This unit covers the competences you need to carry out scientific or technical investigation activities, in accordance with approved procedures and practices. You will be expected to identify and use relevant understanding, methods and skills to complete tasks and address problems that, whilst well defined, have a measure of complexity. You will be expected to initiate and complete tasks and procedures as well as exercise autonomy and judgement within limited parameters. You will also be aware of different perspectives or approaches used within the workplace.

On completion of workplace activities, you will be required to show you have addressed problems that, whilst well defined, may be complex and non-routine. You will be expected to show you have identified, selected and used appropriate scientific or technical skills, methods and procedures. You will use appropriate investigation to inform actions and review how effective these methods have been.

Your responsibilities will require you to comply with organisational policy and procedures for the scientific or technical operations undertaken, and to report any problems with the activities, materials or equipment that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will be expected to initiate and complete tasks and procedures, including, where relevant, responsibility for supervising or guiding others. You will be expected to exercise autonomy and judgement within limited parameters, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out. You will be expected to work to instructions, with a minimum of supervision, either on your own or as part of a team.

Your underpinning knowledge will enable you to use factual, procedural and theoretical understanding to complete scientific or technical tasks and address problems that, whilst well defined, may be complex and non-routine. You will be able to interpret and evaluate relevant workplace information and ideas. You will have an understanding of the scientific or technical process used, and its application, and will know about the equipment, materials and consumables in adequate depth to provide a sound background for carrying out the activities to the required specification.

You will understand the safety precautions required when carrying out scientific or technical activities. You will be required to demonstrate safe working practices throughout, and will understand the responsibility you owe to yourself and others in the workplace.
Performance criteria

You must be able to:

P1  ensure that your work is carried out in accordance with workplace procedures
P2  use safe practices and the appropriate personal protection equipment (PPE) when performing scientific or technical activities
P3  obtain and collate appropriate scientific or technical information which assists the investigation
P4  analyse the information correctly and evaluate it against the objective of the investigation
P5  prioritise the tasks within the investigation and follow the appropriate procedures
P6  use the specified resources required to complete the investigations
P7  follow set procedures to deal with contingencies arising during investigations
P8  conduct investigations in accordance with the established plans
P9  communicate the required information about the work done, in accordance with departmental and organisational procedures
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Carry out scientific or technical investigations

Knowledge and understanding

You need to know and understand:

**Sector specific**
K1 the health and safety requirements of the area in which you are carrying out the scientific or technical activities
K2 the implications of not taking account of legislation, regulations, standards and guidelines when conducting scientific or technical activities
K3 the scientific or technical techniques and processes you must use correctly in the workplace

**Organisation specific**
K4 the importance of wearing protective clothing, gloves and eye protection for scientific or technical activities
K5 the importance of correct identification, and any unique workplace coding system
K6 the organisational requirements for maintaining the security of the workplace (e.g. access or aseptic conditions)
K7 the lines of communication and responsibilities in your department, and their links with the rest of the organisation
K8 the limits of your own authority and to whom you should report if you have problems that you cannot resolve

**Equipment/Process specific**
K9 the principles and procedures for investigations
K10 the techniques that are relevant to the scientific or technical investigation
K11 how to source and access relevant standards
K12 the acceptable operating conditions for conducting investigations
K13 the implications of deviations from set procedures
K14 the essential features of an investigation plan and why this must be followed
K15 the range of equipment used for investigations
K16 the procedures for recording and reporting the investigations done
K17 how to identify and deal with contingencies
K18 the limits and constraints for investigations that are done
K19 the procedures used to deal with deviations from investigation plans
K20 what the procedures are for using contingency plans when deviations from investigation plans occur
K21 the document control and reporting procedures that should be used
K22 the reasons why effective communication is important, and the methods used for communicating effectively
Additional Information

Scope/range related to performance criteria

You must be able to:

1. carry out investigations into one of the following:
   1.1 a non-compliance problem
   1.2 the properties of a new material
   1.3 applications of a new material
   1.4 identifying a substance
   1.5 resolution technical problem
   1.6 cost reduction programme
   1.7 quality assurance review
   1.8 hazard/accident

2. evaluation information from two of the following sources:
   2.1 new external standards/regulations
   2.2 manufacturer’s instructions
   2.3 equipment technical reviews
   2.4 material technical reviews
   2.5 COSHH data sheets
   2.6 environmental reports
   2.7 in-company archives
   2.8 operating procedures
   2.9 test reports
   2.10 accident reports
   2.11 health and safety documentation

3. use two of the following resources to complete the investigations:
   3.1 other staff
   3.2 equipment
   3.3 materials
   3.4 allotted time

4. deal with contingencies for one of the following:
   4.1 equipment failure
   4.2 changes in variables
   4.3 delays
   4.4 safety/environmental change

5. record and communicate details of work done, to the appropriate people, using:
   5.1 verbal report
   plus one method from the following:
   5.2 written or typed report
   5.3 computer-based record
   5.4 specific workplace documentation
   5.5 electronic mail
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