with current standards and procedures.
	Recognize different types of hazards (biological, chemical, physical, electrical, radiological) and apply proper responses.
Regulation and Policies, Procedures Protocols	Assist in environmental monitoring activities by collecting data in cleanroom areas to support regulatory compliance.
	Follow standard operating procedures (SOPs) during all operations to ensure regulatory adherence and consistency.
	Work in classified or controlled areas using gowning and aseptic techniques to prevent contamination.
	Ensure proper flow of personnel, equipment, and materials using facility protocols to support contamination control.

	Apply change control procedures to processes, equipment, and documentation to ensure traceability and compliance.
	Label and apply status indicators to equipment and materials following SOPs to communicate readiness or restrictions.
	Identify and report exception events and initiate corrective and preventive actions (CAPA) using quality procedures to resolve issues.
	Communicate with coworkers and stakeholders to ensure production activities follow required specifications and regulations.
	Apply traceability principles by labeling samples, raw materials, and equipment IDs.
	Execute cGMP-compliant production steps following BR/SOP flow to maintain a validated state.
	Maintain inspection readiness by organizing records and prepping lines to demonstrate control during audits.
Record Keeping	Record process data and complete batch records accurately using controlled documentation to maintain production history.
	Maintain equipment logbooks by updating entries during use to ensure accurate tracking and validation.
	Maintain training documentation for all completed modules to demonstrate qualifications and regulatory compliance.
	Complete, review, and approve equipment process records to provide documentation of preparation, sterilization, and validation.

	Document cleaning activities in logs or batch records to demonstrate compliance with cleanliness standards and audit readiness.
	Label samples clearly with batch and process information to maintain traceability.
	Record sample collection and distribution, including storage and chain of custody, to ensure audit compliance.
	Document compounding, material movements, equipment status, and in-process checks in real time using GDP.
	Transact inventory and label/trace materials to preserve lot genealogy.
Quality Management	Maintain equipment and processes in a validated state by following calibration and validation schedules to ensure consistent product quality.
	Control and document the receipt of raw materials using inventory systems to support traceability and quality assurance.
	Manage chromatography resins by labeling, tracking, and verifying reuse cycles to ensure consistency and product purity.
	Visually inspect equipment for cleanliness, wear, and damage to ensure it is suitable for use.
	Maintain equipment logs and apply status tags to confirm operational readiness and traceability.
	Perform in-process chemical and/or microbiological tests using established methods to verify product quality.
	Interpret and analyze results using descriptive statistics (mean, SD, % error).

	Swab equipment and verify hygiene using approved sampling plans to confirm cleanliness release.
	Identify and escalate deviations/nonconformities using GDP to trigger investigations and CAPAs.
	Stage and verify components (labels, filters, parts) against BRs to prevent mix-ups and ensure right-first-time.
Facilities Management	Perform housekeeping and pest control activities following facility schedules to maintain clean production environments.
	Sanitize and clean controlled spaces using approved procedures to reduce contamination and meet cleanroom standards.
	Prepare cleaning materials and solutions according to SOPs to ensure correct dilution and effectiveness.
	Assist in environmental monitoring during routine and changeover operations to verify cleanroom integrity.
	Troubleshoot basic equipment issues using manufacturer manuals.
	Operate equipment safely by verifying calibration and using correct startup/shutdown procedures.
	Maintain raw material/equipment inventory with proper storage and expiration handling.
	Prepare detergent/sanitizer solutions and clean controlled areas per schedule to sustain environmental control.
Information Communication/Data Management	Deliver shift change updates using established templates or verbal reports to ensure consistent handoff of operations.

	Maintain security and confidentiality of records and data following company policies to protect intellectual property and patient safety.
	Respond appropriately to internal auditors and external inspectors by providing accurate documentation and supporting information.
	Use workplace-relevant software (spreadsheets, presentations, statistical tools) for reporting and analysis.
	Use SCADA/PLC HMIs and batch e-records to monitor steps and capture critical data for release decisions.
	Handoff status at shift change with standardized summaries to maintain continuity and highlight risks.
	Assist in writing, reviewing, or commenting on technical documents using feedback protocols to improve documentation quality.
Operations/Organizational Management	Coordinate with work teams and internal customers through meetings or shift reports to ensure production goals are met.
	Suggest continuous improvements based on observed inefficiencies or process gaps to support lean manufacturing efforts.
Production	Prepare and sterilize buffers and solutions using approved formulations and autoclave or filtration methods to support downstream processing.
	Sample and test buffers and solutions using analytical tools to verify concentration and quality before use.
	Transfer buffers and solutions to designated use points following cleanroom protocols to ensure aseptic handling.

