Version	Final
Date	May 2005

National Occupational Standards for Chemical, Pharmaceutical and Petro-chemical Operations

Process Operator

Approved by UKCG May 2005

The Sector Skills Council for Chemicals, Nuclear, Oil and Gas Petroleum and Polymers

AMENDMENTS				
AMENDMENT & DATE	**PAGES**	**CHANGES MADE BY:**	**CHECKED BY:**	**APPROVED BY:**

Any amendments made to this standard by Cogent will be recorded above.

Commentary for Unit 1.13:

Working effectively in a team

This unit addresses the competence required to work with others. This involves:

- those working in isolation, who need to communicate with others
- those working in groups
- accepting and clarifying responsibilities
- providing and receiving support and feedback
- working in ways which maintain your own and other's safety

There are three elements in this unit, each of which has performance standards and a knowledge base associated with it.

1.13.1 Determine and agree individual responsibilities in working with others
1.13.2 Complete work activities in conjunction with others
1.13.3 Provide and receive support and feedback

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Responsibility That which is given by the appropriate authority

Authority This gives the individual/s, permission to perform the activities

Personnel/work situation This may include one, or a combination of:

- one to one
- group/team work

- where disagreement occurs
- on person to a group situation

Communicate including:

This may include all forms of communication

- spoken
- written
- electronic

Documentation

This may include all types of documentation that may be used in the organisation, in relation to the activity.

Corrective action

To be aware of potential hazards involved in the process, and take corrective action when necessary, including emergency shutdown.

Problems

These include those encountered with either plant/equipment/materials/and/or personnel.

Feedback/Support

Assistance given or received within the organisation. All forms of feedback and support should be constructive.

Health, Safety and Environmental legislation

To be aware of all relevant legislation.

ELEMENT 1.13.1 Determine and agree individual responsibilities in working with others

To do this you need to know

a) the definition of authority and responsibility within the organisation
b) how to check whether you have the required authority
c) your personal responsibility in the operation
d) how to check whether others need to be informed
e) methods of communication within the organisation
f) how to check that all parties understand what is required of them (if required)
g) your personal responsibilities with regard to health, safety and environment
h) what typical problems may arise and how to deal with them
i) who to inform if you cannot solve the problem and/or it is not your responsibility
j) the importance of keeping to agreed time schedules
k) what documentation to use and what information needs to be recorded

ELEMENT 1.13.2 Complete work activities in conjunction with others

In carrying out this work you must:

1. Check that you understand the work activity
2. Ensure that you know and understand your **responsibility** in the activity
3. Check, when required, that all other **personnel** understand their responsibililties
4. Ensure that the activity proceeds as planned
5. Keep other relevant **personnel** informed of the progress of the activity
6. Deal promptly with any **problems** in the activity that are your responsibility
7. Take appropriate **action** when disagreement occurs
8. Inform the appropriate person of any **problems** you cannot solve and/or are not your **responsibility**
9. Work safely at all times with regard to material, equipment and personal safety
10. Use appropriate methods of **communication**

To do this you need to know

a) the method of work activity planned

b) what your responsibilities are in the activity

c) why it is important that all personnel understand what is required of them

d) methods of monitoring the activity

e) how to keep all relevant personnel informed of the progress of the activity

f) how to deal with problems that are your responsibility

g) who to contact if you cannot deal with the problem and/or it is not your responsibility

h) what actions could be taken when disagreement occurs

i) your personal responsibilities with regard to health, safety and environment

j) what methods of communication to use and when to use them

ELEMENT 1.13.3 Provide and receive support and feedback

In carrying out this work you must

1. Ensure that all **personnel** know their responsibilities
2. Use appropriate methods of **communication** to keep all **personnel** informed
3. Identify when assistance is required
4. Give assistance when required if it is within the limit of your **authority**
5. Deal with any **problems** effectively, if they are your **responsibility**
6. Inform the appropriate person when you cannot solve a **problem** and/or it is not your **responsibility**
7. Give constructive **support** and **feedback** to appropriate **personnel**
8. Receive **support** and **feedback** from **personnel**
9. Follow safe working procedures at all times
10. Complete any **documentation** clearly and accurately

To do this you need to know

a) the meaning of responsibility and authority in the organisation

b) methods of communication within the organisation

c) how to identify when assistance may be required

d) how to give assistance within your limit of authority

e) why it is important to give constructive feedback and support in the operation

f) how to give constructive feedback and support within the organisation

g) why it is important to deal with problems effectively

h) who to inform if you cannot solve the problem and /or it is not your responsibility or within your limit of authority

i) what your personal responsibilities are with regard to health, safety and environment

j) what documentation needs to be completed

k) the importance of completing documentation/records accurately and clearly

Commentary for Unit 2.15:

Identify and deal with hazards in the work environment (ECS 7.04)

NB This unit is a tailored version of an ECS Unit produced by OSCEng which was originally designated Unit 7.04

This unit addresses the competence needed to identify hazards in the workplace and take appropriate action to minimise the risk from them. This could involve: identifying the hazards present, assessing the risks, identifying the controls and precautions necessary to undertake the work safely.

There is one element in this unit, which has performance standards and a knowledge base associated with it.

2.15.1 Identify hazards in the workplace

These imported units do not have a glossary of terms, they have scope statements which appear within the unit and have specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant and acceptable in the rare or dangerous occurrences* (see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• health, safety and environmental issues
- emergency scenarios
- rare occurrences at work

Scope

1. **Level and extent of responsibility**

   In the context of this unit, responsibility is limited to working within an overall risk control strategy that has been developed by safety specialists. This will include detailed criteria for identifying hazards, together with clearly defined workplace procedures for the action that must be taken.

2. **Type of hazards and risks arising**

   A hazard is defined by the Health and Safety Executive as '*a hazard is something with the potential to cause harm.'*
   Typical hazards and risks could include those arising from:
   - The use of materials and substances hazardous to the environment
   - The disposal of waste, materials and substances hazardous to the environment

- The working environment, processes and/ or use of equipment
- Emissions of gases, fumes and/or dust

3. **Hazard checking methods to be used**

These would be specified within the risk control strategy within which you operate. These may include visual checks.

4. **The type of workplace and environment**

The type of workplace and environment could include any controlled operation/live plant within the Chemical, Pharmaceutical and Petro-Chemical manufacturing industries.

5. **Typical equipment could include**:
   - Chemical reactors
   - Addition tanks
   - Phase separators
   - Receiving vessels
   - Pipework and pumps
   - Film coaters
   - Solution make-up vessels
   - Filters and spray equipment

6. **Type of action to be taken**

The action to be taken should be in the risk control strategy that applies to your working environment
The types of action to be taken could include:
- Isolation of the hazard, (without increasing the risk)
- Stopping activities
- Reporting the hazard to an appropriate person

ELEMENT 2.15.1 Identify hazards in the workplace

In carrying out this work you must be able to:

1. Work safely at all times, complying with health and safety and other relevant regulations and guidelines

2. Recognise industrial processes, tools, equipment and materials that have the potential to cause harm

3. Check for hazards in the workplace in line with agreed and approved procedures

4. Identify any potential hazards and take appropriate action to minimise the risk

from them

5. Report any hazards identified and any actions you have taken

To do this you need to know

a) **Health and safety legislation, regulations and safe working practices and procedures**
You need to know and be aware of relevant health and safety legislation, and what your responsibilities are in respect of that legislation. Regulations, safe working practices, and workplace procedures that contain specific instructions, for you to comply with, in your working environment.

b) **Hazard spotting and safety assessment methods and techniques**
You need to know the hazard spotting and safety assessment methods and techniques that can be used in your working environment.

c) **Types of hazards involving processes, tools, equipment and materials**
You need to know what types of hazards may arise within your working environment, from the processes, tools, equipment and materials that you use.

d) **Effects of hazards on persons, property and the environment**
You need to know what the effects of hazards are on persons, property and the environment.

e) **Actions to minimise risk from hazards**
You need to know what actions will minimise the risk from the hazard, and how to take the action to minimise the risk.

f) **Safety reporting procedures and documentation**
You need to know the documentation to use, and the safety reporting procedures to use in you working environment.

g) **Reporting lines and procedures**
You need to know the reporting lines and procedures within your working environment.

Commentary for Unit 1.11:

Responding to incidents, hazardous conditions and emergencies

NB This unit is a tailored version of a unit produced by the PINTO, which was originally designated Unit 4.

This unit is about your competence in responding to incidents, hazardous conditions and emergencies. This involves:

- reporting incidents, hazardous conditions and emergencies
- contributing to the correction of incidents, hazardous conditions and emergencies

During this work you must take account of the relevant operational requirements and safe working practices as they apply to you.

To demonstrate your competence you must generate/gather/present evidence of reporting and correcting incidents, hazardous conditions and emergencies.

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

1.11.1 Report incidents, hazardous conditions and emergencies
1.11.2 Contribute to the correction of incidents, hazardous conditions and emergencies

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is acceptable in the assessment of this unit to cover the full scope as defined by the glossary.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Incidents and Hazardous conditions These could include:

- flood
- toxic vapour and/or liquid release
- on controlled release of hydrocarbons
- injured personnel
- major plant or service failure
- explosions

Emergencies

Emergencies could include:

- fire
- release/spillage of materials
- release/spillage of materials
- explosion
- discovery of suspect package
- discovery of injured person
- accident involving person/equipment
- major services failure

Raising the alarm This could be done by :

- mechanical/electrical means
- notifying someone else
- shouting

Action Other actions to be taken could include:

- emergency shut down of the plant
- evacuation of the plant
- notifying other people
- assessing risk
- emergency first aid
- shut down of the operation

Materials May include solids, liquids and gases.

Equipment/plant This may include any equipment/plant where there is some interaction between items and/or people

Problems These can relate to either personnel and/or equipment.

Documentation Including that relating to emergencies, reports and any other relevant documentation.

Health, safety & environmental legislation To include relevant legislation and company policy.

Risk assessment To assess the likelihood of harming yourself and/or others by taking some form of action.

Communication To include spoken, written and/or electronic.

