MANAGE ENVIRONMENTAL POLLUTION AND WASTE

UNIT CODE: ENV/OS/MGT/CR/03/6/A

UNIT DESCRIPTION

This unit describes the competencies required to manage environmental pollution and waste. It involves controlling air, water, soil and noise pollution. It also entails managing wastewater, solid waste, hazardous waste and e-waste and sensitizing the community.

ELEMENTS **These describe the key outcomes which make up workplace function.**	**PERFORMANCE CRITERIA** **These are assessable statements which specify the required level of performance for each of the elements.** ***Bold and italicized terms are elaborated in the Range.***
1. Control air pollution	1.1 ***Sources of air pollution*** are identified 1.2 Air quality is monitored as per SOPs. 1.3 Air pollution level is determined and solved 1.4 ***Air pollution prevention measures*** are applied based on the source of pollution. 1.5 Emissions are regulated as per Environmental regulations. (EMCA, 1999 and amended EMCA 2015) 1.6 Air pollution control measures are applied.
2. Control water pollution	2.1 Water sources are identified. 2.2 Water quality is monitored as per SOPs. 2.3 ***Sources of water pollution*** are identified 2.4 Effluents are regulated as per Environmental regulations. (Water Act, 2016 and Water Quality Regulations 2006) 2.5 ***Water pollution control measures*** are applied based on the type of pollutant.
3. Control soil pollution	3.1 ***Sources of soil pollution*** are identified 3.2 Soil pollution level is determined and solved 3.3 Soil is ***treated*** based on the nature of pollutant 3.4 ***Soil pollution control measures*** are applied based on the pollutant.
4. Control noise pollution	4.1 ***Sources of noise pollution*** are identified 4.2 Noise pollution level is determined and solved 4.3 ***Noise pollution control measures*** are applied based on the source of pollution. 4.4 Noise is regulated as per environmental regulations (EMCA)
5. Manage wastewater	5.1 ***Wastewater*** is ***collected*** as per source. 5.2 Wastewater is ***treated*** based on the level of pollution 5.3 Sludge is treated and disposed or reused as organic manure 5.4 Treated wastewater is discharged back to the environment.

6. Manage solid waste	6.1 ***Solid wastes*** are collected as per ***SOPs*** 6.2 Wastes are sorted /segregated and ***recovered*** 6.3 Collected wastes are transported to designated areas 6.4 The ***7R principles*** are adopted
7. Manage hazardous waste	7.1 ***Hazardous wastes*** are sorted based on their ***characteristics*** 7.2 Hazardous wastes are collected and gathered 7.3 Hazardous wastes are treated and ***disposed*** based on the waste management regulations 2006 and relevant guidelines.
8. Manage e-waste	8.1 ***Electronic wastes*** are collected 8.2 The 7Rs principles are adopted 8.3 Waste management regulations, WEEE(waste, electrical and electronic equipment) directives and guidelines are applied
9. Sensitize community	9.1 Community is sensitized on environmental pollution impacts and waste management 9.2 Waste management policies are enforced. (EMCA, 1999 and amended EMCA 2015) 9.3 Environmental laws are enforced (EMCA, 1999)

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	**Range**
1. Sources of air pollution may include but not limited to:	Industrial Anthropogenic
2. Air pollution prevention measures may include but not limited to:	Green energy technologies o Solar o Wind o Geothermal Carbon sinks Environmental plans and regulations
3. Sources of water pollution may include but not limited to:	Point source Non-point source. Oil spills
4. Water pollution control measures may include but not limited to:	Water quality permits Soil erosion control Biological pest control techniques Wastewater treatment Regulation of effluents
5. Sources of soil pollution	Fertilizers

may include but not limited to:	Pesticides Solid wastes Overgrazing Oil spills Acid rain
6. Soil pollution control measures may include but not limited to:	Use of organic fertilizers and eco-friendly pesticides Reforestation Solid wastes management Soil erosion control
7. Sources of noise pollution may include but not limited to:	Night clubs Industries Vehicles
8. Treated may include but not limited to:	Extraction and separation techniques Thermal methods Chemical methods Microbial treatment methods
9. Noise pollution control measures may include but not limited to:	Noise permits Ear muffs are used in high noise areas Industries are constructed away from residential areas Sound proofing buildings Green technologies
10. Wastewater may include but not limited to:	Black water Grey water Yellow water
11. Collected may include but not limited to:	Septic tanks Sewer systems
12. Solid wastes may include but not limited to:	Biodegradable Non-biodegradable
13. SOPs may include but not limited to:	Number of containers Frequency of collection Types of collection services and routes
14. Recovered may include but not limited to:	Size reduction Density separation by air classifier Iron is recovered through magnetism Glass is screened
15. 7R principles may include but not limited to:	Reuse Recycle

	Reduce Repair Rethink Refill Refuse
16. Treated may include but not limited to:	Chemically o Neutralization o Oxidation or reduction o Hydrolysis o Precipitation Physically o Encapsulation o Separation Biologically o Using organisms Thermally Incineration
17. Sludge treatment may include but not limited to:	Sludge thickening Sludge Stabilization Sludge Dewatering
18. Hazardous wastes may include but not limited to:	Asbestos Paints Automotive wastes Pesticides Mercury Electronics Radioactive materials Medical waste
19. Characteristics may include but not limited to:	Ignitability Reactivity Corrosivity Toxicity
20. Disposed may include but not limited to:	Incinerated Pyrolysis Landfill Recycling
21. Electronic wastes may include but not limited to:	Electrical appliances Microchips

	Phones Computers

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Monitoring and evaluation
- Research
- Analytical
- Measuring
- Report writing
- Problem solving
- Sorting/Segregation wastes
- Recovering wastes
- Recycling wastes
- First aid
- Mathematical and physics
- Resource mobilization

Required knowledge

The individual needs to demonstrate knowledge of:

- Types of pollutants
- Sources of pollution
- Permits
- Methods of pollution control
- Environmental laws, policies and regulations
- Pollution monitoring and evaluation tools
- Environmental degradation and pollution
- Safety precautions
- Types of wastes
- Technological knowhow
- Waste inventory
- Wastewater treatment
- Hazardous wastes
- Policy regulations (EMCA,1999)
- Entrepreneurship
- Landfills

- Sludge management
- 7Rs
- Sustainable development goals

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Monitored air quality. 1.2 Applied air pollution control measures. 1.3 Monitored water quality. 1.4 Applied water pollution control measures 1.5 Determined soil pollution level 1.6 Applied soil pollution control measures 1.7 Determined noise pollution level 1.8 Applied noise pollution control measures 1.9 Treated wastewater 1.10 Treated and disposed sludge 1.11 Collected solid wastes 1.12 Sorted /segregated wastes 1.13 Adopted the 7R principles 1.14 Sorted, collected and gathered hazardous wastes 1.15 Treated and disposed hazardous wastes 1.16 Collected electronic wastes 1.17 Applied environmental regulations and policies
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation 3.2 Oral Questioning 3.3 Written tests
4. Context of Assessment	Competency may be assessed: 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.