Standard
L2: Science manufacturing process operative

UOS reference number
ST0422_V1.1

Title of occupation
Science manufacturing process operative

Core and options
No

Resubmission
No

Level of occupation
Level 2

Route
Engineering and manufacturing

Typical duration of apprenticeship
18 months

Target date for approval
30 June 2022

Occupational profile

Summary

The occupation is found in science process manufacturing industries.

Science process manufacturing is varied. It includes industries such as biotechnology, chemical, composites, petrochemical, polymer, and pharmaceutical.

Science process industries combine raw materials and apply a science based process or processes - biological, chemical, or physical - to create products. Products are made continuously or in batches.

Process manufacturing industries are highly regulated. The Health and Safety Executive and other industry regulators inspect employers. The Control of Major Accident Hazards (COMAH) Regulations apply to some process manufacturing companies. Employers must manage risks to the employee, product, environment, and sometimes the wider community.

The broad purpose of the occupation is to complete science-based manufacturing processes to produce materials and products following standard operating procedures. Products are varied and may include battery cells, composite wind turbine parts, drugs, plastic bottles, proteins, and solvents. This involves checking and preparing materials and using specialist science-based manufacturing process plant or equipment. They monitor the process and take action to resolve deviations. Maintaining the work area is part of the role. They contribute to quality control, continuous improvement, and problem solving activities. They also complete work records, which are important in regulated workplaces.

In their daily work, they interact with other science process manufacturing operatives and technicians, along with colleagues from other business functions. They typically report to a shift manager, team leader, or supervisor.

They are responsible for meeting work schedules. They must work to quality, health and safety, and environment regulations and procedures. This may include wearing personal protective equipment and complying with Control of Substances Hazardous to Health (COSHH).

They may work alone or as part of a team, under supervision.

They work in varied conditions. Some workplaces may be physically demanding. Some may require use of specialist safety equipment. They complete shift work. Sites often run 24 x 7, 365-days a year.

Typical job titles

['Applications operator', 'Aseptic operation process operator', 'Batch maker', 'Chemical plant process operator', 'Manufacturing process operator', 'Powder handling operative', 'Primary process operator', 'Process operator', 'Process support operator', 'Production process operator', 'Sterile operations process operator']
## Duties

<table>
<thead>
<tr>
<th>Duty</th>
<th>Knowledge</th>
<th>Skills</th>
<th>Behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1: Carry out process manufacturing operations using or operating plant or equipment in line with standard operating procedures.</td>
<td>K1, K2, K3, K4, K5, K6, K7, K8, K9, K10, K11, K12, K13, K18, K20, K22</td>
<td>S1, S2, S4, S7, S12, S19</td>
<td>B1, B2, B3, B5, B6</td>
</tr>
<tr>
<td>D2: Arrange and prepare materials for process activity.</td>
<td>K1, K2, K3, K4, K5, K6, K9, K10, K11, K12, K13, K16, K18, K19, K20, K21, K22, K23</td>
<td>S1, S2, S3, S4, S5, S12, S13, S17, S19</td>
<td>B1, B2, B3, B5, B6</td>
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<tr>
<td>D3: Carry out pre-start checks of equipment and process before run or as part of handover responsibilities.</td>
<td>K1, K2, K3, K4, K5, K6, K7, K8, K9, K10, K11, K12, K13, K18, K19, K20, K22, K23</td>
<td>S1, S3, S4, S6, S7, S12, S19</td>
<td>B1, B3, B5, B6</td>
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<tr>
<td>D4: Monitor the process and resolve or escalate issues.</td>
<td>K1, K2, K3, K4, K5, K6, K7, K8, K9, K12, K13, K14, K18, K19, K20, K22, K23</td>
<td>S1, S2, S4, S7, S8, S11, S12, S19</td>
<td>B1, B2, B3, B4, B5, B6</td>
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<tr>
<td>D5: Contribute to quality control: conduct quality checks and escalate concerns.</td>
<td>K1, K2, K3, K4, K5, K6, K7, K8, K9, K12, K13, K14, K18, K19, K20, K22, K23</td>
<td>S1, S2, S4, S9, S11, S12, S17, S19, S20</td>
<td>B1, B3, B4, B5, B6</td>
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<td>D6: Contribute to first-line maintenance, directly or through escalation. For example, equipment checks cleaning, and lubrication.</td>
<td>K2, K3, K4, K5, K6, K10, K11, K12, K18, K19, K20, K22, K23</td>
<td>S1, S3, S4, S6, S12, S19</td>
<td>B1, B3, B4, B5, B6</td>
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<td>D7: Contribute to continuous improvement and problem-solving activities. For example, work as part of an improvement team, identify issues, and put ideas forward.</td>
<td>K1, K2, K3, K4, K5, K6, K7, K8, K10, K11, K13, K15, K18, K19, K20, K22, K23</td>
<td>S1, S2, S3, S11, S12, S16, S17, S18, S19, S20</td>
<td>B1, B2, B3, B4, B5, B6</td>
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<tr>
<td>D8: Complete process work records - digital or paper, including traceability records.</td>
<td>K2, K3, K4, K5, K6, K12, K13, K17, K18, K19, K20, K22</td>
<td>S1, S3, S4, S11, S12, S17, S18, S19, S20</td>
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<td>D9: Contribute to maintaining own work area (housekeeping).</td>
<td>K2, K3, K4, K5, K6, K12, K18, K20, K22</td>
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<td>D10: Conduct change over or clean down activities.</td>
<td>K2, K3, K4, K5, K6, K10, K12, K13, K18, K20, K22</td>
<td>S1, S2, S3, S4, S12, S19</td>
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<td>D11: Carry out end of process activities. For example, finish, pack, discharge or move goods.</td>
<td>K2, K3, K4, K5, K6, K10, K11, K12, K13, K18, K20, K22</td>
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Knowledge, skills and behaviours