ELEMENT 1.11.1 Report incidents, hazardous conditions and emergencies

In carrying out this work you must:

1. Identify the nature, location and scope of **incident**
2. Raise the appropriate **alarm**
3. Report the incident to the appropriate people in accordance with plant reporting procedures
4. Provide accurate and unambiguous information to the appropriate people
5. Complete all relevant **documentation**
6. Work safely in accordance with operational requirements

To do this you need to know

a) how to select, use and care for PPE (e.g. sight/hearing protection, gloves, footwear, hard hats, respirators)

b) the implications of statutory (e.g. HASAWA and COSHH) and organisational requirements

c) how to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules)

d) the emergency procedures for plant and site

e) how to work with and within the Permit to Work system

f) the types of incidents which should be reported (to include fire; flood; toxic vapour and/or liquid release; uncontrolled release of hydrocarbons; explosions; injured personnel; major plant or service failure)

g) how the alarm should be raised for each type of incident

h) how to access, interpret and implement site emergency plans; environmental

procedures; plant emergency procedures

i) how to communicate effectively (e.g. verbal; written)

ELEMENT 1.11.2 Contribute to the correction of incidents, hazardous conditions and emergencies

In carrying out this work you must:

1. Follow appropriate procedures after the situation has been assessed
2. Inform appropriate people as actions are taken
3. Take the correct **action,** in accordance with procedures, to make the process safe
4. Take the correct **action**, in accordance with procedures, to deal with the incident
5. Minimise the incident, hazard or **emergency**
6. Minimise waste and loss
7. Act promptly and in association with others
8. Correctly modify actions in response to changing conditions
9. Work safely in accordance with operational requirements

To do this you need to know

a) how to select, use and care for PPE (e.g. sight/hearing protection, gloves, footwear, hard hats, respirators)

b) the implications of statutory (e.g. HASAWA and COSHH) and organisational requirements

c) how to interpret operational requirements (e.g. policies, procedures, instructions, codes of practice, standards, schedules)

d) the emergency procedures for plant and site

e) how to work with and within the Permit to Work system

f) the procedure for responding at an early stage of an incident (to include fire; flood; toxic vapour and/or liquid release; uncontrolled release of hydrocarbons; explosives; injured personnel; major plant or service failure)

g) how to access, interpret and implement site emergency plans; environmental procedures; plant emergency procedures

h) own responsibilities during emergencies

i) potential incidents within your area of responsibility and the actions to be taken

j) the need for and use of emergency equipment

k) the appropriate first response to casualties

l) the effect of the emergency on plant, equipment and personnel

Commentary for Unit 1.12:

Handover

This unit addresses the competence required to handover operational responsibility, materials and/or information to others in the workplace. This involves:

- completion of handover information
- communication with incoming operator/s
- maintaining the operation of the equipment during handover
- accepting and confirming responsibility taken over
- maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

1.12.1 Follow handover procedure
1.12.2 Confirm responsibility accepted

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Operating instructions The set of instructions which describe the work to be carried out,

including details of the operating parameters.

Operating parameters The conditions under which the processing should take place

Handover The handing over of operational responsibility

Handover situation May include some or all of the following:

- at the end of a shift
- during a shift at an appropriate point
- illness
- accident
- emergency situation
- exchange of responsibility during an operating procedure
- exchange of information during an operating procedure
- transfer of materials during an operating procedure

Handover method May include some or all of the following methods:

- written handover
- verbal handover
- electronic handover

Equipment/plant This may include equipment/plant where there is some interaction

between items and/or people. Also may include a number of parameters within the operator's control, and some control instrumentation.

Typical equipment within workplace area may include:

- chemical reactors
- addition tanks
- phase separators
- receiving vessels
- pipework and pumps
- film coaters
- solution make-up vessels
- filters and spray equipment

PPE Personal protective equipment to be specified, when necessary.

PTW May include permit to work. Authority to start, and/or continue with the

operation or the equivalent.**Process type**
Batch and/or continuous processing.
The following types may be included:

- batch operations, where there are a number of batch operations running simultaneously, and also a multi-staged batch operation. .
- continuous operations, such as reaction, recovery, separation and purification processes, mixing, granulating, drying and compressing.

Problems These can relate to either personnel, materials, equipment , operating instructions and/or specifications. Where a problem requires another person, the person would be expected to report the problem to the person who has the necessary authority to deal with it.

Corrective actions May include adjust, request assistance or shutdown.

Documentation Including that relating to handover, and any other relevant documentation.

Conditions Control of conditions may include:

temperature, flow, humidity, pressure, ph , density and level

Responsibility To be in charge of a certain operation, and accept and confirm that
responsibility

.

Confidentiality Only providing information to those who are authorised to have it.

Communicate To include spoken, written and/or electronic.

Health, safety & environmental legislation To include all relevant legislation and company policy.

ELEMENT 1.12.1 Follow handover procedure

In carrying out this work you must:

1. Check that you know the required **handover method**
2. Check that if required, you have the necessary **PTW** or equivalent
3. Check that you are aware of the current **handover situation**
4. Check that the **handover** time is correct
5. Ensure that you complete any relevant handover **documentation** clearly and accurately
6. Check and confirm that the information contained in the **handover situation** is correct
7. Ensure that all relevant **handover** information is given to the incoming operator
8. **Handover** at the correct time and place
9. Maintain safe and effective operation of the **equipment** during **handover**
10. Wear appropriate **PPE**
11. **Communicate**, if required, with relevant personnel
12. Deal promptly with any **problems** that arise, reporting any which you cannot solve and/or are not your responsibility
13. Follow safe working procedures at all times

To do this you need to know

a) handover methods, and specifically the one to be used in the operation

b) what the current handover time and handover situation is

c) the importance of the correct handover time and method

d) why it is important to complete all documentation clearly and accurately

e) the consequences of not checking and confirming handover information

f) why it is important to give the incoming operator all relevant information

g) the importance of knowing the correct time and place for the handover

h) how to maintain safe and effective operation of equipment during handover

i) the importance of communication, keeping others informed during the operation

j) your personal responsibilities with regard to health, safety and environment

k) what personal protective equipment to use and why

l) the types of problems that can occur and how to recognise and deal with them

m) who to contact if there is an unsolvable problem and/ or it is not your responsibility

ELEMENT 1.12.2 Confirm responsibility accepted

In carrying out this work you must:

1. Check that you have the correct **handover** information
2. Check that you can interpret and understand the **handover** information
3. Clarify any concerns over the **handover** information with the appropriate person
4. Check that you have any relevant **documentation** that you may need to proceed
5. Complete any relevant **documentation** clearly and accurately
6. Check that any information is recorded correctly at time of **handover**
7. **Accept** and confirm **responsibility**, by appropriate method, after **handover** of information, responsibility and / or materials has taken place
8. **Communicate** if required with relevant personnel
9. Check that the **PTW** or equivalent, is complete (if necessary)
10. Wear appropriate **PPE**
11. Deal promptly with any **problems** in the procedure that are your responsibility
12. Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility
13. Work safely at all times
14. Ensure that security and **confidentiality** is observed where necessary

To do this you need to know

a) the importance of confirming that you have the correct handover information

b) how to interpret handover information

c) why it is important to clarify any points

d) what documentation may need to be obtained before proceeding

e) why it is important to complete any documentation clearly and accurately

f) methods of accepting and confirming responsibility

g) why it may be important that the permit to work is complete

h) why it is important to complete documentation clearly and accurately

i) methods of communication

j) what problems may occur in the operation and how to deal with them

k) who to report to with unsolvable problems and/or those which are not your responsibility

l) your personal responsibilities with regard to health, safety and environment

m) when and why PPE needs to be worn

n) when it may be important to observe security/confidentiality

Commentary for Unit 2.5:

Prepare for processing within Chemical, Pharmaceutical and Petro Chemical Manufacture

This unit addresses the competence required to prepare area and equipment for processing. This involves:

- preparation of area and equipment
- confirmation of status of equipment
- completing necessary documentation
- maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.5.1 Prepare area and equipment for processing
2.5.2 Complete necessary documentation

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Documentation	May include that relating to preparations, and any other relevant documentation.
Materials	May include solids, liquids and gases.

Operating instructions The set of instructions which describe the work to be carried out,
including details of the operating parameters.

Operating parameters The conditions under which the processing should take place

Optimisation programme The programme which aims to optimise performance.

Equipment/plant This may be expected to include equipment/plant where there is some interaction between items and/or people. Also may include a number of parameters within the operator's control, and perhaps some control instrumentation.
Typical equipment may include:

- chemical reactors
- addition tanks
- phase separators
- receiving vessels
- pipework and pumps
- film coaters
- solution make-up vessels
- filters and spray equipment

PPE Personal protective equipment to be specified, when necessary.

PTW May include permit to work. Authority to start, and/or continue with the
operation, or the equivalent.

Process type Batch and/or continuous processing. The following types may be included:

- batch operations, where there may be a number of batch operations running simultaneously, or may be a multi-staged batch operation.

- continuous operations, such as reaction, recovery, separation and purification processes, mixing, granulating, drying and compressing.

Problems These may relate to either materials, equipment , materials, operating instructions and/or specifications.

Corrective actions May include adjust, request assistance or shutdown

Health, safety & environmental To include all relevant legislation and company policy.

Conditions Control of conditions may include:

temperature, flow, humidity, pressure, density, ph and level

Communication/Communicate Methods to include spoken, written and electronic.

ELEMENT 2.5.1 Prepare area and equipment for processing

In carrying out this work you must:

1. Check that you have the required **operating instructions** and that they are clear and complete
2. Check that if required, you have the necessary **PTW** or equivalent
3. Ensure that the **operating parameters** are established
4. Check that the area and **equipment** to be used is in a safe and functional condition
5. Confirm the status of the **equipment** before processing begins
6. Wear appropriate **PPE**
7. Begin operation and operate **equipment** safely
8. **Communicate**, if required, with relevant personnel
9. Deal promptly with any **problems** that arise, reporting any which you cannot solve and/or are not your responsibility
10. Follow safe working procedures when using **equipment** and dealing with hazardous materials
11. Complete any required **documentation** accurately and clearly

To do this you need to know

a) the meaning of terms used in operating instructions

b) your responsibilities within the permit to work system, or equivalent
c) the consequences of not using the permit to work system, or equivalent
d) how to interpret and check operating parameters
e) the functions and uses of the different types of equipment used in the operation
f) the importance of confirming status of plant/equipment
g) the importance of communication, keeping others informed during the operation
h) how to handle equipment safely in ways that protect yourself and others from risk
i) your personal responsibilities with regard to health, safety and environment
j) what personal protective equipment to use and why
k) the types of problems that can occur and how to recognise and deal with them
l) who to contact if there is an unsolvable problem and/ or it is not your responsibility
m) what documentation needs to be used and how to complete it

ELEMENT 2.5.2 Complete necessary documentation

In carrying out this work you must:

1. Check that you have all of the relevant **documentation** to proceed
2. Check that the **PTW** or equivalent is complete
3. Ensure that any relevant **documentation** is completed accurately and clearly
4. Wear appropriate **PPE**
5. Deal promptly with any **problem/s** in the procedure that are your responsibility
6. Record the outcome/solution of the **problem/s** accurately
7. Inform the appropriate person of any **problem/s** you cannot solve and/or are not your responsibility
8. Work safely at all times with regard to **materials, equipment** and personal safety
9. Ensure that security and confidentiality is observed where necessary

To do this you need to know

a) what documentation needs to be obtained before proceeding
b) why it is important that the permit to work or equivalent is complete
c) why it is important to complete documentation clearly and accurately
d) what problems may occur in the operation and how to deal with them
e) the importance of recording outcomes/solutions to problems

f) who to report to with unsolvable problems and/or those which are not your responsibility

g) your personal responsibilities with regard to health, safety and environment

h) when and why PPE needs to be worn

i) when it may be important to observe security/confidentiality

Commentary for Unit 2.6:

Control, monitor and adjust the processing operation

This unit addresses the competence required to control processing operations. This involves:

- preparation of area and equipment
- making adjustments when necessary
- completing necessary documentation
- maintaining your own and other's safety while working

There are three elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.6.1 Prepare and check for processing
2.6.2 Process, monitor and adjust
2.6.3 Confirm and control the process

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Operating instructions The set of instructions which describe the work to be carried out,
including details of the operating parameters. Also to include Standard Operating Procedures when appropriate.