	Prepare filters for use by assembling and inspecting filter systems to ensure integrity and readiness.
	Prepare, pasteurize or sterilize, and titrate media and feed solutions using validated processes to support cell culture and purification activities.
	Perform processes by following batch records, validation protocols, and SOPs to maintain compliance and consistency.
	Maintain and control processes in automated environments using control systems to ensure proper performance.
	Record process data in real time using batch records and logbooks to ensure traceability.
	Inspect materials at all stages of the process to verify condition and detect defects.
	Receive material from upstream processing using approved transfer procedures to ensure continuity of operations.
	Separate cells from media using centrifugation or filtration (TFF or depth filtration) to prepare for product recovery.
	Weigh and dispense APIs and excipients using calibrated balances and batch records to ensure formulation accuracy and yield.
	Compound bulk drug product per SOPs and BRs using compounding systems to supply sterile filling or packaging.
	Operate batch and continuous manufacturing lines using defined run parameters to maintain product flow and quality.
	Execute normal flow and tangential flow filtration to concentrate or purify products.

	Prepare chromatography columns by assembling, sanitizing, packing resins, and evaluating performance to support purification.
	Perform chromatography steps to separate and purify products.
	Run packaging lines using approved settings to meet schedule and cGMP requirements.
	Bulk-fill purified products using aseptic techniques to prepare them for final formulation and packaging.
	Prepare sample ports for aseptic sampling using sterile tools and procedures to prevent contamination.
	Obtain in-process samples according to batch records or sampling plans to monitor product quality.
	Prepare samples specifically for testing (beyond in-process sampling).
	Perform test procedures or assays with correct selection of measurement tools.
	Handle powders using dust-control and BR instructions to achieve precise additions.
	Execute SCADA-guided batching and perform manual additions as specified to keep batches within control limits.
Safety	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.
	Maintains clean and organized work areas and follow safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.

	<p>Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.</p>
	<p>Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.</p>
	<p>Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.</p>
	<p>Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.</p>
<p>Supply Chain Management/Distribution/Logistics</p>	<p>Weigh, dispense, and label raw materials based on batch records to ensure accurate material input for production.</p>
	<p>Dispense consumables and intermediates from inventory using cleanroom procedures to support daily operations.</p>
	<p>Control and reconcile inventory using enterprise resource systems to ensure materials are tracked and available.</p>
<p>Equipment</p>	<p>Clean CIP (clean-in-place) vessels, transfer lines, and filter trains using automated cleaning systems to maintain sanitary conditions.</p>
	<p>Clean COP (clean-out-of-place) equipment or sonicators following procedures to ensure proper decontamination.</p>
	<p>Depyrogenate components and equipment using heat or chemical treatment to eliminate pyrogens.</p>
	<p>Sterilize SIP (steam-in-place) vessels, transfer lines, and sampling ports using validated steam cycles to ensure sterility.</p>

	Perform pressure tests on equipment to confirm integrity and prevent leaks.
	Prepare and assemble components and equipment using assembly diagrams and tools to ensure readiness for operations.
	Autoclave components and equipment according to SOPs to ensure sterility before use.
	Perform WFI (water for injection) flushes of transfer lines to remove residues and maintain purity.
	Perform scheduled sanitizations of hoods using disinfectants and wipes to maintain aseptic conditions.
	Prepare and standardize probes and ancillary instruments using calibration solutions to ensure accurate readings.
	Prepare, assemble, and integrity test filters using pressure-hold testing to confirm sterility and reliability.
	Operate, monitor, and maintain equipment, tools, and workstations following SOPs to support consistent production.
	Participate in the installation, modification, and upgrade of equipment to improve process performance.
	Clean, assemble, and dismantle process equipment according to established procedures to restore operability after runs.
	Perform line changeovers using changeover checklists to reduce cross-contamination.
	Conduct basic preventive maintenance per PM schedule to reduce downtime.

