

**Sustainable Development
Programmes**

TRAINING IN WASTE
MANAGEMENT



expect extraordinary



TRAINING IN WASTE MANAGEMENT



An Introduction

The need was recognised within Interwaste and by employers in the municipal and private sector who expressed the need for specialised training for their employees in the best practice for the management of landfill sites for waste disposal.

The purpose of the training material is to provide learners with specialised knowledge regarding waste disposal and to back the theory with practical examples during the short courses. The courses also serve as refresher courses for experienced and knowledgeable employees in the relevant fields of waste disposal and provide the learners with credits towards continuous education and training based on previously acquired knowledge through formal learning or through workplace based learning and experience.

Who should attend the courses?

Typical candidates for these courses are persons currently employed by municipalities, mines, utility corporations and private companies, who manage the disposal of waste and landfill sites and who perform related activities relevant to the disposal of waste e.g. operating process facilities, transfer stations and material recovery facilities.

NQF1

General Workers
Gate Control Officers
Security Guards
Compost Workers
Gardeners
Litter Pickers

NQF2

Administration Officers
Junior Team Leaders
Weighbridge Operators
Vehicle Support Workers
Operators of static and non-complex moving equipment

NQF3

Assistant Supervisors
Team Leaders
Administrative Officers & Clerks
Engineering Technicians
Surveyors
Vehicle and Plant Operators
Junior Project Managers
Site Agents

NQF4

Supervisors
Senior Plant Operators
Site Managers
Senior Team Leaders

Skills Required (In addition to basic literacy skills)

NQF1 - Basic mathematical abilities

NQF2 - Mathematical skills grade 9 and practical experience of 3 years

NQF3 - Mathematical skills grade 10 and practical experience of 4 years

NQF4 - Mathematical skills grade 11 and practical experience of 5 years

Assessment Plan

It is obvious that the assessment is mainly based on workplace-simulated assignments. However, the formative workplace assessment can be complemented by knowledge tests and other methods of assessment at the training provider. It is recommended that the facilitator keep close contact with the employer. This part of the orientation would serve as the pre-assessment meeting with the learners.

Assessment Process

All learners will follow the same process.

1. During training sessions learners will be given all the required knowledge and skills that will enable them to carry out the assignments or to write the knowledge test. The training provider will provide learners with clear guidelines for completing assignments and collecting evidence.
2. The learner carries out the assignments and collects evidence in the simulated workplace environment.
3. The evidence for the assignments (e.g. reports, analyses, etc.) must be handed over by the learner in due time to the workplace assessor for assessment.
4. The assessment will be discussed with the learner. If evidence provided is not sufficient, additional activities will be discussed with the learner.
5. The evidence including the evidence summary sheet is submitted to the training provider for filing. All the information is compiled into a file. This file is called a Portfolio of Evidence.
6. Once the learner has completed all formative assessments and met all the requirements the learner is scheduled for the summative assessment for a module.
7. Summative assessments will be conducted in the form of a discussion by a panel. The panel will consist of a minimum of four members. They are the workplace assessor, moderator, training provider and a representative from the municipality/employer. Additional members from the Unions, Chambers or other stakeholders may be invited as well.
8. Once the learner has completed all the modules and meets all the requirements a final panel is organised to assess the qualification as a whole.

Learners not declared competent after the summative assessment of a module have the right to repeat this assessment once in due time. It is recommended that a second repetition of the summative assessment of a module is only permitted if the employer gives written permission.

Landfill-Specific Skills Development

In addition to the more general and wide ranging waste management industry training curriculum, Interwaste has developed a training matrix focused specifically on landfill management and operation.

The matrix includes both theoretical and practical modules structured for students studying for NOF levels 1,2,3 and 4. Wherever possible students, on completion of all classroom components, are taken onto a working landfill facility for hands-on experience in a wide range of areas including:

- The criteria and processes involved in the regulatory permitting of a modern sanitary landfill facility.
- An insight into the design and operational plan considerations affecting a proposed landfill.
- The personnel responsible for the efficient day-to-day operation of a facility.
- The importance of Health and Safety regulations in the workplace.
- The landfill facility entrance, security and weighbridge complex.
- How facilities deal with the environmental problem of discarded vehicle tyres.
- The important role of on-site composting of garden greens waste.
- The operation of safe and efficient collection areas for recyclables within the landfill facility.
- The precise operational plan that governs every deposition of waste throughout the life of the facility.
- Vehicles, plant and heavy equipment found on a modern working landfill.
- The minute by minute deposition operations at the working face of a facility.
- The potential environmental impact that a facility can effect if not properly managed and controlled.
- The prevention and control of nuisance factors such as dust, odours, vermin and flies.
- "Special Waste" disposal techniques, regulations and precautions.
- Financial aspects that govern the ability to successfully operate a modern landfill facility.
- Closure and rehabilitation measures effected at the end of a facilities operational lifespan.
- The monitoring procedures required by law for decades after the site closure.
- The regular auditing of sites required to verify their compliance to operational standards and conditions.