Operating parameters The conditions under which the processing should take place

Operating conditions Control of conditions may include:

temperature, flow, humidity, pressure, density, ph and level

Equipment/plant This may include equipment/plant where there is some interaction
between items and/or people. Also may include a number of parameters within the operator's control, and some control instrumentation.

Typical equipment may include:

- chemical reactors
- addition tanks
- phase separators
- receiving vessels
- pipework and pumps
- film coaters
- solution make-up vessels
- filters and spray equipment

PPE Personal protective equipment to be specified, when necessary.

PTW Permit to work. Authority to start, and/or continue with the operation
or the equivalent.

Process type/operations Batch and/or continuous processing. The following types may be included:

- batch operations, where there are a number of batch operations running simultaneously, and also a multi-staged batch operation.

- continuous operations, such as reaction, recovery, separation and purification processes, mixing, granulating, drying and compressing.

Problems These can relate to either materials, equipment , materials, operating instructions and/or specifications. Where a problem requires a maintenance engineer, the person would be expected to report the problem to a more senior person.

Sample May be expected to include sampling methods, taking a quantity of the processing product and checking the quality. The method of obtaining, labelling, analysing, interpretation to depend on the processing method.

Product quality The chemical composition to match the customer requirements and the product specification.

Deviations Deviations of process variables from expected norms, non-conformance requiring adjustments and /or corrective action.

Corrective actions May include adjust, request assistance, replace defective materials or shutdown

Documentation Including that relating to controlling processing, and any other relevant documentation.

Health, safety and Environmental legislation To be aware of relevant current legislation and company policy.

Communication/ Communicate Methods to include spoken, written and electronic

ELEMENT 2.6.1 Prepare and check for processing

In carrying out this work you must:

1. Check that you have the required **operating instructions** and that they are clear and complete
2. Check that if required, you have the necessary **PTW** or equivalent
3. Ensure that the **operating parameters** are established

4. Check that the **equipment** to be used is in a safe and functional condition
5. Check that **materials** and components are as specified
6. Ensure that controls are set correctly as contained in the **operating instructions**
7. Wear appropriate **PPE**
8. **Communicate**, if required, with relevant personnel
9. Deal promptly with any **problems** that arise, reporting any which you cannot solve and/or are not your responsibility
10. Follow safe working procedures when using **equipment** and dealing with hazardous materials
11. Complete any required **documentation** accurately and clearly

To do this you need to know

a) the meaning of terms used in operating instructions

b) the importance of the permit to work (or equivalent)

c) how to interpret and check operating parameters

d) the functions and uses of the different types of equipment used in the operation

e) the importance of confirming materials and components are as specified

f) the importance of checking that controls are as specified

g) the importance of communication, and of keeping others informed during the operation

h) how to handle equipment safely in ways that protect yourself and others from risk

i) your personal responsibilities with regard to health, safety and environmental issues

j) what personal protective equipment to use and why

k) the types of problems that may occur and how to recognise and deal with them

l) who to contact if there is an unsolvable problem and/ or it is not your responsibility

m) what documentation needs to be used and how to complete it

n) the importance of keeping accurate records for this activity

ELEMENT 2.6.2 Process, monitor and adjust

In carrying out this work you must:

1. Check that you have the correct **materials** for the **process operation**

2. Check that you have the specified **operating parameters**
3. Begin processing according to relevant **operating instructions**
4. Monitor processing by appropriate method
5. Recognise **deviations** and take **corrective action** to restore normal **operating conditions**
6. Record and information accurately using appropriate **documentation**
7. Wear appropriate **PPE**
8. **Communicate** with others when necessary
9. Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility
10. Work safely at all times with regard to **materials**, **equipment** and personal safety

To do this you need to know

a) the importance of confirming materials to be used in the process

b) the importance of having specified operating parameters

c) how to begin processing according to SOP

d) methods of monitoring the process

e) what deviations may occur from the norm, and how to recognise them

f) what corrective action to take to restore to normal operating conditions

g) why it is important to complete documentation clearly and accurately

h) why it is important to keep others informed

i) who to report to with unsolvable problems and/or those which are not your responsibility

j) your personal responsibilities with regard to health, safety and environmental issues

k) when and why PPE needs to be worn

ELEMENT 2.6.3 Confirm and control the process

In carrying out this work you must:

1. Check that the **process operation** is operating according to instructions
2. Check that you have all of the relevant **documentation** to proceed
3. When required obtain **sample/s** at the specified time from the specified place
4. When required ensure that the **sample** is representative
5. When required label **sample/s** correctly
6. Follow the correct procedure for processing **sample/s**
7. Interpret **sample** results, and take any necessary **corrective action**
8. Ensure that the **product quality** is controlled, and waste is minimised
9. Ensure that the relevant **documentation** is completed accurately and clearly
10. Wear appropriate **PPE**
11. Deal promptly with any **problems** in the procedure that are your responsibility
12. Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility
13. Work safely at all times with regard to **materials**, **equipment** and personal safety

To do this you need to know

a) the importance of checking that the process is operating within normal parameters

b) what documentation needs to be obtained before proceeding

c) how to obtain representative samples and why it is important

d) how to label samples correctly and why it is important

e) the correct method/procedure for processing samples

f) how to interpret sample results

g) what corrective action to take, if any is needed

h) how to control the process quality and the importance of minimising waste

i) why it is important to complete documentation clearly and accurately

j) what problems may occur in the operation and how to deal with them

k) who to report to with unsolvable problems and/or those which are not your responsibility

l) your personal responsibilities with regard to health, safety and environmental issues

m) when and why PPE needs to be worn

Commentary for Unit 2.7:

Complete processing operation

This unit addresses the competence required to complete a processing operation. This involves:

- prepare plant for shutdown
- shut down of services that are no longer required
- confirmation of status of plant and equipment
- control of waste and/or residual materials when appropriate
- completing necessary documentation
- informing the relevant people in the organisation
- maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.7.1 Complete processing operation
2.7.2 Complete necessary documentation

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant & acceptable in the rare or dangerous occurrences *(see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of the unit.

- rare occurrences at work
- emergency scenarios
- health, safety & environmental issues

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Operating instructions The set of instructions which describe the work to be carried out, including details of the operating parameters.

Operating parameters The conditions under which the processing should take place

Optimisation programme The programme which aims to optimise performance.

Equipment/plant This may include equipment/plant where there is some interaction between items and/or people. Also may include a number of parameters within the operator's control, and some control instrumentation.
Typical equipment may include:

- chemical reactors
- addition tanks
- phase separators
- receiving vessels
- pipework and pumps
- film coaters
- solution make-up vessels
- filters and spray equipment

PPE Personal protective equipment to be specified, where necessary.

PTW May include permit to work. Authority to start, and/or continue with the operation or the equivalent.

Process type Batch and/or continuous processing. The following types may be included:

- batch operations, where there may be a number of batch operations running simultaneously, or may be multi-staged batch operation.

- continuous operations, such as reaction, recovery, separation and purification processes, mixing, granulating, drying and compressing.

Problems These may relate to either materials, equipment , materials, operating instructions and/or specifications.

Corrective actions May include adjust, request assistance and shutdown

Documentation May include that relating to preparations, and any other relevant documentation.

Conditions Control of conditions may include:

- temperature, flow, humidity, pressure and level

Health, safety & environmental legislation May include all relevant legislation and company policy.

Communication/ Communicate May include spoken, written and/or electronic.

SOP Standard operating procedure. The method of performing a task that is recognised as best practice.

Services May include, steam, water, air, electricity, fuel, gas and/or nitrogen.

Waste/residual materials May include off specification product, waste materials and/or excess product.

ELEMENT 2.7.1 Complete processing operation

In carrying out this work you must:

1. Check that you have the required preparation/shut down **operating instructions** and that they are clear and complete
2. Check that the **plant /equipment** is in an appropriate condition for shut down to commence
3. Ensure that all services not required are shut down according to **operating instructions**
4. Confirm that **services** are isolated
5. **Communicate** with all relevant personnel that shut down is imminent
6. Inform all relevant personnel when shut down is completed

7. Minimise any loss or damage through the operation
8. Control **residual** and/or **waste materials**
9. Complete any required **documentation** accurately and clearly
10. Wear appropriate **PPE**
11. Deal promptly with any **problems** that arise, reporting any which you cannot solve and/or are not your responsibility
12. Follow safe working procedure at all times

To do this you need to know

a) the meaning of terms used in preparation/shut down operation instructions
b) how to check that the equipment is ready for shut down to commence
c) methods of shut down for the operation
d) the importance of shutting down services not required by SOP
e) the importance of keeping relevant personnel informed
f) why it is important to minimise any loss/damage during shut down
g) methods of dealing with waste and/or residual materials
h) why it is important to complete documentation accurately and clearly
i) how to handle equipment safely in ways that protect yourself and others from risk
j) your personal responsibilities with regard to health, safety and environment
k) what personal protective equipment to use and why
l) the types of problems that can occur and how to recognise and deal with them
m) who to contact if there is an unsolvable problem and/ or it is not your responsibility

ELEMENT 2.7.2 Complete necessary documentation

In carrying out this work you must:

1. Check that you have the correct **documentation** for the operation
2. Record all results accurately
3. Ensure that the relevant **documentation** is completed accurately and clearly
4. Wear appropriate **PPE**
5. Deal promptly with any **problems** in the procedure that are your responsibility
6. Record the outcome/solution of the **problem** accurately
7. Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility
8. Work safely at all times with regard to **materials, equipment** and personal safety
9. Ensure that security and confidentiality is observed when necessary

To do this you need to know

a) the importance of checking that you have the correct documentation

b) what documentation needs to be obtained

c) methods of material reconciliation

d) why it is important to complete documentation clearly and accurately

e) what problems may occur in the operation and how to deal with them

f) who to report to with unsolvable problems and/or those which are not your responsibility

g) your personal responsibilities with regard to health, safety and environment

h) when and why PPE needs to be worn

i) when it may be important to observe security/confidentiality

Commentary for Unit 2.13:

Contribute to the improvement of routine working practices

NB This unit is a tailored version of a Combined Working Practices unit produced by PINTOG, which was originally designated Unit 8.