Troubleshooting/Analysis/Risk Management	Recognize and respond to atypical events using observation and system alerts to reduce risks.
	Participate in troubleshooting and root cause analysis of operations using team-based methods to resolve problems.
	Perform calculations involving logs, dilutions, and conversions to support production.
	Construct and interpret standard curves or graphs to identify trends in process data.
	Respond to process upsets using SOP checks to stabilize operation and protect product.

Biotechnology Laboratory Technician

Sources

Biotechnology Careers, Siemens, Phlow Corp, Manufacturing Skills Institute (MSI), Reynolds Community College, Brightpoint Community College

Associated Credentials

Manufacturing Technician Level 1 – MSI; Associate’s degree – Biotechnology, Biology, Chemistry, or a related scientific field; American Society of Clinical Pathology (ASCP) – Medical Laboratory Technician Certification

Related Job Titles

Medical & Clinical Laboratory Technician, Pharmacy Manufacturing Technician, Pharmacy Technician, Pharmacy Production Technician, Manufacturing Technician

Function Selected	Competencies
Customer/Client/Patient/Partner Relationships and/or Services	Confirms sample identity and documentation to ensure traceability.
	Communicates laboratory results to stakeholders to support decision-making.
	Supports product release activities by providing complete laboratory data.
	Assists in complaint investigations to support customer satisfaction and compliance.
	Writes and revises technical documents to ensure alignment with current practices.
	Collaborates with cross-functional teams to achieve laboratory and business objectives.
	Presents laboratory results clearly to audiences during meetings or audits.
Equipment	Operates laboratory equipment according to procedures to generate reliable results.

	Calibrates equipment to maintain accuracy and regulatory compliance.
	Maintains and cleans instruments to ensure consistent performance.
	Performs preventative maintenance to minimize downtime.
	Troubleshoots equipment issues to restore functionality.
	Documents equipment use and maintenance to support traceability.
	Weighs samples accurately using analytical balances to support valid results.
	Maintains laboratory glassware through cleaning and sterilization to prevent cross-contamination.
Information Communication/Data Management	Manages laboratory data in approved systems to ensure accuracy and accessibility.
	Enters data promptly and accurately to maintain reliable records.
	Calculates, graphs, and presents laboratory results using spreadsheet tools to support data analysis and scientific reporting.
	Tracks samples and test results in a Laboratory Information Management System (LIMS) to ensure traceability and data integrity.
	Documents experimental procedures and maintains study records in an electronic laboratory notebook (ELN) to support reproducibility and regulatory compliance.
	Manage datasets through review and verification to ensure data integrity.
	Generate tables, charts, and reports to communicate results effectively.

	Apply computer skills, including Microsoft Office and databases, to support documentation and reporting.
	Performs statistical analysis, graphing, and trend analysis using spreadsheet and software tools (e.g., Excel, GraphPad).
	Interprets protein and DNA sequence data using web-based tools such as BLAST and NCBI databases to support molecular identification and comparative analysis.
Operations/Organizational Management	Integrates laboratory documentation best practices, including notebook protocols, SOP adherence, and metadata for traceability.
	Implements current Good Manufacturing Practices (cGMP) and ISO quality standards throughout laboratory and production activities to maintain regulatory compliance and operational consistency.
	Participates in scale-up processes and bio-manufacturing workflows from lab bench to pilot production.
Production	Prepares and maintains cell cultures using aseptic techniques to support research and production workflows.
	Executes nucleic acid manipulations including DNA/RNA extraction, gel electrophoresis, PCR, and CRISPR-based methods.
	Performs protein purification and analysis using chromatography and spectrophotometry.
	Produces, harvests, and monitors batch or continuous cultures in controlled environments such as fermentation or bioreactor systems.
Quality Management	Performs laboratory tests on raw materials, intermediates, and finished products using validated methods to ensure products meet specifications and regulatory standards.

