THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

OCCUPATION: ENVIRONMENTAL MONITORING TECHNICIAN

LEVEL: NTA LEVEL 5

FEBRUARY 2024

TABLE OF CONTENT

ABBREVIATIONS.....ii

GLOSSARY OF TERMS iii

1.0. INTRODUCTION 5

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS..... 6

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR ENVIRONMENTAL MONITORING TECHNICIANS 6

4.0. VALIDITY PERIOD..... 7

5.0. OCCUPATIONAL STANDARDS 8

5.1 OCCUPATIONAL STANDARDS FOR ENVIRONMENTAL MONITORING TECHNICIAN – NTA – LEVEL 5 8

APPENDIX: DACUM CHARTS FOR ENVIRONMENTAL MONITORING TECHNICIAN – NTA – LEVEL 5 40

ABBREVIATIONS

CBET	Competency Based Education and Training
COD	Chemical Oxygen Demand
CO	Carbon Monoxide
NACTVET	National Council for Technical and Vocational Education and Training
NO_X	Nitrogen Oxide
NOS	National Occupational Standards
OS	Occupational Standards
pH value	Hydrogen Ion Concentration Index
SO_2	Sulfur Dioxide
SS	Suspended Solids
TET	Technical Education and Training
TP	Total Phosphorus
TSP	Total Suspended Particulate
TVET	Technical and Vocational Education and Training

GLOSSARY OF TERMS

Circumstantial knowledge:	Detailed knowledge, which allows the decision-making in regard to different circumstances and cross cutting issues.
Skills:	The ability to use knowledge, understanding, practical and thinking skills to perform effectively to the workplace standards required in employment.
Competency:	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
Competency based education:	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
Curriculum:	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
Educational/training programme:	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
Occupation:	A specific position requiring the performance of specific tasks - essentially the same tasks are performed by all employees having the same title. (Example: baker)
Occupational area:	This is a broad grouping of related jobs. (Example: food service)
Occupational standards:	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as performance tool of assessment of the prescribed outcomes.
Performance criteria:	Indicate the expected end results or outcome in form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.
Standards:	It is a set of statement, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.

Task analysis:	The process of analysing each task to determine the steps, related knowledge, attitudes, performance standards, tools and materials needed, and safety concerns required of employees performing it.
Task:	A work activity that has a definite beginning and ending, is observable or measurable, consists of two or more definite steps, and leads to a product, service, or decision.
Underpinning knowledge:	This is crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
Verification process:	The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.
Occupational competence:	The application of knowledge and skills to perform consistently to the standards required in the work context.

1.0. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status, with a high level of human development. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical and Vocational Education and Training (NACTVET) has begun the job of drafting Occupational Standards (OS) that will eventually be adopted as National Occupational Standards (NOS) for use in the delivery of TET that meets the needs of the labour market and the country's economic agenda.

Occupational Standards (OS) are performance criteria that are matched with labour market demands. Each of them describes the functions, performance standards, and understanding or knowledge underpinning a given occupation. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruitment, supervision, and appraisal, as well as TET Standards. They are also helpful for benchmarking and harmonizing job qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in application across all public and private institutions.

However, it must be noted that Occupational Standards are different from Training /Education Standards. Occupational standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs troubleshooting in electrical circuits, etc.), and are usually defined by Employers following procedures as agreed upon by all the stakeholders. On the other hand, Training and Education Standards are developed from the activities defined in the occupational standards, and they specify learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him/her to function at an agreed level in an occupation. Training and Education Standards are used to define curricula in training institutions. It is critical, however, to establish a direct link between the occupational standards and the training standards for both of them to respond collaboratively to the demands of the labour market.

For the purpose of TET delivery, Tanzania has adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing competency-based training (CBET) programmes. Therefore, it is quite pertinent for TET institutions to use the relevant occupational standards as a benchmark for formulating their curricula.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training.