This unit addresses the competence required to contribute to the improvement of routine working practices. This involves:

- taking part in discussions about working practices and procedures

- being alert to changes that could be made
- making suggestions that are realistic and take account of safety
- providing suggestions to the right people and at the right time

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.13.1 Seek opportunities to improve routine working practices
2.13.2 Identify and recommend improvements to routine working practices

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant and acceptable in the rare or dangerous occurrences* (see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• health, safety and environmental issues
• emergency scenarios
• rare occurrences at work

Glossary of terms
The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials	May include solids, liquids and gases.

Operating instructions/and/or specification

The set of instructions which detail the process and the quality/quantity/time outcomes for the operation. Including normal operating parameters.

Equipment/plant	This to include equipment/plant where there is some interaction between items and/or people. PPE to be specified, when necessary.
Problems	These can relate to either materials, equipment and/or materials

and/or specifications. Typical production problems include:

- product contamination
- loss of yield
- equipment damage
- non-achievement of specified quantity/time and/or quality
- requirements
- health/safety/environmental problems.

Investigative methods To find the solution some or all of the following may be used:

- interviewing
- inspecting
- testing of materials
- testing of equipment
- trying out solutions

Authority That which is given to the person responsible for the operation.

Documentation May include any relevant reports/records/recommendations and any other documentation.

Communication/Communicate Methods to include individually or in groups, either

- written
- spoken
- electronic

Recommendations These may include some or all of the following:

- improving quality
- improving quantity
- reducing costs
- safety aspects
- environmental aspects
- improving time scales

Health, safety and environmental legislation To include all relevant legislation

Working practices

Working practices you are required to follow will be in relation to:

- standard operating procedures
- health, safety and environment protection procedures

ELEMENT 2.13.1 Seek opportunities to improve routine working practices

In carrying out this work you must:

1. Take an active part in discussions about **working practices**
2. Actively consider whether **working practices** are as good as they could be
3. Take account of safety implications when considering whether potential improvements could be made to **working practices**
4. Base your comments upon up to date information
5. Deal promptly with any **problems** that arise
6. **Communicate** effectively at all times
7. Work safely at all times

To do this you need to know

a) what the main functions are of process equipment and systems, how the various parts of a system interact, and what types of services used by process equipment and systems

b) what is involved in communicating effectively with others, why it is important for team members to support each other effectively, the sort of information needed by each team member for their role, how decisions are made and how to give clear instructions

c) why it is important to use valid and reliable information in evaluation, why evaluation is carried out and why it is important to consider all the various aspects of a situation in its evaluation

d) how to deal with typical problems in the investigative process

e) what your personal responsibilities are with regard to health and safety

ELEMENT 2.13.2 Identify and recommend improvements to routine working practices

In carrying out this work you must:

1. Make **recommendations** which are realistic, safe and comply with company procedure
2. Indicate the sorts of benefits you think suggested improvements could bring
3. Present your **recommendations** clearly, to the right people at the right time
4. **Communicate** with relevant personnel
5. Deal promptly with **problems**
6. Work safely at all times

To do this you need to know

a) what working practices and authorisations apply, the lines of communication and procedures that should be followed in a given situation and why it is important to work within the 'rules' of the organisation

b) what your personal responsibilities are with regard to health and safety

c) what your responsibilities are with regard to health and safety issues within the organisation

d) how to evaluate hazards and risks within routine working practices

e) what is involved in communicating effectively with others, why it is important for team members to support each other effectively, the sort of information needed by each team member for their role, how decisions are made and how to give clear instructions

Commentary for Unit 2.1:

Transfer materials into and between stages of production

This unit addresses the competence required to transfer materials into and between stages of production. This involves:

- moving raw materials, intermediate and finished products
- dispensing materials to facilitate production
- maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.1.1 Moving goods and materials
2.1.2 Dispensing materials

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Stores item/finished product The product at the end of processing and/or raw materials, waste materials.

Methods of movement These may be either:

- by mechanical transport(incl fork-lifts, hoists)
- by automatic transfer route through the plant
- by hand
- volumetric dispensing
- gravimetric dispensing

Specification The set of instructions which describe the work to be carried out, including details of the quality to be achieved. The specification will also detail the quantity, (weight and/or volume) to be measured, and the time within which it must be completed.

Equipment Dispensing equipment may include, bench and floor mounted balances, large and small scale volumetric measures**.**
Mechanical moving equipment, may include fork lifts, hoists etc.

PPE Personal protective equipment to be specified, when necessary.

Problems These can relate to either materials, equipment and/or materials and/or delivery specifications within the limits of their responsibility.

Corrective actions May include adjust, request assistance and shutdown.

Documentation Includes stock records, batch documentation, and any other relevant documentation.

Conditions Control of conditions may be expected to include:

- temperature
- pressure
- flow
- level
- humidity
- ph
- density

Storage Methods of storing materials, appropriate to the process

Health, safety and To be aware of relevant issues concerning these areas .Including

Environmental legislation the disposal of waste.

Samples Methods of collecting, storing and analysing .

ELEMENT 2.1.1 Moving goods and materials

In carrying out this work you must:

1. Check that you have the required **specification** and that it is clear and complete
2. Ensure that **materials** supplied are to the **specification**
3. Prepare the **materials** correctly for transfer and/or use in the processing
4. Check that the **equipment** to be used is in a safe and functional condition
5. Deal promptly with any **problems** that arise, reporting any which you cannot solve
6. Follow safe working procedures when using **equipment** and dealing with hazardous materials
7. Complete the preparations within the required time
8. Transfer **finished product** to next process
9. Wear **PPE** if required
10. Dispose of waste according to company policy
11. Transfer unused **materials** to designated area for reprocessing, storage or disposal and label accordingly
12. Complete required **documentation**

ELEMENT 2.1.2 Dispensing materials

In carrying out this work you must:

1. Check that you have the required **specification** and that it is clear and complete
2. Ensure that dispensing **equipment** is clean, safe and ready for use
3. Make sure that **materials** are verified against the **specification**
4. Ensure that **conditions** are suitable for the type of material to be dispensed
5. Use the correct **method** of dispensing for the **materials**
6. Wear appropriate **PPE** if required
7. Ensure that appropriate action is taken to minimise waste
8. Deal promptly with any **problems** in the procedure that are your responsibility
9. Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility
10. Work safely at all times with regard to **materials**, **equipment** and personal safety
11. Clear any residual **materials** and/or waste from the dispensing area in accordance with company policies
12. Clean the area and **equipment** if required for the next scheduled operation
13. Reconcile **materials** and record accurately using the correct **documentation**

To do this you need to know

a) the meaning of terms used in specifications/documentation for dispensing materials

b) the handling characteristics of different types of materials to be dispensed, including hazardous if appropriate

c) why it is important that materials are checked against the specification

d) methods of dispensing and equipment used

e) what the consequences are of incorrect dispensing

f) why it is important to use the correct techniques and equipment for dispensing

g) what preparations are required for dispensing

h) your personal responsibilities with regard to health, safety and environment

i) why and when the dispensing equipment needs to be cleaned

j) when and why PPE needs to be worn

k) methods of documentation that are used

Commentary for Unit 2.8:

Sample and test materials

This unit addresses the competence required to sample and test materials used in processing. This includes:

preparing and obtaining a sample
testing the sample
maintaining product integrity at all times
maintaining your own and others safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.8.1 Prepare and obtain sample
2.8.2 Test the sample

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials / sample	May include solids, liquids and gases.
Specification	The set of instructions which describe the work to be carried out. Including customer requirements, both qualitative and quantitative, and the time within which it must be completed.
Sample request	May include the following: quality assurance testing during production latet moisture content testing

on-site sample

Sampling plan Contains all relevant information. Including:

conditions
sampling method
access
location
timing
frequency
duration
recording methods

Testing request May include the following:

conducting density/moisture tests
establishing liquid and plastic limits
performing viscosity tests
cell identification/in-numeration

Testing plan Contains all relevant information to be used. May include:

calibration of equipment
testing method
cleanliness
environment
time
acceptable variations
recording methods

Sampling equipment Sampling equipment **May** include:

gas bombs
automated
standard bottles (glass and plastic)
manual sampling points

Equipment PPE to be specified, when necessary

Problems These can relate to either materials, equipment and/or materials and/or delivery specifications. The person carrying out this work would be expected to resolve any equipment problem for which maintenance engineers are not required. Where a problem does require a maintenance engineer, the person would be expected to report the problem to a more senior person. Other problems include, contamination, disruption and disturbance.

Documentation Includes specifications, reports, schedules and any other relevant documentation.

Conditions Control of conditions may include:

temperature
pressure
flow
level
humidity
density
ph

Risk assessment To include hazardous materials and contamination.

Health, safety and To include all relevant legislation and company policy.
Environmental legislation

SOP Standard operating procedure. The method of performing a task that is recognised as best practice.

ELEMENT 2.8.1 Prepare and obtain sample

In carrying out this work you must:

Check that you have the required **sampling plan** and that it is clear and complete

Ensure that **equipment** to be used is as specified, and in a safe and functional condition

Ensure that all required resources are available

Ensure that **conditions** are in accordance with **sample plan**, and are recorded

Ensure that **sample** is taken in accordance with **SOP**

Deal promptly with any **problems** that arise, and record appropriately

Follow safe working procedures at all times

Wear **PPE** if necessary

Ensure that any **risk assessment** is undertaken if necessary

Protect **sample** from all forms of contamination

Identify and label sample according to **sampling plan**

12. Record information as specified in the **sampling plan**

To do this you need to know

the meaning of terms used in sampling plans

methods of sampling, including standard operating procedure

the handling characteristics of materials to be sampled, including any hazardous

the functions and uses of the different types of equipment used in sampling methods

how to handle equipment safely in ways that protect yourself and others from risk

your personal responsibilities with regard to health, safety and environment

when and why to use personal protective equipment

what corrective action to take on discovering defective conditions, materials and/or equipment

the types of problems that can occur and how to recognise and deal with them

types of labelling used

what documentation to use and what information needs to be recorded

ELEMENT 2.8.2 Test the sample

In carrying out this work you must:

Check that you have the required **testing plan** and that it is clear and complete

Ensure that the **equipment** to be used is as specified and in a safe and functional manner

Store and label test sample if required

Check that the correct sample has been selected

Use the appropriate testing procedure in accordance with **testing plan**

Ensure that controlled **conditions** are as specified in the **testing plan**

Wear **PPE** if required

Record all results in accordance with **testing plan**

Deal promptly with any **problems**, deviations, or abnormal occurrences when testing. Record and inform the appropriate person

Work safely at all times with regard to **materials,** equipment and personal safety

Clear any residual **materials** and/or waste from the testing area in accordance with company policies

Ensure that any **equipment** to be re-used, is cleaned and stored appropriately

13. Complete all relevant **documentation**

To do this you need to know

the meaning of terms used in testing plans

the different types of equipment used in testing

the different methods of testing that could be used

standard operating procedure for testing

what the consequences are of incorrect/adverse conditions

why it is important to check that the correct sample has been selected

methods of storing and labelling test samples

how to record the results

the consequences of abnormal results, and who to inform

methods of clearing residual materials and /or waste

why, when and how the equipment needs to be cleaned and stored

your personal responsibilities with regard to health, safety and environment

when and why PPE needs to be worn

k) types of documentation that are used

Commentary for Unit 2.9:

Separate and dispose of processing materials, by-products and wastes

NB This unit is a tailored version of a Combined Working Practices unit produced by PINTOG, which was originally designated Unit 17.

