

ENVIRONMENTAL POLLUTION

ISCED UNIT CODE: 0521 551 14A

TVETCDACC UNIT CODE: ENV/CU/ENT/CR/02/5/MA

UNIT DURATION:150 HOURS

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Monitor environmental pollution

Unit Description

This unit specifies the competencies required to monitor environmental pollution. It involves assessing air quality, monitoring water quality, monitoring soil quality, monitoring noise pollution and creating environmental pollution awareness

Summary of Learning Outcomes

By the end of this unit the trainee should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Assess air quality	30
2.	2. Monitor water quality	30
3.	3. Monitor soil quality	30
4.	4. Monitor noise pollution	30
5.	5. Conduct environmental pollution awareness	30
Total		150

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Assess air quality	Theory 1.1 Air Quality 1.1.1 Types of air pollution	<ul style="list-style-type: none">• Practical• Written tests

	<p>1.1.2 Sources of air pollution</p> <p>1.1.3 Health and environmental effects of air pollution</p> <p>1.2 Air Quality emissions</p> <p>1.2.1 Components of air quality emission</p> <p>1.3 Air quality monitoring</p> <p>1.3.1 Air Quality Monitoring Networks</p> <p>1.3.2 Air Quality Measurement Techniques</p> <p>1.3.2.1 Sampling methods (passive and active)</p> <p>1.3.2.2 Analytical techniques for measuring air pollutants (spectroscopy, chromatography)</p> <p>1.4 Air Quality determination tool</p> <p>1.4.1 Data Analysis Tools</p> <p>1.4.1.1 Statistical analysis and modelling of air quality data</p> <p>1.4.1.2 Spatial and temporal analysis of air pollution patterns</p> <p>1.5 Air quality assessment process</p> <p>1.6 Air Pollution Control and Mitigation</p> <p>1.6.1 Emission Control Technologies</p> <p>1.6.2 Clean Energy and Sustainable</p>	<ul style="list-style-type: none"> • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies
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	<p>1.7 Air quality management plans</p> <p> 1.7.1 Air Quality Monitoring and Enforcement</p> <p>Practice</p> <p>1.8 Carry out air quality assessment</p>	
2. Monitor water quality	<p>Theory</p> <p>2.1 Water quality</p> <p> 2.1.1 Water pollution</p> <p> 2.1.1.1 Types of water pollutants: point and non-point sources</p> <p> 2.1.1.2 Sources of water pollution: industrial, agricultural, domestic, municipal</p> <p> 2.1.1.3 Impacts of water pollution on human health, ecosystems, and economic activities</p> <p>2.2 Water Quality Sampling</p> <p> 2.2.1 Water quality Sampling tools</p> <p> 2.2.1.1 Sampling Bottles</p> <p> 2.2.1.2 Sampling Dippers and Buckets</p> <p>2.3 Water quality Sampling methods</p> <p> 2.3.1 Grab samples</p> <p> 2.3.2 Composite samples</p> <p>2.4 Water quality measurement</p> <p> 2.4.1 Key water quality parameters measured</p> <p> 2.4.1.1 Physical</p> <p> 2.4.1.2 Chemical</p> <p> 2.4.1.3 Biological</p>	<ul style="list-style-type: none"> • Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	<p>2.5 Water quality measuring tools</p> <p>2.6 Water quality measurement importance</p> <p>2.7 Water Pollution Control and Mitigation</p> <p>2.8 Water Quality Monitoring and Enforcement</p> <p>Practice</p> <p>2.9 Carry out water quality assessment</p>	
3. Monitor soil quality	<p>Theory</p> <p>3.1 Soil quality</p> <p> 3.1.1 Soil sampling</p> <p> 3.1.1.1 Methods of soil sampling</p> <p> 3.1.1.2 Soil sampling tool</p> <p> 3.1.1.3 Procedure of soil sampling</p> <p>3.2 Soil sampling analysis</p> <p> 3.2.1 Types of soil tests</p> <p> 3.2.2 Importance of soil testing</p> <p> 3.2.3 Steps in soil testing</p> <p>3.3 Soil quality monitoring</p> <p>Practice</p> <p>3.4 Carry out soil testing</p>	<ul style="list-style-type: none"> • Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies
4. Monitor noise pollution	<p>Theory</p> <p>4.1 Noise pollution</p> <p> 4.1.1 Sources of noise pollution</p> <p> 4.1.2 Impacts of Noise Pollution</p> <p>4.2 Noise pollution levels</p> <p> 4.2.1 Noise measurements tools</p> <p> 4.2.2 Noise measurement principles</p> <p> 4.2.3 Measurement Technique</p> <p> 4.2.4 Standards and Guidelines</p> <p>4.3 Noise pollution control</p> <p> 4.3.1 Noise Source Control</p> <p> 4.3.2 Noise Propagation Control</p> <p> 4.3.3 Noise Exposure Control</p> <p>4.4 Routine noise pollution inspection</p>	<ul style="list-style-type: none"> • Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

	<p>4.4.1 Inspection technique</p> <p>4.4.2 Importance of routine inspection</p> <p>4.5 Noise pollution management</p> <p>4.6 Noise Pollution Monitoring and Enforcement</p> <p>4.6.1 Monitoring and compliance</p> <p>4.6.2 Application of EMCA</p> <p>Recommendations</p> <p>Practice</p> <p>4.7 Measure and analyse noise pollution levels</p>	
5. Conduct environmental pollution awareness	<p>5.1 Environmental pollution Awareness</p> <p>5.1.1 Types of environmental pollution</p> <p>5.1.2 Sources of environmental pollution</p> <p>5.2 Environmental pollution assessment</p> <p>5.2.1 Pollution monitoring techniques</p> <p>5.2.2 Data Analysis and Interpretation</p> <p>5.3 Environmental Pollution Control and Mitigation</p> <p>5.3.1 Pollution Prevention and Control Technologies</p> <p>5.3.2 Sustainable Practices and Policies</p> <p>5.4 Environmental pollution awareness</p> <p>5.5 Environmental awareness activities</p> <p>Practice</p> <p>5.6 Identify and map environmental pollution emission sources</p>	<ul style="list-style-type: none"> • Practical • Written tests • Individual/group assignment • Projects • Interviews/ Oral questions • Third party • Case Studies

Suggested Methods of Instruction

- Demonstration
- Role playing
- Group discussion

- Direct instruction

Recommended Resources for 25 trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Item: Trainee)
A	Learning Materials			
1.)	Khaki bags		25pcs	1:1
2.)	Labelling tags		25 pcs	1.1
B	Learning Facilities & infrastructure			
1.)	Lecture/theory room		1	1:25
2.)	Laboratory		1	1:25
C	Tools and Equipment			
1.)	Buckets		25 pcs	1:1
2.)	PPEs		25pcs	1:1
3.)	Jembe		10 pcs	1:5