NQF LEVEL 1 - OUTLINE OF MODULES AND LEARNING UNITS - (4,5 days)

MODULE 0

Introduction to Short Course - 1/4 day

Topics

1. List of documents.
2. Waste and Environmental Management (WEM).
3. National Qualifications Framework (NQF).
4. How to achieve a qualification.
5. WEM career path.
6. The legal framework.
7. The training material.
8. The assessment strategy.
9. Workplace learning and project orientation.
10. Glossary of acronyms.

MODULE I

Basic Waste Management - 2 days

Learning Unit 1:

Waste management at place of generation.

SAQA ID 119303:

Handle and dispose of waste.

Topics

1. Waste description.
2. Concepts and principles.
3. Waste management steps.
4. Special waste.
5. Waste management procedures.

Assesment Criteria

- Demonstrate an understanding of what waste is and how it inter-relates with the environment.
- Identify and describe the concepts and principles of waste management.
- Identify and describe the sequence of steps required in the waste management process.
- Recognise and respond appropriately to special waste.
- Apply waste management principles and procedures in own context.

Learning Unit 2:

Hand tools for waste management.

SAQA ID 119302:

Select, use and care for basic equipment in environmentally related contexts.

Topics

1. Waste management hand tools.
2. Inspect and use hand tools.
3. Maintain and care for hand tools.
4. Safe use of hand tools.

Assesment Criteria

- Select the appropriate hand tools and equipment for a variety of tasks.
- Inspect and prepare tools and equipment prior to use.
- Use hand tools or equipment to perform a variety of tasks.
- Maintain, care for and store tools and equipment in an environmentally responsible manner.
- Work safely with due care for self, others, tools and equipment, materials and the environment.

MODULE II

Waste and Environmental Impacts - 2 days

Learning Unit 1:

Impact of waste on the environment.

SAQA ID 119305:

Demonstrate an awareness of the impact of human activities on the environment.

Topics

1. Identify environmental components.
2. Identify the range of impacts from waste disposal.
3. Describe natural events and waste disposal.
4. Gather information of waste disposal impacts.
5. Motivate action to manage the impacts of waste disposal.

Assesment Criteria

- Identify the components of the environment and describe their inter-relationships.
- Identify a range of impacts on the environment and use the correct terminology to describe them.
- Describe natural events and human activities which result in impacts on the environment.
- Gather information related to a particular environmental impact on the immediate surroundings and use it to describe the cause and effect of this impact.
- Take appropriate action to address the impacts of human activities on the environment.

Learning Unit 2:

Material handling at waste disposal sites.

SAQA ID 119306:

Recognise, group, use and care for materials which can impact on health and the environment.

Topics

1. Materials used and potential impact on the environment.
2. Standard procedures of material handling and the properties of material.
3. Potential environmental impact and safe use of material.
4. Transport, store and care for material at waste disposal sites.

Assesment Criteria

- Recognise and group various items found in my context according to the impact of their material(s) on health and the environment.
- Read documented information on materials and understand its purpose and use.
- Understand the physical properties of the materials and relate them to the way the materials occur or are used.
- Describe the potential impact of the materials on health and the environment related to their properties.
- Use materials in my context.
- Transport, store and care for materials in my context.

MODULE III

Revision and Assessment - 1/4 day

Revision of all competencies and summative assessment

Topics

- All of the above.

Assesment Criteria

- All of the above.
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NQF LEVEL 2 - OUTLINE OF MODULES AND LEARNING UNITS - (4,5 days)

MODULE 0

Introduction to Short Course - 1/4 day

Topics

1. List of documents.
 2. Waste and Environmental Management (WEM).
 3. National Qualifications Framework (NQF).
 4. How to achieve a qualification.
 5. WEM career path.
 6. The legal framework.
 7. The training material.
 8. The assessment strategy.
 9. Workplace learning and project orientation.
 10. Glossary of acronyms.
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MODULE I

Waste Management Techniques - 2 days

Learning Unit 1:

Waste management processes.

SAQA ID 119555:

Separate, handle, store, treat and transport waste.

SAQA ID 119557:

Operate waste disposal facilities.