This unit addresses the competence required to separate and dispose of processing materials, by-products and wastes. This involves:

separating part processed, excess materials, recoverable by-products and wastes from the process
dealing with spillages and equipment problems
dealing with hazardous and non hazardous materials, by-products and wastes

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.9.1 Separate part-processed and excess materials and recoverable by-products
2.9.2 Separate and remove wastes for treatment

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant and acceptable in the rare or dangerous occurrences* (see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• health, safety and environmental issues
- emergency scenarios
- rare occurrences at work

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Separated

Processed, part-processed materials, excess materials and recoverable by-products need to be separated out, this can occur during the course of or at the end of a process operation.

The following wastes may need to be separated:
hazardous wastes environmentally sensitive wastes wastes that are neither hazardous nor environmentally sensitive

Spillages and contamination

Spillage or contamination relating to processed, part processed materials, excess materials or recoverable by-products.

Materials and by-products

Types of materials and by-products may include:
materials or by-products with specific SHE implications which require the use of PPE
materials or by-products which are easily damaged, spilled or contaminated
materials or by-products which are not easily damaged, spilled or contaminated
materials or by-products of very high value

Problems

Problems can occur when materials or by products cannot be separated at specified times without disruption to the process operation, suitable containment and storage for separated materials or by-products is not available, or separation equipment and systems are not working properly

Other people

Other people may include:
other process operators
waste handling operators

Waste

Waste may include:
hazardous wastes
environmentally sensitive wastes

	wastes that are neither hazardous nor environmentally sensitive
Waste removal process	Waste removal can occur during or at the end of a operation
PPE	Personal protective equipment to be specified where necessary.

ELEMENT 2. 9.1 Separate part-processed and excess materials and recoverable by-products

In carrying out this work you must:

Make sure that processed **materials**, part-processed **materials,** excess **materials** and recoverable **by-products** are separated out at the most effective stages in the process

Act promptly to clean up any **spillages** and **contamination**

Handle **materials** and **by-products** safely and in ways that prevent them from being damaged, spilled or contaminated

Remove processed, part processed and excess **materials** and recoverable **by-products** to the right streams

Keep up to date, accurate and complete records of the quantity, quality and source of **separated** materials and by-products

Promptly and accurately report any **problems** with the materials for which you are responsible

Inform the appropriate person of any **problem** that you cannot solve and/or is not your responsibility

Wear appropriate **PPE**

Work safely at all times

To do this you need to know

what materials are used in different processes, what happens to them as they are processed, and why they have to be prepared

what hazards to people and the environment arise from mishandling and misprocessing of materials, the precautions and procedures which should be applied when handling materials at each stage of the process and in storage

why processed, part processed materials, excess materials and recoverable by-products should be separated out as they are produced, the types of containment and storage used

what working practices and authorisations apply, the lines of communication and procedures that should be followed in a given situation and why it is important to work within the 'rules' of the organisation

why a specification is needed for a process and what information is normally given, where to get the specification for a given job, why it is so important to make sure that the specification is met, in what ways the specifications might change for different customers, and how to read and interpret a process specification

how to deal with typical problems and who to report unsolvable problems to

the sorts of records kept, how to complete them, where they are stored and who has access to them

what agreed health and safety procedures relate to controlling risks to health, safety, process and the environment

what your personal responsibilities are with regard to health and safety

what to look for when checking goods for their acceptability, acceptable reasons for refusing goods entry to stores, methods for checking type and quality of goods, use of stock control systems, where deliveries should be off-loaded, sources of information on supplier history, what resources are available for checking goods entering storage, why its is important to handle goods safely, and what documentation to use and why it is important to complete it accurately

definitions of the following sorts of wastes - hazardous, non-hazardous, environmentally sensitive, environmentally inert, how to find out about the procedures that apply to handling different sorts of wastes, why wastes are removed during the course of a process as well as at the end, why it is important to minimise the loss of good product when separating and removing wastes, the sorts of waste handling containers and equipment used in the processing industry, what kind of information is given on waste identification labels, and what action to take if there is a spillage, leakage or emission of wastes

when and how to wear PPE

ELEMENT 2.9.2 Separate and remove wastes for treatment

In carrying out this work you must:

Make sure that other people involved with the process are clearly told when **waste** separation and removal activities are to be carried out which may affect them

Follow all safety, health and environmental procedures which apply to **waste** handling

Separate **wastes** out in such a way that as little as possible good product is removed

Use the correct **waste** handling route as specified in safe working practices

Carry out **waste** removal with as little disruption as possible to the process

Accurately record the removal of **wastes**

Wear **PPE** when appropriate

Work safely at all times

Deal promptly with **problems**, reporting those that you cannot solve and/or are not your responsibility to the right person

To do this you need to know

what is involved in communicating effectively with others, why it is important for team members to support each other effectively, the sort of information needed by each team member for their role, how decisions are made and how to give clear instructions

what hazards to people and the environment arise from mishandling and misprocessing of materials, the precautions and procedures which should be applied when handling materials at each stage of the process and in storage

why processed, part processed materials, excess materials and recoverable by-products should be separated out as they are produced, the types of containment and storage used,

what working practices and authorisations apply, the lines of communication and procedures that should be followed in a given situation and why it is important to work within the 'rules' of the organisation

when and how to wear PPE

the sorts of records kept, how to complete them, where they are stored and who has access to them

what agreed health and safety procedures relate to controlling risks to health, safety, process and the environment

what your personal responsibilities are with regard to health and safety

definitions of the following sorts of wastes - hazardous, non-hazardous, environmentally sensitive, environmentally inert, how to find out about the procedures that apply to handling different sorts of wastes, why wastes are removed during the course of a process as well as at the end, why it is important

to minimise the loss of good product when separating and removing wastes, the sorts of waste handling containers and equipment used in the processing industry, what kind of information is given on waste identification labels, and what action to take if there is a spillage, leakage or emission of wastes

Commentary for Unit 2.10:

Clean and prepare complex items of plant and equipment for production

This unit addresses the competence required to clean the area and /or equipment to prepare for production . This involves:

dismantling of equipment
cleaning of equipment
re-instating the equipment
confirming the status of the plant and/or equipment
liasing with maintenance personnel where appropriate
maintaining your own production and other's safety while working

There are three elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.10.1 Clear, clean plant, equipment and area of process
2.10.2 Liase with relevant personnel
2.10.3 Confirm the status of plant, equipment and area after cleaning

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Operating instructions/specification The set of instructions which describe the work to be carried out, including details of the parameters for doing so.

Dismantling operations May include, within limits of own authority:

disconnecting
isolating
disassembling

Cleaning operations May include the removal of solids, liquids and gases by appropriate procedures.

Equipment/plant This may include equipment/plant where there is some interaction between items and/or people. Also may include single items of equipment comprising a few parts. Types of equipment to be cleaned may include heat exchangers, dryers, filtration systems, tablet presses and sterile filtration units.

PPE Personal protective equipment to be specified, when necessary.

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Problems These may relate to either materials, equipment, personnel and/or specifications.

Corrective actions May include adjust, request assistance or shutdown.

Documentation May include any relevant documentation.

Communication/ Communicate May include either, spoken, written and/or electronic.

Liaison	To keep personnel informed throughout the operation.
Maintenance	Work which may be carried out to enable the process to run as smoothly as possible.
Health, safety and environmental legislation	May include any relevant legislation and company policy
Authority/Authorisation	The permission that is needed to complete the task.
SOP	Standard Operating Procedure. The method of completing a task according to stated guidelines in the organisation.
Current Status	Confirmation of plant and equipment
Relevant personnel	May include process, utilities, materials handling, laboratory and any other relevant personnel.

ELEMENT 2.10.1 Clear, clean plant, equipment and area of process

In carrying out this work you must:

Check that you have the required **authorisation** to proceed

Check that you have the **specification** detailing the work to be carried out

Identify correct **plant** and/or **equipment** to be isolated

Isolate **plant** and/or **equipment** according to SOP

If required, dismantle **plant** and/or **equipment** correctly

Clear and clean all residual **materials** and/or waste from the area to the required standard

If required re-assemble **plant** and/or **equipment** ready for the next operation

Wear specified **PPE** if necessary

Deal promptly with any **problems** that arise, reporting any which you cannot solve and/or are not your responsibility

Follow safe working procedures when using **equipment** and dealing with hazardous materials

To do this you need to know

the importance of having the necessary authorisation to proceed

the meaning of terms used in specifications concerned with cleaning

the importance of identifying the correct plant/equipment

methods of isolating plant/equipment

how to handle equipment safely in ways that protect yourself and others from risk

methods of cleaning plant/equipment

how to dismantle and reassemble plant and/or equipment when necessary

your personal responsibilities with regard to health, safety and environment

what personal protective equipment to use and why

the types of problems that can occur and how to recognise and deal with them

who to contact if there is an unsolvable problem and/ or it is not your responsibility

ELEMENT 2.10.2 Liase with relevant personnel

In carrying out this work you must:

Ensure that relevant personnel are clear about the nature of the **plant/equipment** to be maintained

Communicate effectively with relevant personnel

Explain to relevant personnel about any **problems** and current status of the **plant/equipment**

Give warnings as appropriate about specific hazards and/ or safety requirements

Ensure that when the **plant/equipment** is received from maintenance you are clear about the work undertaken

Record information accurately on correct documentation

Wear appropriate **PPE**

Deal promptly with any **problems** in the procedure that are your responsibility

Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility

Work safely at all times with regard to **material**, **equipment** and personal safety

To do this you need to know

how to contact the appropriate maintenance personnel

the importance of communication through the procedure

why it is important to explain about the current status of the plant/ equipment

why it is important to give warnings about specific hazards and /or safety issues

when and why PPE needs to be worn

what problems may occur and how to deal with them

who to report to with unsolvable problems and/or those which are not your responsibility

your personal responsibilities with regard to health, safety and environment

methods of documentation that are used

m) why it is important to complete documentation accurately

ELEMENT 2.10.3 Confirm the status of plant, equipment and area after cleaning

In carrying out this work you must

Ensure that all **plant/equipment** is confirmed as being clean and operational

Check the status of all **plant/equipment,** identifying any areas of concern

Deal promptly with any **problems** that arise, reporting any which you cannot solve

Ensure that the condition of all **plant/equipment** is recorded accurately

Confirm that the area is in a suitable condition for the next activity

Communicate with relevant personnel when required

Wear **PPE** if appropriate

Follow safe working procedures at all times

Complete any **documentation** correctly

To do this you need to know

Why it is important to check that plant and equipment is clean and operational

the importance of checking the status of the plant and equipment

why it is important to identify any 'areas of concern'

why it is important to record all information accurately

why it is important to confirm and record the status of the plant and equipment

why it is important to communicate with relevant personnel

what problems may occur and how to deal with them

who to report to if you cannot solve problems and/or they are not your responsibility

what your personal responsibilities are with regard to health, safety and environment

what documentation needs to be completed and how

Commentary for Unit 2.11:

Starting the packaging operations

This unit describes the activities and understanding you will need to demonstrate that you are able to start packaging operations, ensuring that everything is safe and ready to use. The lines used will require a high degree of operator control and problem solving. You will need to demonstrate and explain how you: ensure readiness of the area and equipment, ensure materials are available, carry out pre-start checks. To perform competently, you will need to show that you can operate in a range of conditions.