The document explains how the occupational standards were developed, as well as the scope, the

occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The process of developing these Occupational Standards involved both local and international expertise. The process began with an examination of major documents that guide Tanzanian skills development including the *10-year National Skills Development Strategy (2016-2026).* NACTVET labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a team of experts in consultation with practitioners developed draft occupational standards. The draft document was used to develop an occupational profile for each occupation (DACUM Chart), which is attached as an **Appendix** to every Occupational Standard.

The occupational standards were validated during the stakeholders' forum held on 22nd and 23rd February 2024 at Morogoro. The information from the stakeholders' forum provides insight from the workplace, professional bodies, regulatory bodies and sector ministries regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR ENVIRONMENTAL MONITORING TECHNICIANS

These standards cover a broad range of duties and tasks that can be performed by an Environmental Monitoring Technician. However, the occupational standards are not meant to replace individual job descriptions, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Environmental Monitoring Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, other personnel can be employed or designated to execute specific task during sampling under the supervision of an Engineer.

In the laboratory, the Environmental Monitoring Technician shall complete detection and analysis, from sample handover to standard detection and analysis, original record filling, quality control, data processing, etc.

Generally, the Environmental Monitoring Technician performs the following duties:

a) Obtain the in-situ sampling plan;

b) Prepare and calibrate sampling equipment;

c) In-situ sampling;

d) Clean the sampling site;

e) Detect and analyze wastewater;

f) Detect and analyze waste gas;

g) Detect and analyze industrial enterprise noise;

h) Overhaul and calibrate laboratory analytical instrument and equipment

i) Clean the laboratory and dispose the waste;

j) Control quality;

k) Communicate with customers;

l) Analyze data and prepare report;

m) Review the monitoring report;

n) Manage occupational health and safety.

The Occupational standards have been clustered into NTA qualification levels, i.e. NTA Levels 4, 5 and 6.

4.0. VALIDITY PERIOD

The occupational standards will be valid for 3-5 years due to the fast-changing nature of technology. The review will proceed in the same manner as the previous one, with new occupational standards being developed based on current labour market Information.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR ENVIRONMENTAL MONITORING TECHNICIAN – NTA – LEVEL 5

<table>
<tr><td>OCCUPATION</td><td>ENVIRONMENTAL MONITORING TECHNICIAN</td><td>OCCUPATION CODE</td><td></td></tr>
<tr><td>DUTY TITLE</td><td>DETECT AND ANALYSE WASTEWATER</td><td>DUTY NO.</td><td>501</td></tr>
<tr><td>TASK TITLE</td><td>ANALYSE WATER QUALITY</td><td>TASK NO.</td><td>5011</td></tr>
<tr><td>PERFORMANCE CRITERIA</td><td colspan="3">The person performing this task must be able to analyse and determine the indexes (flow rate, flow, pH value, chemical oxygen demand, ammonia nitrogen, total phosphorous and suspended solids) of wastewater according to relevant standards and technical specifications.</td></tr>
<tr><td>RANGE STATEMENT</td><td colspan="3">The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include:
1. Flowmeter;
2. pH meter;
3. Glassware such as conical flask and burette;
4. Baking oven;
5. Electronic scale;
6. Spectral photometer;
7. Protection articles, such as lab coat and gloves.</td></tr>
<tr><td colspan="4">EVIDENCE REQUIREMENT</td></tr>
<tr><td colspan="2">PRACTICAL PERFORMANCE</td><td colspan="2">UNDERPINNING KNOWLEDGE</td></tr>
<tr><td colspan="2">The person performing this task must be able to do the following:
1. Abide by the environmental laws, regulations and standards;
2. Read the flow rate and flow;
3. Determine the analysis method and sample characteristics according to relevant standards, and formulate the experimental analysis plan;
4. Complete preparation before testing and analysis;
5. Carry out experimental analysis on samples with relevant instruments and equipment;
6. Control the quality in laboratories;
7. Record and process the data;</td><td colspan="2">Detailed knowledge about:
1.0 Methods
The person performing this task must be able to explain how to:
1.1 Determine the suitable analytical method and instruments;
1.2 Determine the flow rate and flow;
1.3 Pre-process samples;
1.4 Determine the indexes such as pH value, chemical oxygen demand, ammonia nitrogen, total phosphorous and suspended solids;
1.5 Control the quality in laboratories;
1.6 Fill in the original record form;
1.7 Process and calculate the data.</td></tr>
</table>