Topics

1. Primary waste management processes and appropriate disposal methods.
2. Transport waste and traffic and vehicle movement control.
3. Access and material flow control at waste facilities.
4. Safety, health and environmental threats.
5. Records and reports.

Assesment Criteria

- Separate, treat and store waste.
- Transport waste.
- Control access and monitor the flow of incoming materials to a waste facility.
- Recognise and report threats or damage to health, safety or the environment.
- Compile relevant records.
- Apply the appropriate disposal method for each category of waste.
- Control and direct movement of vehicles on the waste disposal site.
- Control access and monitor the flow of incoming materials to a waste facility.
- Recognise and report threats or damage to health, safety or the environment.
- Compile records related to waste disposal.

Learning Unit 2:

Tools and equipment for waste processes.

SAQA ID 119556:

Use tools and operate equipment in an environmentally responsible manner.

Topics

1. Select and use appropriate tools and equipment for specific processes.
2. Inspect and prepare tools and equipment for use.
3. Maintain, care and store tools and equipment.

Assesment Criteria

- Select and use appropriate tools and equipment responsibly.
 - Inspect and prepare tools and equipment prior to use.
 - Maintain and store tools and equipment.
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MODULE II

Waste and Environmental Impacts - 1,5 days

Learning Unit 1:

Impact of waste on the environment.

SAQA ID 119558:

Work with, use and care for materials and resources which can impact on health and the environment.

Topics

1. Potential impact of materials and resources on health and the environment.
2. Handle and use materials and resources.
3. Damaging impacts from material and resource handling/use.
4. Record and report the use and handling of material and resources.
5. Conserve, use and handle materials and resources.

Assesment Criteria

- Classify materials and resources found in an environment according to their potential impact(s) on health and environment.
- Work with, use, transport, store and care for materials and resources.
- Recognise and respond to environmentally damaging impacts resulting from the extraction, use, transport or storage of materials or resources.
- Compile required records related to handling and using materials or resources and submit reports.
- Collect, handle and dispose of waste.
- Conserve materials and resources and use them wisely.

Learning Unit 2:

Environmental impact management.

SAQA ID 119554:

Apply environmental management tools to assess impacts.

SAQA ID 119553:

Take action to address impacts on the environment.

Topics

1. Identify environmental impacts and immediate causes of these impacts.
2. Select and use appropriate assessment tools.
3. Develop responses and plans to address environmental impacts.
4. Implement plans to address impacts.
5. Record and maintain data on impacts.

Assesment Criteria

- Identify a variety of potential and actual impacts on the environment and use the correct terminology to describe them.
 - Explain the reasons for using particular assessment tool(s). Use environmental management tools to assess the impacts.
 - Record and maintain data and identify anomalies.
 - Determine the immediate causes of the identified impacts.
 - Determine an appropriate response to a variety of identified environmental impacts.
 - Develop an appropriate plan to address each identified impact.
 - Implement the plans and evaluate the results.
 - Record and report interventions and results achieved.
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MODULE III

Revision and Assessment - 1/4 day

Revision of all competencies and summative assessment

Topics and Assesment Criteria

- All of the above.
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NQF LEVEL 3 - OUTLINE OF MODULES AND LEARNING UNITS - (4 days)

MODULE 0

Introduction to Short Course - 1/4 day

Topics

1. List of documents.
2. Waste and Environmental Management (WEM).
3. National Qualifications Framework (NQF).
4. How to achieve a qualification.
5. WEM career path.
6. The legal framework.
7. The training material.
8. The assessment strategy.
9. Workplace learning and project orientation.
10. Glossary of acronyms.

MODULE I

Operate Plant, Machines and Equipment - 1,5 days

Learning Unit 1:

Operate plant, machines and equipment.

SAQA ID 119830: Operate specialised vehicles and/or complex static or moving machinery and equipment.

Topics

1. Primary care for plant, machines and equipment.
2. Basic concepts and principles regarding plant, machines and equipment use and care.
3. Operate plant, machines and equipment.
4. Record and report information on plant, machine and equipment use.

Assesment Criteria

- Monitor condition and operation of vehicles, machinery or equipment and resolve problems.
- Operate vehicles, machinery or equipment according to workplace standards and with regard to their impact on the environment.
- Record and report information related to the condition and operation of the vehicle, machine or equipment.
- Discuss and explain concepts and principles related to the operation of equipment.

MODULE II

Waste and Environmental Data and Impacts - 2 days

Learning Unit 1:

Environmental data.

SAQA ID 119822:

Collect data for environmental management purposes.

Topics

1. Requirements for and sequential steps for data collection.
2. Equipment and documents used for data collection.
3. Collect and record data and complete documents.
4. Care for data collection tools and equipment.
5. Reasons for collection of data.