There are three elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.11.1 Ensure readiness of the area and equipment
2.11.2 Ensure materials are available
2.11.3 Carry out pre start-up checks

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation can be used only in the situations defined below*, in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• where safety factors are important
• when a particular work activity does not happen very often

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials To include solids, liquids and gases.

Methods of movement These can be either:

by mechanical transport(incl fork-lifts,hoists)
by automatic transfer route through the plant
by hand

Specification The set of instructions which describe the work to be carried out.

Packing/filling operations These could include:

warmed product operations
fluidised product operations
straightforward packing operations?

Packing/filling request The set of instructions which describe the work to be carried out. To include the packing order, work order, batch card and/or, recipe. Small scale or bulk. Including all relevant data on:

equipment
product
packaging
weights
fills
packing densities
machine settings

Equipment To include reliable equipment with basic instrumentation.
PPE to be specified, when necessary.

.

Problems These can relate to either , equipment, materials, records or specifications. The person carrying out this work would be expected to resolve any equipment problem for which maintenance

	engineers are not required. Where a problem does require a maintenance engineer, the person would be expected to report the problem to a more senior person.
Corrective actions	May include adjust, replace defective materials, request assistance or shutdown
Documentation	May include records, specifications, and any other relevant documentation.
Waste	Including ways of minimising waste in the process, and acceptable re-cycling within the operation
Health, safety and Environmental legislation	To include all relevant legislation and company policy.
PPE	Personal protective equipment to be specified when necessary.

ELEMENT 2.11.1 Ensure readiness of the area and equipment

In carrying out this work you must:

Check that the area and **equipment** are cleared and cleaned to the specified procedure

Check that the services required to start the **packing/filling operation** are available

Check that the area and **equipment** have been prepared for use

Identify and deal with **problems** correctly

Wear **PPE** when appropriate

Complete all **documentation** required to permit packaging operations with the specified information at the appropriate time

Record all information accurately and legibly

Work safely at all times

To do this you need to know

the area and the pieces of equipment which should be ready

the specified procedures for clearing and cleaning

how to confirm line clearance

the services which are required to start the operation

what action to take and whom to inform

how to switch on the equipment

which equipment is to be used and how it should be prepared

which safety devices need to be checked and how to check them

when and how to wear PPE

methods for dealing with problems, and procedures for reporting problems

which documents need to be completed and when

standard operating procedures

your personal responsibilities with regard to health and safety

what information is needed

where to obtain the documents and to whom they should be given

what information is needed by whom

the prescribed manner for making alterations

ELEMENT 2.11.2 Ensure materials are available

In carrying out this work you must:

Check that all specified **materials** are available in the required quantity at the correct time

Correctly identify all **materials** against **documentation**

Accurately and legibly complete the **documentation** with the specified information at the correct time

Identify and deal with **problems** correctly

Wear **PPE** when appropriate

Work safely at all times

To do this you need to know

which materials are needed and how much

the quantity of materials which will be needed later

what materials to expect and how much

how to interpret the documentation

how to confirm the material status

the importance of identifying the materials correctly

which documents are to be completed and when

when and how to wear PPE

procedures for reporting problems and methods of dealing with problems

what you personal responsibilities are with regard to health and safety

what information is needed

where to obtain the documents and to whom they should be given

the prescribed manner for making alterations

ELEMENT 2.11.3 Carry out pre start-up checks

In carrying out this work you must

Ensure that the **equipment**/line is loaded correctly with the specified **materials**

Produce on a trial basis packs of the correct **specification**

Segregate appropriately materials and packs which do not meet **specification**

Identify and deal with **problems** correctly

Wear **PPE** when appropriate

Complete **documentation** accurately and legibly with the specified information at the correct time

Work safely at all times

To do this you need to know

how to load materials correctly, and which materials to use

how to set controls to suitable positions, and the start up procedures

how to carry out calibration checks

how to make tests and adjust the controls to meet specification

how to carry out challenge tests

how to handle recoverable packs and materials correctly

how to handle non-recoverable packs and materials correctly

whose authority is needed to begin and when

procedures for reporting problems and methods for dealing with problems

which documents are to be completed and when

standard operating procedures

what your personal responsibilities are with regard to health and safety

what information is needed

where to obtain the documents and to whom they should be given

the prescribed manner for making alterations

when and how to wear PPE

Commentary for Unit 2.12: Ending the packaging operations

This unit describes the activities and understanding you will need to demonstrate that you are able to complete the packaging operation, ensuring that the line is left ready for the next use. You will need to demonstrate and explain how you: finish packaging; prepare packs, materials and waste disposal; reconcile specific materials; ensure clearance of packaging line. To perform competently, you will need to show that you can operate in a range of conditions. You will need to demonstrate therefore that you can deal effectively with the following:

either a fully automated line comprising at least three items of equipment or two different types of semi-automatic packing lines comprising at least two items of equipment
end of a batch, end of a product run, end of a specific order
documentation relating to packaging instructions and packaging records
procedures relating to legal requirements and quality standards
problems associated with documentation and packs, and incorrect information and counts
reconciliations when achieved within limits and outside limits
bulk products and packaging components.

There are four elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.12.1 Finish packaging
2.12.2 Prepare packs, materials and waste disposal
2.12.3 Reconcile specific materials
2.12.4 Ensure clearance of packaging line

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation can be used only in the situations defined below*, in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• where safety factors are important
• when a particular work activity does not happen very often

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials To include solids, liquids and gases.

Methods of movement These can be either:

by mechanical transport(incl fork-lifts,hoists)
by automatic transfer route through the plant
by hand

Packing/filling operations These could include:

warmed product operations
fluidised product operations
straightforward packing operations?

Packing/filling request The set of instructions which describe the work to be carried out. To include the packing order, work order, batch card and/or, recipe. Small scale or bulk. Including all relevant data on :

equipment
product
packaging
weights

- fills
- packing densities
- machine settings

Equipment To include reliable equipment with basic instrumentation.
PPE to be specified, when necessary.

.

Problems These can relate to either , equipment, materials, records or specifications. The person carrying out this work would be expected to resolve any equipment problem for which maintenance engineers are not required. Where a problem does require a maintenance engineer, the person would be expected to report the problem to a more senior person.

Corrective actions	May include adjust, replace defective materials, request assistance or shutdown
Documentation	**Includes records, specifications, and any other relevant documentation.**
Waste	Including ways of minimising waste in the process, and acceptable re-cycling within the operation
Health, safety and Environmental legislation	To include all relevant legislation and company policy.
PPE	Personal protective equipment to be specified when necessary.

ELEMENT 2.12.1 Finish packaging

In carrying out this work you must:

1. Carry out preparations to finish packaging according to the **packing/filling request**
2. Achieve the end point according to specified procedures
3. Identify and deal correctly with **problems**
4. Wear **PPE** when appropriate
5. Work safely at all times

To do this you need to know

a) the timescale for the completion of the order or batch
b) the procedures for finishing and the time needed to do so
c) the quantities required
d) how to switch off services and equipment
e) procedures for reporting problems
f) the methods of dealing with problems
g) what your personal responsibilities are with regard to health and safety
h) when and how to wear PPE

ELEMENT 2.12.2 Prepare packs, materials and waste disposal

In carrying out this work you must:

1. Correctly prepare final packed product/s for removal according to **packing/filling request**
2. Correctly prepare excess **materials** for removal
3. Handle **waste materials** according to the specified procedures
4. Complete **documentation** accurately and legibly with the specified information at the correct time
5. Wear **PPE** when appropriate
6. Work safely at all times

To do this you need to know

a) how to understand packing requests

b) the total number of packed product/s that should be removed, and how to identify them

c) methods of stacking packed product/s

d) how to collate and label excess materials for return

e) how to check all areas for excess materials

f) the procedures for collating, quantifying, labelling waste material

g) what your personal responsibilities are with regard to health and safety

h) what needs to be recorded , and how

i) the techniques for the safe handling of hazards

j) what information is needed and when

k) the procedures for completing documentation

l) the specified manner for making alterations

m) when and how to wear PPE

ELEMENT 2.1.2.3 Reconcile specific materials

In carrying out this work you must

1. Quantify accurately the total amounts of packs and excess **materials**
2. Complete the reconciliation correctly

Identify and deal with **problems** correctly

Complete the **documentation** accurately and legibly with the specified information at the correct time

Wear **PPE** when appropriate

Work safely at all times

To do this you need to know

which materials should be reconciled

the result of the calculation

what the reconciliation procedures are

how to make the required calculations

when and to whom to refer results outside the specified limits

procedures for reporting problems

methods for dealing with problems

which documents are to be completed and when

what information is needed

what your personal responsibilities are with regard to health and safety

where to obtain the documents and to whom they should be given

the specified manner for making alterations

when and how to wear PPE

ELEMENT 2.12.4 Ensure clearance of packaging line

In carrying out this work you must

Ensure that the **packaging equipment** is in a safe condition for line clearance

Locate and remove from the line any unwanted residual **materials** according to the specified procedures

Transfer to storage or dispose of packs, excess **materials** and waste according to the specified procedures

Clear the line according to the specified procedures

Identify and deal with **problems** correctly, reporting those that you cannot solve and/ or are not your responsibility to the appropriate person

Complete **documentation** accurately and legibly with the specified information at the correct time

Work safely at all times

Follow procedures effectively at all times

To do this you need to know

what constitutes a safe condition

which services to shut down and how to do it

how to identify what should be removed and why

how to remove packs and excess materials

the correct method for removing waste for disposal

how to transfer to storage

how to dispose of unwanted materials and waste

the requirements for the line after clearance has been completed

procedures for reporting problems and methods for dealing with problems

which documents are to be completed and when

what information is needed

where to obtain the documents and to whom they should be given

security procedures for dealing with documents and materials

procedures for operating equipment

acceptable time limits for completion and priority order tasks

what your personal responsibilities are with regard to health and safety

the prescribed manner for making alterations

expected standards of hygiene and code of dress

expected standards of tidiness and cleanliness

Commentary for Unit 2.13:

Contribute to the improvement of routine working practices

NB This unit is a tailored version of a Combined Working Practices unit produced by PINTOG, which was originally designated Unit 8.