8. Master laboratory safety practices; 9. Observe health, occupational and environmental safety rules and regulations.	**2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Principles for water sample pre-treatment; 2.2 Principles of analytical method; 2.3 Principles of quality control. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Sample pretreatment methods; 3.2 Sample analysis and detection methods; 3.3 Effective judgment during analysis. **4.0 Essential skills** 4.1 Communication skills; 4.2 Experimental operation skills; 4.3 Teamwork skills; 4.4 Filling skills of relevant records.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The water quality indexes are analysed and determined according to relevant standards and technical specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Post system; 5. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYSE WASTEWATER	**DUTY NO.**	501
TASK TITLE	OPERATE THE ANALYSIS EQUIPMENT AND INSTRUMENTS SUCH AS SPECTROPHOTOMETER AND ELECTRONIC SCALES	**TASK NO.**	5012
PERFORMANCE CRITERIA	The person performing this task must be able to use spectrophotometer, electronic scales and other analysis equipment/instruments according to relevant standards and technical specifications.		
RANGE STATEMENT	The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include: 1. pH meter; 2. Electronic scale; 3. Spectral photometer.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Make preparations such as warming up before start up; 2. Power on; 3. Calibrate the analysis equipment/instruments; 4. Operate the analysis equipment/instruments and determine the indexes; 5. Power off; 6. Maintain the instruments/equipment; 7. Fill in the instrument using records.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Operate and maintain the instruments; 1.2 Master laboratory safety practices. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Operation principles of instruments; 2.2 Principles of quality control. **3.0 Theories** The person performing this task must be able to explain the following:

	3.1 Basic composition of instruments; 3.2 Basic use and operation of instruments; 3.3 Basic maintenance of instruments. **4.0 Essential skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Filling skills of relevant records.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The water quality indexes are determined with analysis equipment/instruments such as spectrophotometer and electronic scales according to relevant standards and technical specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYSE WASTEWATER	**DUTY NO.**	501
TASK TITLE	FILL IN THE WASTEWATER DETECTION RECORD	**TASK NO.**	5013
PERFORMANCE CRITERIA	The person performing this task must be able to fill in the original record form according to relevant standards and technical specifications.		
RANGE STATEMENT	The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include: 1. Computers; 2. Microsoft Office; 3. Calculator.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Master the basic information of original record form; 2. Fill in the original record form; 3. Process and analyse the data; 4. Review data; 5. Store the original detection record form.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Record the original data of wastewater indexes; 1.2 Process and analyse the wastewater index data; 1.3 Review the data validity; 1.4 Store and hand over the data. 2.0 **Principle** The person performing this task must be able to explain the following principles: 2.1 Data authenticity principle; 2.2 Data validity principles. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Valid data rounding rules; 3.2 Basic knowledge of quality control; 3.3 Data review process and requirements; 3.4 Quality control requirement of analytical method.