Knowledge
K2: Science manufacturing process operative role. Limits of responsibility.
K3: Process industry safety: high-hazard sites and their potential impact, and The Control of Major Accident Hazards Regulations (COMAH).
K5: Risk assessments and safe systems of work within process industries. Personal Protective Equipment (PPE). Isolation and emergency stop procedures.
K8: The effects of temperature, pressure, and flow on liquids, gases, and solids.
K9: Awareness of process industry methods: measuring of raw ingredients and materials, blending, mixing, combining, melt processing, moulding, extrusion, and formulations.
K10: Common science manufacturing industry plant, equipment, and tools: pumps, valves, temperature gauges, filtration equipment, tanks, vessels and production and processing machinery, and control systems; what they are and what they do. The importance of operational checks.
K12: Standard operating procedures (SOP). What they are and why they are important.
K14: Quality assurance requirements and monitoring processes.
K15: Basic continuous improvement techniques: 5 Why’s, 5S, KAIZEN.
K16: Stock requirements: control systems, and stock rotation.
K17: Work record requirements and importance of records for traceability and audits.
K18: Verbal communication techniques.
K19: Written communication techniques.
K21: Work organisation and time management techniques.
K22: Principles of team working.
K23: Equality, diversity, and inclusion.

Skills
S1: Follow procedures in line with process industry health and safety regulations, standards, and guidance.
S2: Follow procedures in line with process industry environmental and sustainability regulations, standards, and guidance.
S3: Follow work instructions.
S4: Follow process manufacturing standard operating procedures.
S5: Conduct material preparation for example, measure, weigh, mix and load materials.
S6: Check and set up science process industry tools, plant, or equipment.
S7: Use science process industry tools, plant, or equipment required for task.
S8: Monitor process manufacturing and take corrective actions to meet specification.
S9: Apply product quality assurance procedures for example, take product samples, inspect products.
S10: Conduct end of process procedures for example, finish, pack, label, discharge, move, and store batches.
S11: Collect and interpret information.
S12: Identify and resolve or report issues.
S13: Store materials, monitor, and rotate stock.
S14: Comply with housekeeping procedures for example, clean equipment and machinery, tidy work area.
S15: Identify and segregate resources for reuse, recycling, and disposal.
S16: Apply basic continuous improvement techniques for example, 5Why’s, 5S, and KAIZEN.
S17: Perform simple calculations for example, raw material quantity and production calculations.
S18: Record information (text and data) - paper based or electronic for example, quality control documentation, cleaning logs, handover notes, stock inventory systems.
S19: Communicate with colleagues verbally.
S20: Use information technology for example, digital manufacturing management systems, virtual learning platforms, word processing, and email. Comply with GDPR and cyber security procedures.

Behaviours
B1: Put health and safety first.
B2: Consider the environment.
B3: Take ownership for quality of given work.
B4: Adapt to changing work requests.
B5: Team focus to meet work goals for example, work collaboratively.
B6: Seek learning and development opportunities.
### Example training specification

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Entry requirements
No entry requirements specified

Professional recognition
No professional body recognition specified

Rationale for no professional recognition
Professional recognition does not apply to level 2 occupations

Progression routes
ST0250: L3: Science manufacturing technician
ST0249: L3: Science industry maintenance technician
ST0841: L4: Engineering manufacturing technician
ST0695: L4: Process leader

Notice period
30 days

Notice period comments
Training providers and end-point assessment organisations have seen draft versions during the revision process enabling to prepare for its introduction. The occupational standard and EPA plan are not significantly different in content or approach to the original version.