This unit addresses the competence required to contribute to the improvement of routine working practices. This involves:

- taking part in discussions about working practices and procedures
- being alert to changes that could be made
- making suggestions that are realistic and take account of safety
- providing suggestions to the right people and at the right time

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.13.1 Seek opportunities to improve routine working practices
2.13.2 Identify and recommend improvements to routine working practices

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant and acceptable in the rare or dangerous occurrences* (see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• health, safety and environmental issues
• emergency scenarios
• rare occurrences at work

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials May include solids, liquids and gases.

Operating instructions/and/or specification

The set of instructions which detail the process and thequality/quantity/time outcomes for the operation. Including normal operating parameters.

Equipment/plant This to include equipment/plant where there is some interaction between items and/or people. PPE to be specified, when necessary.

Problems These can relate to either materials, equipment and/or materials
and/or specifications. Typical production problems include:

- product contamination
- loss of yield
- equipment damage
- non-achievement of specified quantity/time and/or quality
- requirements
- health/safety/environmental problems.

Investigative methods To find the solution some or all of the following may be used:

- interviewing
- inspecting
- testing of materials
- testing of equipment
- trying out solutions

Authority That which is given to the person responsible for the operation.

Documentation May include any relevant reports/records/recommendations and any other documentation.

Communication/Communicate Methods to include individually or in groups, either

- written
- spoken
- electronic

Recommendations These may include some or all of the following:

- improving quality
- improving quantity
- reducing costs
- safety aspects
- environmental aspects
- improving time scales

Health, safety and environmental legislation To include all relevant legislation

Working practices Working practices you are required to follow will be in relation to:

- standard operating procedures
- health, safety and environment protection procedures

ELEMENT 2.13.1 Seek opportunities to improve routine working practices

In carrying out this work you must:

8. Take an active part in discussions about **working practices**
9. Actively consider whether **working practices** are as good as they could be
10. Take account of safety implications when considering whether potential improvements could be made to **working practices**
11. Base your comments upon up to date information
12. Deal promptly with any **problems** that arise
13. **Communicate** effectively at all times
14. Work safely at all times

To do this you need to know

f) what the main functions are of process equipment and systems, how the various parts of a system interact, and what types of services used by process equipment and systems

g) what is involved in communicating effectively with others, why it is important for team members to support each other effectively, the sort of information needed by each team member for their role, how decisions are made and how to give clear instructions

h) why it is important to use valid and reliable information in evaluation, why evaluation is carried out and why it is important to consider all the various aspects of a situation in its evaluation

i) how to deal with typical problems in the investigative process

j) what your personal responsibilities are with regard to health and safety

ELEMENT 2.13.2 Identify and recommend improvements to routine working practices

In carrying out this work you must:

7. Make **recommendations** which are realistic, safe and comply with company procedure
8. Indicate the sorts of benefits you think suggested improvements could bring
9. Present your **recommendations** clearly, to the right people at the right time
10. **Communicate** with relevant personnel
11. Deal promptly with **problems**
12. Work safely at all times

To do this you need to know

f) what working practices and authorisations apply, the lines of communication and procedures that should be followed in a given situation and why it is important to work within the 'rules' of the organisation

g) what your personal responsibilities are with regard to health and safety

h) what your responsibilities are with regard to health and safety issues within the organisation

i) how to evaluate hazards and risks within routine working practices

j) what is involved in communicating effectively with others, why it is important for team members to support each other effectively, the sort of information needed by each team member for their role, how decisions are made and how to give clear instructions

Commentary for Unit 2.14:

Ensure your own actions aim to protect the environment

NB This unit is a tailored version of a Health and Safety unit produced by the Employment NTO, which was originally designated Unit H. This means that the wording of the unit differs slightly from the rest of the COGENT suite.

This unit is about minimising risks to the environment as a result of work activities. It describes the competence required to ensure that:

your own actions do not create any risks to the environment
you do not ignore significant risks to the environment
you take sensible action to put things right, including reporting risks, and seeking advice

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.14.1 Identify the risks to the environment arising as a result of workplace activities
2.14.2 Minimise risks to the environment arising as a result of workplace activities

Fundamental to this Unit is an awareness and understanding of the impact of working practices on the environment. It is important to have a basic understanding of good practice in protecting the environment. This Unit does not assume a person with high level responsibilities for the environment already exists in the workplace.

This unit is for: everyone at work (i.e. paid, unpaid, full-time, part-time) It is about maintaining good practice in day to day work activities by identifying the risks, minimising the risks and using resources responsibly.

This unit is about: the responsibilities of everyone at work for minimising risks to the environment as a result of work activities. It describes the competences required to ensure that:

your own actions do not create any risks to the environment
you do not ignore significant risks to the environment, and
you take sensible action to put things right, including reporting risks, and seeking advice

This is what you need to show:

In element H.1: that you understand how activities at the workplace might affect the environment, how to check your own work activities and work area

for any hazards which you or others may bring about and cause to the environment. You should be able to identify those hazards with significant risks which you can safely deal with yourself, and when you must report them to the “responsible person” for attention.
In element H.2: that you show you have taken steps to reduce risks to the environment which have arisen as a result of your action, or action by others with whom you might come into contact with during the course of your work. It covers carrying out tasks in accordance with instructions and the requirements of the workplace.

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation is not acceptable in the assessment of this unit to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for this unit.

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Environment — This is a broad term which refers to the global environment with which we all interact.

Hazards — The Health and Safety Executive (HSE) definition is as follows: "A hazard is something with potential to cause harm":

Risk/s — The Health and Safety Executive definition is " a risk is the likelihood of a hazard's potential being realised". In this unit these definitions apply equally to environmental hazards and risks. Risks to the environment covered by this unit are arising from:
the use of materials and substances hazardous to the environment
the disposal of waste, materials and substances hazardous to the environment
emission of gases, fumes or dust.

Workplace — This is the single or multiple areas in which work is carried out. This may be a shop, office, a manufacturing plant, outdoors, or an educational establishment.

Working practices — These are any activities, procedures, use of materials or equipment and working techniques used. It also covers any omissions in good working practice which may pose a threat to health and safety

Workplace policies — This covers documentation prepared by the employer on the procedures to be followed regarding environmental matters. It could be the employers environmental policy statement, or guidance covering aspects of the working practices or workplace that should be drawn to the employees' (and "other persons") attention.

Workplace environmental procedures These contain the specific instructions or details for people at work to follow for a environmentally friendly working environment. They will contain the instructions, for example, on disposal of materials hazardous to the environment. Legal and workplace environmental procedures covered by this unit are:
waste minimisation
the use of environmentally safe working methods and equipment
the use of personal protection equipment
what to do in the event of an emergency involving environmental hazards
authorisation for handling, storing, using or disposing hazardous materials, products or equipment.

Reporting procedures Reporting procedures covered by this unit are:
oral reports written reports

Responsible persons The person or persons at work to whom you should report any health and safety issues and hazards. This could be a supervisor, line manager or employer.

ELEMENT 2.14.1 Identify the risks to the environment arising as a result of workplace activities

In carrying out this work you must be able to:

Correctly name and locate the **responsible persons** in the workplace to whom you should report environmental matters

Remain up-to-date on environmentally-friendly **working practices** which are relevant to your workplace

Identify any current **working practices** in your job role which could cause harm to the **environment**

Identify any materials, products or equipment used in any part if your job role which could cause harm to the **environment**

Report, accurately, any differences between legal and workplace regulations and the actual use of materials or products hazardous to the **environment**

Report, promptly, those hazards which present high risks to the **persons responsible** for environmental matters

Report, concisely and accurately, your **environment** awareness training needs to the appropriate persons

To do this you need to know

relevant aspects of the Environmental Protection Act and relevant regulations which will affect the workplace

your duties for the environment as defined by any specific legislation covering your job role

the particular risks to the environment which may be present in your workplace and/or in your own job role

the importance of remaining alert to the presence of hazards to the environment in the whole work place

the importance of dealing with or promptly reporting risks to the environment

substances and processes categorised as hazardous to the environment

workplace policies, precautions and procedures relating to controlling risks to the environment

responsibilities for items (materials/equipment) hazardous to the environment in your job description

the responsible persons to whom to report environmental matters

ELEMENT 2.14.2 Minimise risks to the environment arising as a result of workplace activities

In carrying out this work you must be able to:

Follow the up-to-date legal requirements and **workplace environmental procedures** for your job role

Control these environmental hazards within your capability and the scope of your job responsibilities

Report, promptly, risks to the **environment** that you are able to deal with

Pass on any suggestions for limiting **risk/s** to the **environment** to the **responsible persons**

Follow suppliers', manufacturers' and workplace instructions for the safe use and storage of materials and products

Follow suppliers', manufacturers' and workplace instructions for the safe use and storage of equipment

Follow the correct procedure for handling materials and products hazardous to the **environment**

Follow the correct procedure for disposing of materials and products hazardous to the **environment**

To do this you need to know

the specific workplace environmental procedures covering your job role

suppliers', manufacturers' and workplace instructions for the use of equipment, materials and products hazardous to the environment

how to use resources and materials effectively and efficiently

working practices for your own job role

correct handling procedures for materials hazardous to the environment

your own responsibility for controlling hazards to the environment

workplace requirements for handling hazards to the environment which you are unable to deal with

Commentary for Unit 2.16:

Maintain the condition of engineering assets (ECS 5.01 & 5.02)

NB This unit is a tailored version of two ECS Units produced by OSCEng which were originally designated Unit 5.01 and 5.02

This unit addresses the competence required to maintain plant, equipment and services within detailed specifications and following clearly defined procedures. This involves:

implementation of maintenance procedures for engineering assets
adjusting engineering assets to meet operating requirements
liaising with other personnel
completing necessary documentation
maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

2.16.1 Carry out planned maintenance procedures
2.16.2 Adjust engineering assets to meet operating requirements

These imported units do not have glossary of terms, they have scope statements which appears within the unit and have specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation will only be considered relevant and acceptable in the rare or dangerous occurrences* (see below) in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• health, safety and environmental issues
- emergency scenarios
- rare occurrences at work

Scope statements

Level and extent of responsibility

In the context of this unit, responsibility is limited to working within an agreed maintenance schedule. This will include detailed information concerning the maintenance to be undertaken, together with clearly defined workplace procedures for the action that must be taken.