	4.0 Essential skills 4.1 Communication skills; 4.2 Filling skills of relevant records; 4.3 Teamwork skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The wastewater indexes are recorded according to relevant standards and technical specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Computer software; 5. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYZE WASTE GAS	**DUTY NO.**	502
TASK TITLE	ANALYSE ATMOSPHERIC INDEXES	**TASK NO.**	5021
PERFORMANCE CRITERIA	The person performing this task must be able to analyse and determine the waste gas of stationary pollution source according to relevant standards and technical specifications.		
RANGE STATEMENT	The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include: 1. Automatic smoke (gas) tester; 2. Thermometer; 3. Psychrometer; 4. Manometer; 5. Electronic scale; 6. Ringelmann aethalometer; 7. PPE, such as lab coat, gloves, mask and safety helmet.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Abide by the environmental laws, regulations and standards; 3. Choose suitable tools and equipment for task; 4. Formulate experimental analysis plan; 5. Determine the parameters of pollution source such as oxygen content, moisture content, flow and flow rate; 6. Determine the emission parameters of stationary pollution source such as particulate matter, sulfur dioxide, nitric oxide and carbon monoxide; 7. Determine the Ringelmann blackness; 8. Analyse the data correctly;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Analyze the samples with analysis equipment; 1.2 Process and analyze the data 1.3 Implement the quality control measures during analysis; 1.4 Master laboratory safety practices. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Waste gas determination principles; 2.2 Principles of quality control; 2.3 Data validity principles. **3.0 Theories** The person performing this task must be able to explain the following:

9. Ensure the validity of analysis process with quality control method.	3.1 Reasons for data processing; 3.2 Importance of quality control measures. **4.0 Essential skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Customer service skills; 4.4 Report writing skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The waste gas sample is analyzed and determined according to relevant standards and technical specifications.
Circumstantial knowledge:	**Detailed knowledge about:** 1. Safety protection of monitoring site; 2. Safety operation of measuring instruments; 3. Monitoring programme; 4. Occupational health and safety.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYSE WASTEWATER	**DUTY NO.**	502
TASK TITLE	OPERATE ANALYSIS EQUIPMENT/INSTRUMENTS SUCH AS SMOKE (DUST) TESTER AND ELECTRONIC SCALES	**TASK NO.**	5022
PERFORMANCE CRITERIA	The person performing this task must be able to use automatic smoke (dust) tester, Ringelmann aethalometer and electronic scales according to standards and technical specifications.		
RANGE STATEMENT	The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include: 1. Automatic smoke (gas) tester; 2. Ringelmann aethalometer; 3. Electronic scale.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Make preparations such as warming up before start up; 2. Power on; 3. Calibrate instruments; 4. Determine the indexes with instruments; 5. Power off; 6. Maintain the instruments/equipment; 7. Record the data; 8. Fill in the instrument using records.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Maintain instruments; 1.2 Master laboratory safety practices. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Specifications and technical standards for instruments and equipment; 2.2 Principles of quality control. **3.0 Theories** The person performing this task must be able to explain the following:

	3.1 Basic composition of instruments; 3.2 Basic use and operation of instruments; 3.3 Basic maintenance of instruments. **4.0 Essential skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Filling skills of relevant records.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The waste gas indexes are determined with analysis equipment such as automatic smoke (dust) tester, Ringelmann aethalometer and electronic scales according to relevant standards and technical specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Equipment operation and maintenance knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYZE WASTE GAS	**DUTY NO.**	502
TASK TITLE	FILL IN THE WASTE GAS DETECTION RECORD	**TASK NO.**	5023
PERFORMANCE CRITERIA	The person performing this task must be able to fill in the original record form according to relevant standards and technical specifications.		
RANGE STATEMENT	The task may be executed outdoors or in the laboratory under the supervision of an Environmental Monitoring Engineer. The tools to be used include: 1. Computers; 2. Microsoft Office; 3. Calculator.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Comprehend the basic information of original record form; 2. Truthfully fill in the original record form; 3. Process and analyze the data; 4. Review data; 5. Store the original detection record form.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Record the original data of waste gas indexes; 1.2 Process and analyze the waste gas index data; 1.3 Review the data validity; 1.4 Store and hand over the data. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Data authenticity principle; 2.2 Data validity principles. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Valid data rounding rules; 3.2 Basic knowledge of quality control; 3.3 Data review process and requirements; 3.4 Quality control requirement of analytical method.

