

SEMBIT3-07 - SQA Unit Code F9J6 04

Carrying out problem solving activities



Overview

This unit covers the competences required to solve problems, in accordance with approved procedures. Problems could occur in any aspect of the business, such as manufacturing, engineering, processing, service and support functions. You will be expected to take prompt and appropriate action to identify, analyse and implement corrective actions to solve the problem.

You will be required to investigate problems by obtaining all the necessary data and information, to enable you to identify and evaluate the possible corrective actions and their effects on both the process and the people involved.

Your responsibilities will require you to comply with organisational policy and procedures for the successful implementation of the corrective actions to problems, and to report any difficulties that you cannot personally resolve to the relevant authority.

Your underpinning knowledge will provide a good understanding of a structured approach to problem solving. You will be conversant with organisational procedures and systems, including methods of evaluating the outcomes of the problem-solving activity. Your underpinning knowledge will enable you to take an informed approach to applying problem-solving techniques and procedures to a range of problems, and will provide a sound basis for carrying out the activities to the required standard.

You will be fully aware of any health, safety and environmental requirements, and the appropriate legislative and regulatory frameworks applicable to your area of work. You will be required to ensure that safe working practices are maintained throughout, and will understand the responsibility you owe to yourself and others in the work area.

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Performance criteria

- You must be able to:*
- P1 take prompt action to identify the nature and extent of the problems that arise
 - P2 obtain all relevant data and information relating to the problem
 - P3 evaluate all realistic root causes of the problem
 - P4 identify the most effective corrective action
 - P5 ensure that corrective actions are implemented correctly and promptly
 - P6 keep all relevant people informed of progress throughout the problem-solving activity
 - P7 ensure that corrective actions to problems comply with all relevant regulations and guidelines

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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 problem solving activity
- K2 the importance of wearing protective clothing and other appropriate safety equipment during the investigation of the problem, and where it may be obtained
- K3 methods used to detect that a problem has occurred
- K4 methods of containment of a non-conforming product or process
- K5 a structured process for problem solving (such as DMAIC methodology - Define, Measure, Analyse, Improve, Control)
- K6 the processes and procedures used within the scope of the problem-solving activity
- K7 how to obtain any necessary resources to support the problem-solving activity
- K8 the extent of your own responsibility, and to whom you should report if you have problems that you cannot resolve
- K9 the use of performance measurement and analysis to direct and focus improvement effort
- K10 the techniques used to obtain data and information on problems (such as the former DTI's seven measures of QCD), and the sources of information
- K11 the methods and techniques involved in evaluating information (such as the seven quality tools, Is / Is Not sheets, capability studies, measurement system analysis)
- K12 the importance of getting to the root cause
- K13 the methods and techniques involved in root cause analysis (such as 5 'Why' analysis, cause and effect diagrams, fault tree analysis, flowcharting, FMEA, process flow analysis)
- K14 the criticality of different types of problem, and how to prioritise the problems to be solved
- K15 how to obtain and interpret company policy and procedures
- K16 the factors that have to be taken into account when selecting the corrective action to a problem
- K17 methods used to choose and implement corrective actions (such as decision matrix, design of experiments, Gantt chart, Deming cycle (Plan-Do-Check-Act), error proofing)
- K18 whom to inform of actions taken, and by what means
- K19 the reporting procedures and documentation, and their application
- K20 methods used to monitor the effectiveness of corrective actions (such as statistical process control (SPC), the former DTI's seven measures of QCD, seven quality tools)
- K21 how to review the problem-solving process to understand the lessons learned, in order to achieve further improvements within the business

Additional Information

Scope/range related to performance criteria

You must be able to:

1. carry out **all** of the following as part of the problem-solving activity:
 - 1.1. ensure that performance monitoring/measurement and review processes are in place (such as the former DTI's seven measures of QCD, the seven quality tools, SPC)
 - 1.2. utilise a team-based approach for the problem-solving activity
 - 1.3. discuss/consult with the relevant people on the nature and extent of the problem
 - 1.4. follow a structured problem solving process, and use appropriate techniques to identify the root cause(s)
 - 1.5. communicate the proposed corrective action to the relevant people, obtaining feedback where appropriate
 - 1.6. prepare a plan of action for implementation of the appropriate corrective action
 - 1.7. monitor the implementation of corrective actions, and make necessary revisions to the plan of action (Plan, Do, Check, Act)
 - 1.8. monitor the effectiveness of corrective actions following their implementation
 - 1.9. review the effectiveness of corrective actions against the costs of implementation
 - 1.10. review the problem-solving process to understand the lessons learned, in order to achieve further improvements within the business
2. obtain and use data on the problem from **four** of the following sources:
 - 2.1. statistical data
 - 2.2. historical records (eg, maintenance or shift logs)
 - 2.3. quality audits
 - 2.4. external sources
 - 2.5. feedback from customers
 - 2.6. mapping the process
 - 2.7. operating procedures / manufacturing manuals
 - 2.8. company procedures
 - 2.9. health and safety information
 - 2.10. environmental documents
 - 2.11. observation
 - 2.12. designed and controlled trials/experiments
3. establish possible root causes to problems by **two** of the following methods/techniques:
 - 3.1. cause and effect diagram
 - 3.2. five 'why' analysis
 - 3.3. flowcharting
 - 3.4. fault tree analysis
4. evaluate possible corrective actions to problems, by considering **all** of the following:

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- 4.1. operational effectiveness
- 4.2. ease of implementation
- 4.3. timescale for implementation
- 4.4. financial impact
- 4.5. functionality of the system
- 4.6. environmental impact
- 4.7. staffing implications
- 4.8. quality implications
- 4.9. conformity with company policies
- 4.10. health and safety implications
- 4.11. customer delivery implications
5. implement corrective actions to problems, which comply with **one** of the following:
 - 5.1. company standards and procedures
 - 5.2. BS and/or ISO standards and procedures
 - 5.3. customer standards and requirements
6. monitor the effectiveness of corrective actions, by using **one** of the following:
 - 6.1. one or more of the former DTI's seven measures of QCD
 - 6.2. one or more of the seven quality tools
 - 6.3. statistical process control (SPC)
7. communicate with the relevant people throughout the problem solving activity, by using **both** of the
 - 7.1. verbal communication
 - 7.2. completion of company-specific documentation (paper or IT based)

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