Assesment Criteria

- Demonstrate understanding of the data collection requirements and plan the sequence of actions required to collect the data.
- Obtain and prepare equipment and documentation required for data collection.
- Collect and record data.
- Care for and store tools and equipment used.
- Complete and process all applicable documentation.
- Explain why the data is required.

Learning Unit 2:

Detect and respond to environmental impacts.

SAQA ID 119829:

Use appropriate environmental management tools and protocols to detect and respond to specific impacts.

Topics

1. Monitor and evaluate activities and processes.
2. Identify key activities and processes that impact on the environment.
3. Select and use tools and protocols to assess environmental impacts.
4. Develop and implement plans to address impacts.
5. Record and report outcomes from interventions.

Assesment Criteria

- Monitor and evaluate activities and processes.
- Use data from monitoring process to identify key activities and processes impacting on the environment.
- Select and use appropriate tools and protocols to assess impact on the environment.
- Develop and implement an appropriate plan to address the deviations and evaluate results.
- Record and report interventions and results achieved.

MODULE III

Revision and Assessment - 1/4 day

Revision of all competencies and summative assessment

Topics

- All of the above.

Assesment Criteria

- All of the above.
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NQF LEVEL 4 - OUTLINE OF MODULES AND LEARNING UNITS - (4,5 days)

MODULE 0

Introduction to Short Course - 1/4 day

Topics

1. List of documents.
 2. Waste and Environmental Management (WEM).
 3. National Qualifications Framework (NQF).
 4. How to achieve a qualification.
 5. WEM career path.
 6. The legal framework.
 7. The training material.
 8. The assessment strategy.
 9. Workplace learning and project orientation.
 10. Glossary of acronyms.
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MODULE I

Environmental Improvement and Information Management - 2,5 days

Learning Unit 1:

Implement environmental improvements.

SAQA ID 123369:

Implement environmental improvements to a site, facility, operation or process.

Topics

1. Basic environmental assessment.
2. Problem solving.
3. Plan and implement actions.
4. Evaluate impacts of actions.
5. Teamwork.

Assesment Criteria

- Review information and identify environmental and technical problems and opportunities for improvement.
- Determine solutions to environmental and technical problems and issues in the workplace.
- Develop and implement an action plan to introduce a technical and/or environmental improvement.
- Evaluate the impact of the improvement.
- Demonstrate understanding of environmental management principles and practices and their application within own area of responsibility.

Learning Unit 2:

Process environmental data and information.

SAQA ID 123368:

Process environmental data and organizational information.

Topics

1. Operational data.
2. Collection of data.
3. Inspections and assessments.
4. Process and maintain data.
5. Communicate data.

Assesment Criteria

- Determine data required for a particular operation or site.
 - Plan and prepare for the collection of relevant data.
 - Ensure that data is collected as required.
 - Conduct inspections and assessments, record and report results and make recommendations.
 - Ensure that data and information is processed, maintained and stored according to worksite protocols.
 - Communicate and report environmental and organisational data and information.
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Learning Unit 3:

Process own information.

SAQA ID 123372:

Use appropriate tools and information systems to manage own information and communication.

Topics

1. Personal work related data and information.
2. Presentations and reports.
3. Manage own information and knowledgebase.

Assesment Criteria

- Collect, process and manipulate own work-related data and information.
 - Develop presentations and reports from documents and deliver presentations.
 - Manage own information, documentation and knowledge base.
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MODULE II

Equipment, Resource and Asset Use and Management - 1,5 days

Learning Unit 1:

Supervise use of equipment and tools.

SAQA ID 119533:

Supervise and control the use of construction plant and equipment.

SAQA ID 15170:

Organise and control the utilisation of plant and equipment in civil engineering construction.

Topics

1. Asset and resource management.
2. The principles of control and use of plant and equipment.
3. Monitor production and use of assets and resources.
4. Keeping records of use of assets and resources.
6. Organise and plan assets and resources.
7. Organise, plan and monitor use of lubricants.
8. Plan and organise maintenance.
9. Plan and implement production control and keep records.
10. Occupational health and safety requirements.

Assesment Criteria

- Demonstrate knowledge of construction plant and equipment.
 - Prepare for construction activities.
 - Monitor production.
 - Monitor fuel and lubrication use and maintenance programmes.
 - Complete work activities.
 - Identify the relevant Occupational Health and Safety requirements.
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MODULE III

Revision and Assessment - 1/4 day

Revision of all competencies and summative assessment

Topics

- All of the above.

Assesment Criteria

- All of the above.
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