	4.0 Essential skills 4.1 Communication skills; 4.2 Filling skills of relevant records; 4.3 Teamwork skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The waste gas indexes are recorded according to relevant standards and technical specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Computer software; 5. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYSE INDUSTRIAL ENTERPRISE NOISE	**DUTY NO.**	503
TASK TITLE	ANALYSE THE NOISE OF INDUSTRIAL ENTERPRISE	**TASK NO.**	5031
PERFORMANCE CRITERIA	The person performing this task must be able to determine the quantity and location of noise monitoring points, sound level and measuring time/frequency according to the situation of industrial enterprise, site conditions and relevant technical requirements/standards, analyze the background noise and correct the monitoring data based on analysis result.		
RANGE STATEMENT	The task may be executed in the noise polluted site under the supervision of a Senior Technician. The tools and equipment to be used include: 1. Tool kits; 2. Calibrator of sound level meter; 3. Sound level meter; 4. Tripod; 5. Aerovane; 6. Lab coat; 7. Reflective vest; 8. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Choose monitoring and calibration instruments for field calibration as required; 3. Investigate the noise environment boundary, sensitive spots and noise pollution source of industrial enterprises; 4. Determine the quantity and location of monitoring points, sound level and measuring time/frequency; 5. Arrange the monitoring points in industrial enterprises;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Calibrate and use the environmental noise monitoring equipment; 1.2 Judge the noise functional area level of industrial enterprise according to the site conditions and determine the evaluation sound level; 1.3 Collect samples; 1.4 Draw the site location diagram according to the location conditions. **2.0 Principle** The person performing this task must be able to

6. Read and record the monitoring data and correct the data according to background noise; 7. Fill in the original record form; 8. Arrange the tools, equipment and workplace; 9. Store tools and equipment.	explain the following principles: 2.1 Classification standard of noise environment area level; 2.2 Basis for monitoring location arrangement; 2.3 Basis for monitoring sound level, time and frequency; 2.4 Background noise measuring method and correction principle. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Calibration method, principle and requirements; 3.2 Arrangement of monitoring points; 3.3 Operation of in-situ sampling instruments; 3.4 Background noise measurement and correction. **4.0 Essential skills** 4.1 Site communication skills; 4.2 Safe operation skills; 4.3 Customer service skills; 4.4 Teamwork skills; 4.5 Filling skills of relevant records.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The quantity and location of noise monitoring points, sound level and measuring time/frequency are determined according to the situation of industrial enterprise, site conditions and relevant technical requirements/standards, the background noise is analyzed and the monitoring data is corrected based on the analysis results.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Post system; 5. Equipment operation and maintenance knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYZE INDUSTRIAL ENTERPRISE NOISE	**DUTY NO.**	503
TASK TITLE	OPERATE THE NOISE METER	**TASK NO.**	5032
PERFORMANCE CRITERIA	The person performing this task must be able to use environmental noise detection and calibration instruments skillfully.		
RANGE STATEMENT	The task may be executed in the noise polluted site under the supervision of a Senior Technician. The tools and equipment to be used include: 1. Tool kits; 2. Calibrator of sound level meter; 3. Sound level meter; 4. Tripod; 5. Aerovane; 6. Lab coat; 7. Reflective vest; 8. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the health and safety prevention measures; 2. Abide by the environmental laws, regulations and standards; 3. Calibrate and use the environmental noise monitoring equipment; 4. Set correct noise measurement sound level and time, export and record the detection data; 5. Fill in the original record form; 6. Arrange the tools, equipment and workplace; 7. Store tools and equipment.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Choose monitoring and calibration instruments for field calibration as required; 1.2 Adjust the evaluation sound level according to monitoring plan; 1.3 Arrange the monitoring points in industrial enterprises according to monitoring plan; 1.4 Carry out monitoring and sampling on site. **2.0 Principle** The person performing this task must be able to explain the following principles:

