

Plan and conduct scientific or technical investigations

Overview

This standard covers the competence you will need to plan and conduct scientific or technical investigations in accordance with approved procedures and practices.

You will be required to demonstrate that you can identify, selected and used appropriate business and scientific or technical methods and skills. You will show you have initiated and used appropriate investigation to inform your actions in accordance with workplace procedures.

The activity is likely to be undertaken by someone in a science related work setting, including individuals working in hospitals, scientific laboratories, schools and universities.

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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) where scientific or technical activities are performed
 - P3 identify and agree the business and scientific or technical requirements of your role in the workplace
 - P4 establish processes that deliver scientific or technical outcomes based on organisational goals and aims
 - P5 identify the objective of the investigation
 - P6 obtain and collate appropriate information which assists the investigation
 - P7 analyse the information correctly and evaluate it against the objective of the investigation
 - P8 identify the conditions under which investigations can take place
 - P9 evaluate the alternative investigative techniques and select the appropriate technique
 - P10 prioritise the tasks within the investigation and identify appropriate procedures
 - P11 quantify the resource requirements for the investigations and ensure that they are within the capability of the organisation
 - P12 set procedures in place to deal with contingencies arising during investigations
 - P13 conduct investigations in accordance with the established plans
 - P14 present the results of the work done to the appropriate people, in accordance with departmental and organisational procedures

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Knowledge and understanding

- You need to know and understand:*
- 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
 - 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 and keeping confidential documents
 - K7 the workplace business aims and goals and the planning process
 - K8 the workplace organisational structure, its values and culture
 - K9 how your scientific or technical activities add value through delivering workplace products, services and processes
 - K10 the lines of communication and responsibilities in your department, and the links with the rest of the organisation
 - K11 the limits of your own authority and to whom you should report if you have problems that you cannot resolve
 - K12 how to identify and assess the scientific or technical requirements of your work roles
 - K13 the different ways in which you are set your agreed personal work objectives
 - K14 the different perspectives and approaches that are important when exercising autonomy or judgement about scientific or technical activities used
 - K15 the types of investigation initiated and used to review the effectiveness or appropriateness of methods, action and results of your scientific or technical work
 - K16 the principles and procedures for scientific or technical investigations
 - K17 the techniques that are relevant to the investigation
 - K18 how to set objectives taking account of capabilities and available resources
 - K19 how to source and access relevant standards
 - K20 the acceptable operating conditions for conducting investigations
 - K21 the implications of deviations from set procedures
 - K22 how to identify customer requirements
 - K23 the essential features of an investigation plan and how to initiate it
 - K24 how to identify the most appropriate equipment for investigations
 - K25 the procedures for recording and reporting the investigations done
 - K26 how to identify and deal with contingencies
 - K27 the limits and constraints for investigations that are done

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K28 the methods and processes used to deal with deviations from investigation plans

K29 how to establish contingency plans for deviations from investigation plans

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Scope/range

1. conduct 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. evaluate 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 workplace records archives
 - 2.8 operating procedures
 - 2.9 test/technical reports
 - 2.10 accident reports
 - 2.11 health and safety documentation

3. specify resources requirements against two of the following parameters
 - 3.1 staff
 - 3.2 equipment
 - 3.3 materials/chemical
 - 3.4 time

4. evaluate capability requirements for investigations that require all of the following:
 - 4.1 techniques
 - 4.2 technical expertise
 - 4.3 available time
 - 4.4 resources

5. establish contingencies for two of the following:
 - 5.1 equipment failure
 - 5.2 changes in variables
 - 5.3 delays
 - 5.4 safety/environmental change

6. record and communicate details of the work done, to the appropriate people, using:
 - 6.1 verbal report plus one method from the following:

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- 6.2 written or typed report
- 6.3 computer-based record
- 6.4 specific workplace documentation
- 6.5 electronic mail

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