	Verifies calibration status and quality control checks using approved procedures to maintain accuracy and compliance with Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
	Documents test results, deviations, and corrective actions in laboratory systems to support traceability and audit readiness.
	Monitors quality control data to detect variability and prevent product defects.
	Participates in internal and external quality programs to confirm laboratory reliability and compliance.
	Investigates customer complaints or out-of-specification results to identify causes and recommend corrective or preventive actions.
	Aligns laboratory practices with company standards by following established compliance management systems.
	Conducts assays to generate and analyze data to support product quality decisions.
	Analyzes data using statistical methods to identify trends and support conclusions.
	Maintains regulatory compliance by adhering to quality control systems and standardized documentation procedures.
	Maintains quality control through standardized documentation, validation logs, and internal audits aligned with pharmaceutical manufacturing standards.
	Identifies and escalates deviations, implements corrective actions, and contributes to continuous improvement processes.
Record Keeping	Maintains confidentiality of laboratory data in compliance with regulations.

	Reports and documents incidents to support corrective action.
	Records discrepancies in samples or results to ensure accuracy.
	Maintains records in alignment with GDP principles to support audit readiness.
	Documents results accurately in approved systems to maintain integrity.
	Records inventory usage to preserve material traceability.
	Maintains calibration and maintenance records to demonstrate compliance.
Regulation and Policies, Procedures Protocols	Follows GMP, GLP, and Good Documentation Practices (GDP) to maintain compliance with regulatory requirements.
	Adheres to standard operating procedures (SOPs) for laboratory activities to ensure accuracy and consistency.
	Maintains logbooks for instrument calibration and maintenance to demonstrate compliance during audits.
	Applies compliance management processes to sustain audit readiness.
	Reports nonconformances and deviations in alignment with company and regulatory expectations.
	Contributes to continuous improvement of procedures to reflect current regulations and industry practices.
	Supports regulatory inspections by providing accurate and complete records.
	Follows shipping and receiving protocols to ensure materials meet quarantine and temperature requirements.

Safety	Conducts environmental monitoring to evaluate air, surfaces, and personnel for contamination control.
	Conducts environmental monitoring to evaluate air, surfaces, and personnel for contamination control.
	Disposes of sharps and chemical waste using approved containers and labeling systems to prevent contamination or injury.
	Performs sterilization and disinfection procedures to maintain controlled and contamination-free laboratory conditions.
	Follows contamination prevention protocols in pharmaceutical environments, including gowning, sterile technique, and cleanroom area classifications, to ensure aseptic processing.
	Selects and wears personal protective equipment (PPE) based on task-specific hazards and procedures to reduce risk of injury or contamination.
	Recognizes and reports unsafe conditions, incidents, or equipment issues to prevent hazards and support corrective action.
	Maintains clean and organized work areas and follow safety procedures (e.g., 5S, GMP) to prevent accidents and ensure readiness for audits.
	Uses Safety Data Sheets (SDS) and labeling protocols to understand chemical and biological hazards and apply appropriate handling procedures.
	Handles, stores, and disposes of hazardous and biohazardous materials according to internal protocols and regulatory requirements.
	Participates in safety drills and follows emergency procedures to ensure readiness for incidents and protect personnel and facilities.

	Complies with relevant safety regulations and policies (e.g., OSHA, GMP, institutional biosafety, environmental health) to maintain legal and procedural adherence.
Supply Chain Management/Distribution (Intake, Process, Retrieval)/Logistics	Maintains laboratory inventory to ensure availability of materials.
	Documents material movement and chain-of-custody to support traceability.
	Stores and delivers samples under required conditions to maintain integrity.
	Follows material retention and disposal protocols to ensure compliance.
	Implements shipping and receiving procedures to safeguard material quality during transit and storage.
	Reconciles inventory with physical counts to ensure accuracy.
Troubleshooting/Analysis/Risk Management	Selects appropriate testing methods to ensure valid results.
	Troubleshoots laboratory processes and equipment to resolve malfunctions.
	Identifies and assesses out-of-specification results to confirm validity.
	Performs root cause analysis to support corrective and preventive actions.
	Identifies and resolves laboratory disruptions by applying root cause analysis and corrective actions to maintain workflow continuity.
	Assesses laboratory risks to identify controls and reduce failure likelihood.
	Investigates data anomalies to ensure reliability of reported results.
	Recommends corrective actions to resolve laboratory deviations.

	Diagnoses inconsistencies in experimental data by analyzing raw output, control performance, and instrument function.
	Troubleshoots molecular biology techniques, including DNA/protein extraction failures or anomalous assay results.