	2.1 Classification standard of noise environment area level; 2.2 Basis for monitoring location arrangement; 2.3 Basis for monitoring sound level, time and frequency; 2.3 Background noise measuring method and correction principle. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Calibration method, principle and requirements; 3.2 Arrangement of monitoring points; 3.3 Operation of in-situ sampling instruments; 3.4 Background noise measurement and correction. **4.0 Essential skills** 4.1 On-site communication skills; 4.2 Safe operation skills; 4.3 Customer service skills; 4.4 Teamwork skills; 4.5 Filling skills of relevant records.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The noise monitoring task is performed with noise monitoring equipment according to the site conditions and monitoring plan.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Equipment operation and maintenance knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYZE INDUSTRIAL ENTERPRISE NOISE	**DUTY NO.**	503
TASK TITLE	MONITOR THE NOISE OF SITE POLLUTION SOURCE	**TASK NO.**	5033
PERFORMANCE CRITERIA	The person performing this task must be able to monitor the noise of site pollution source according to standard operation requirements.		
RANGE STATEMENT	The task may be executed in the noise polluted site under the supervision of a Senior Technician. The tools and equipment to be used include: 1. Tool kits; 2. Calibrator of sound level meter; 3. Sound level meter; 4. Tripod; 5. Aerovane; 6. Lab coat; 7. Reflective vest; 8. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Choose suitable tools and equipment for task; 3. Wind direction measurement; 4. Measure wind speed; 5. Calibrate the sound level meter; 6. Erect the tripod; 7. Set the sound level meter; 8. Measure the noise; 9. Read the data; 10. Arrange the tools, equipment and workplace; 11. Store tools and equipment.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Measure the wind direction and velocity; 1.2 Set the sound level meter; 1.3 Measure the noise; 1.4 Read the data. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Wind direction/velocity measurement principles; 2.2 Principles of quality control. **3.0 Theories** The person performing this task must be able to explain the following:

	3.1 Reasons for wind velocity measurement; 3.2 Reasons for sound level calibration; 3.3 Importance of sound level meter. **4.0 Essential skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Customer service skills; 4.4 Report writing skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The noise of the site pollution source is monitored according to standard operation requirements.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Safety protection of monitoring site 4. Safety operation of measuring instruments; 5. Occupational health and safety.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	DETECT AND ANALYZE INDUSTRIAL ENTERPRISE NOISE	**DUTY NO.**	503
TASK TITLE	FILL IN THE NOISE DETECTION RECORD OF INDUSTRIAL ENTERPRISE	**TASK NO.**	5034
PERFORMANCE CRITERIA	The person performing this task must be able to fill in the noise detection record of an industrial enterprise according to standard operation requirements.		
RANGE STATEMENT	The task may be executed in the noise polluted site under the supervision of a Senior Technician. The tools and equipment to be used include: 1. Tool kits; 2. Calibrator of sound level meter; 3. Sound level meter; 4. Tripod; 5. Aerovane; 6. Lab coat; 7. Reflective vest; 8. Recording pen; 9. Record form of noise detection of industrial enterprises; 10. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Choose suitable tools and equipment for task; 3. Record the name and address of industrial enterprise; 4. Record the weather condition; 5. Record the wind velocity; 6. Record the calibration data of sound level meter; 7. Record the noise monitoring data of monitoring points in daytime/at night;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Record the original data of wastewater indexes; 1.2 Process and analyze the wastewater index data; 1.3 Review the data validity; 1.4 Store and hand over the data. **2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Data authenticity principle; 2.2 Data validity principles.