Assets or equipment to be maintained

Typical equipment could include:
Chemical reactors
Addition tanks
Phase separators
Receiving vessels
Pipework and pumps
Film coaters
Solution make-up vessels
Filters and spray equipment

3. **Types of maintenance procedures and activities**

Typical types of maintenance procedures and activities could include:
Fitting blanks, plugs, cap ends
Fitting drain hoses, flexible hoses
Fitting airlines
Routine lubrication

Quality standards and accuracy to be achieved

The quality standards and accuracy to be achieved are those that are consistent with the schedule and specifications that you are expected to work to.

Type of equipment to be worked on

Typical equipment could include:
Chemical reactors
Addition tanks
Phase separators
Receiving vessels
Pipework and pumps
Film coaters
Solution make-up vessels
Filters and spray equipment

Type and complexity of adjustments to be made

The adjustments to be made may be expected to include those made to engineering assets under operational conditions, that require the engineering asset to be made safe from any other power source, and / or those that require the engineering asset to be taken out of operation.

Quality standards and accuracy to be achieved

The quality standards and accuracy to be achieved are those that are consistent with the
schedule and specifications that you are expected to work to.

ELEMENT 2.16.1 Carry out planned maintenance procedures

In carrying out this work you must:

Work safely at all times, complying with health and safety and other relevant regulations and guidelines

Follow the relevant maintenance schedules to carry out the required work

Carry out the maintenance activities within the limits of your personal authority

Carry out the maintenance activities in the specified sequence and in an agreed time scale

Report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule

Complete relevant maintenance records accurately and pass them on to the appropriate person

Dispose of waste materials in accordance with safe working practices and approved procedures

To do this you need to know

Health and safety legislation, regulations and safe working practices and procedures

You need to know and be aware of relevant health and safety legislation, and what your responsibilities are in respect of that legislation. Regulations, safe working practices, and workplace procedures that will contain specific instructions, for you to comply with, in your working environment.

Maintenance schedules and related specifications

You need to know the relevant maintenance schedule, and related specifications that you will be expected to work from.

Maintenance methods and procedures

You need to know the maintenance procedures and methods for the engineering assets that you are working on. This could be expected to include the importance of time schedules in maintenance procedures.

Maintenance records and documentation procedures

You need to know the maintenance recording and documentation procedures that you will need to use within your working environment.

Equipment operating and care and control procedures

You need to know the care and control procedures to be used when operating

equipment. This could be expected to include knowing the importance of confirming the status of the plant/equipment.

Maintenance authorisation procedures

You need to know the maintenance authorisation procedures that are used in your working environment.

Waste disposal procedures

You need to know what waste disposal procedures should be used in your working environment.

Reporting lines and procedures

You need to know the reporting lines and procedures in your working environment**.**

ELEMENT 2.16.2 Adjust engineering assets to meet operating requirements

In carrying out this work you must:

Work safely at all times, complying with health and safety and other relevant regulations and guidelines

Follow the appropriate operating specifications for the equipment being maintained

Carry out adjustments within the limits of your personal authority

Make the required adjustments in the specified sequence and in an agreed time scale

Confirm that the adjusted equipment meets the required operating specification

Report any instances where the equipment fails to meet the required performance after adjustments or where there are identified defects outside the required adjustments

Maintain documentation in accordance with organisational requirements

To do this you need to know

Health and safety legislation, regulations and safe working practices and procedures

You need to know and be aware of relevant health and safety legislation, and what your responsibilities are in respect of that legislation. Regulations, safe working practices, and workplace procedures that will contain specific instructions, for you to comply with, in your working environment.

Maintenance schedules and related specifications

You need to know the relevant maintenance schedule, and related specifications that you will be expected to work from.

Maintenance methods and procedures

You need to know the maintenance procedures and methods for the engineering assets that you are working on. This could be expected to include the importance of carrying out adjustments in the specified sequence and in the agreed time scale.

Maintenance records and documentation procedures

You need to know the maintenance recording and documentation procedures that you will need to use within your working environment.

Equipment operating and care and control procedures

You need to know the care and control procedures to be used when operating equipment. This could be expected to include knowing the importance of confirming the status of the plant/equipment.

Maintenance authorisation procedures and limits of responsibility and authority

You need to know the maintenance authorisation procedures that are used, and the limits of your responsibility and authority within your working environment.

Reporting lines and procedures

You need to know the reporting lines and procedures in your working environment

Commentary for Unit 1.8

Work in aseptic or clean room conditions

This unit addresses the competence required to work in aseptic or clean room conditions. This involves:

strict adherence to procedures
preparing to work in aseptic or clean rooms
working correctly in aseptic or clean rooms
maintaining your own and other's safety while working

There are two elements in this unit, each of which has performance standards and a knowledge base associated with it.

1.8.1 Prepare for work in aseptic or clean room conditions
1.8.2 Work correctly in aseptic or clean room conditions

There is also a glossary of terms which appear within the unit and have a specific meaning.

Assessment Strategy Statement

In the context of N/SVQ assessment, the use of simulation can be used only in the situations defined below*, in the assessment of this unit, to cover the full scope as defined by the glossary of the unit. Workplace performance evidence is mandatory for the rest of unit.

*• where safety factors are important
• when a particular work activity does not happen very often

Glossary of terms

The following terms have a specific meaning in this unit and are highlighted where they appear in the performance standards. In the context of NVQ/SVQ assessment, awarding bodies are required to make sure that a candidate's evidence of performance from the workplace demonstrates that their work is consistent with these terms as defined here.

Materials / products May include solids, liquids and gases. Some may be hazardous.

Specification / instructions The set of instructions which describe the work to be carried out.

PPE Personal protective equipment, to include clothing and footwear specified as appropriate for the conditions of work.

Scrub up/cleaning procedure The procedure that is specified by the organisation as being appropriate for the conditions of work

Problems These can relate to either clothing, materials and or, equipment.

Corrective actions May include, request assistance and shutdown

Documentation Includes any relevant documentation.

Health, safety and Environmental legislation To be aware of all relevant legislation, and company policy including disposal of waste

ELEMENT 1.8.1 Prepare for work in aseptic or clean room conditions

In carrying out this work you must:

Check that you have the required work **instructions** and that they are clear and complete

Ensure that the **PPE** is correct and complete

Follow any **scrub up procedures** correctly

Put on the **PPE** correctly

Leave the changing room in a clean and tidy condition

Complete any **documentation** correctly

Pass information when required to the appropriate person

Deal promptly with any **problems** that arise, reporting any which you cannot solve

Follow safe working procedures at all times

To do this you need to know

the meaning of terms used in work instructions

how to check that you have the required PPE

what scrub up and personal cleaning procedures need to be completed

how to handle the PPE and put it on correctly

why it is important to leave the changing room in a tidy condition

why it is important to complete documentation accurately and legibly

when and who to pass information to

your personal responsibilities with regard to health, safety and environment at work

how to deal with typical problems and who to report unsolvable problems to

what documentation to use and what information needs to be recorded

ELEMENT 1.8.2 Work correctly in aseptic or clean room conditions

In carrying out this work you must:

Select samples for in process checking according to **instruction**s at specified intervals

Check and document the results of the in process checks accurately

Transfer the information to the appropriate person/department

Deal with breakages and machine breakdowns according to standard company procedure

Maintain the sterility of the materials/products during breakdown

Clear away any damaged or unusable materials/products

Dispose of waste according to policy guidelines

Complete any **documentation** clearly and accurately

Deal promptly with any **problems** in the procedure that are your responsibility

Inform the appropriate person of any **problems** you cannot solve and/or are not your responsibility

Work safely at all times with regard to **materials**, equipment and personal safety

Complete all necessary **documentation**

To do this you need to know

how to select samples correctly

how to document and check the results of the samples

who to transfer the information to

how to deal with breakages and breakdowns in the aseptic /clean room

how to maintain the sterility of the product during breakdown

how to clear away damaged and/or unusable components/materials

methods of waste disposal

what types of problem may occur and how to deal with them

when and how to take corrective action

who to inform if you cannot solve a problem and/or it is not your responsibility

your personal responsibilities with regard to health, safety and environment

methods of documentation that are used

Unit 3.15 : Enable learning through demonstrations and instruction

NB: This unit has been imported directly from the Employment NTO (No L 11)

Overview

This unit is appropriate for you if your role involves:

demonstrating skills and methods to learners
instructing learners in procedures and processes

The activities you are likely to be involved in:

demonstrating how equipment is used
showing a learner how to do something
giving learners instructions on what to do or how to carry out a particular activity
deciding when you should use demonstration or instruction to encourage learning
reviewing the potential use of technology-based learning
checking on the progress of learners
giving feedback to learners

What the unit covers:

demonstrating skills and methods to learners
instructing learners

Element L11.1: Demonstrate skills and methods to learners

Performance criteria

You must be able to do the following:

Base the demonstration on an analysis of the skills needed and the order they must be learned in.
Ensure that the demonstration is accurate and realistic.
Structure the demonstration so the learner can get the most out of it.
Encourage learners to ask questions and get explanation at appropriate stages in the demonstration.
Give learners the opportunities to practise the skill being demonstrated and give them positive feedback.
Give extra demonstrations of the skills being taught to reinforce learning.
Ensure that demonstrations take place in a safe environment and allow learners to see the demonstration clearly.
Respond to the needs of learners during the demonstration.
Reduce distractions and disruptions as much as possible.

Element L11.2: Instruct learners

Performance criteria

You must be able to do the following:

Match instruction to the needs of the learners.
Identify which learning outcomes will be achieved through instruction.
Ensure that the manner, level and speed of the instruction encourages learners to take part.
Regularly check that learners understand and adapt instruction as appropriate.
Give learners positive feedback on the learning experience and the outcomes achieved.
Identify anything that prevents learning and review this with the learners.

Knowledge requirements

You need the following knowledge to perform this Unit of Competence. You will show this through the outcome of your work activities and through evaluations of your systems and processes.

You need to be able to show that you have general knowledge and understanding of the following:

The nature and role of demonstrations and instruction

the separate areas of demonstrations which encourage learning
which types of learning are best achieved and supported through demonstrations
how to identify and use different learning opportunities
how to structure demonstrations and instruction sessions
how to choose from a range of demonstration techniques

Principles and concepts

how to put learners at their ease and encourage them to take part
how to choose between demonstration and instruction as learning methods
how to identify individual learning needs
which factors are likely to prevent learning and how to overcome them
how to check learners' understanding and progress
how to put information in order and decide whether the language you will be using is appropriate for the learners
how to choose and prepare appropriate materials, including technology-based materials
the separate areas of instructional techniques which encourage learning
which types of learning are best achieved and supported through instruction

External factors influencing human resource development

how to make sure everybody acts in line with health, safety and environmental protection legislation and best practice
how to analyse and use developments in learning and new ways of delivery, including technology-based learning

Assessment Strategy Statement

In the context of N/SVQ assessment, evidence must be derived from workplace performance.