8. Draw the distribution diagram of monitoring points; 9. Record the site condition; 10. Sign the record form; 11. Arrange the tools, equipment and workplace; 12. Store tools and equipment.	**3.0 Theories** The person performing this task must be able to explain the following: 3.1 Valid data rounding rules; 3.2 Basic knowledge of quality control; 3.3 Data review process and requirements. **4.0 Essential skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Customer service skills; 4.4 Report writing skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The noise detection record of industrial enterprises is filled in according to standard operation requirements.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Computer software; 5. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	OVERHAUL AND CALIBRATE LABORATORY ANALYTICAL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	504
TASK TITLE	CALIBRATE ANALYSIS AND INSPECTION EQUIPMENT	**TASK NO.**	5041
PERFORMANCE CRITERIA	The person performing this task must be able to overhaul and calibrate the laboratory analytical instruments/equipment according to technical standards and requirements.		
RANGE STATEMENT	The task may be executed under the supervision of a Senior Technician or an Environment Engineer according to the technical standards and requirements. The tools and equipment to be used include: 1. Spectral photometer; 2. Electronic scale; 3. Smoke (dust) tester; 4. Noise monitoring instrument; 5. Necessary tools for overhaul and calibration of instruments/equipment; 6. Use and maintenance instructions and technical standard documents of instruments/equipment; 7. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Choose suitable overhaul and calibration method for tasks; 3. Choose suitable tools and equipment for task; 4. Overhaul and calibrate the spectrometer; 5. Overhaul and calibrate the electronic scales; 6. Overhaul and calibrate the smoke (dust) tester; 7. Overhaul and calibrate the noise monitor;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Overhaul and calibrate the spectrometer; 1.2 Overhaul and calibrate the electronic scales; 1.3 Overhaul and calibrate the smoke (dust) tester; 1.4 Overhaul and calibrate the noise monitor. **2.0 Principle** The person performing this task must be able to explain the following principles:

8. Arrange the tools, equipment and workplace; 9. Store tools and equipment.	2.1 Working principles and operation regulations for laboratory analysis equipment; 2.2 Overhaul and calibration procedures for laboratory analysis equipment. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Reasons for overhauling and calibrating laboratory analysis equipment; 3.2 Methods for overhauling and calibrating laboratory analysis equipment; 3.3 Importance of overhaul and calibration method/basis for laboratory analysis equipment. **4.0 Essential skills** 4.1 Maintenance and inspection skills; 4.2 Cooperation skills; 4.3 Technical service skills; 4.4 Procedure formulation skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The laboratory analysis equipment is overhauled and calibrated according technical standard requirements.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Overhaul and calibration of spectrometer; 2. Overhaul and calibration of electronic scales; 3. Overhaul and calibration of smoke (dust) tester; 4. Overhaul and calibration of noise monitor; 5. Safety operation and protection on site; 6. Occupational health and safety.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	OVERHAUL AND CALIBRATE LABORATORY ANALYTICAL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	504
TASK TITLE	CLEAN AND MAINTAIN ANALYTICAL INSTRUMENTS	**TASK NO.**	5042
PERFORMANCE CRITERIA	The person performing this task must be able to correctly and reasonably maintain and clean the laboratory analytical instruments/equipment according to technical standards and requirements.		
RANGE STATEMENT	The task may be executed in the laboratory under the supervision of a Senior Technician or an Environmental Engineer. The tools and equipment to be used include: 1. Spectral photometer; 2. 2. Electronic scale; 3. Smoke (dust) tester; 4. Noise monitoring instrument; 5. Necessary tools and reagents for cleaning and maintenance of instruments/equipment; 6. Use and maintenance instructions and technical standard documents of instruments/equipment; 7. PPE, such as safety helmet and boots, gloves and mask.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe the preventive measures for health and safety; 2. Choose suitable cleaning and maintenance method; 3. Choose suitable tools, reagents and equipment; 4. Clean and maintain the spectrometer; 5. Clean and maintain the electronic scales; 6. Overhaul and calibrate the smoke (dust) tester;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Clean and maintain the spectrometer; 1.2 Clean and maintain the electronic scales; 1.3 Clean and maintain the smoke (dust) tester; 1.4 Clean and maintain the noise monitor. **2.0 Principle** The person performing this task must be able to explain the following principles:

7. Clean and maintain the noise monitor; 8. Arrange the tools, equipment and workplace; 9. Store tools and equipment.	2.1 Principle for cleaning and maintenance of analysis equipment; 2.2 Principles of quality control. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Reasons for cleaning and maintaining laboratory analysis equipment; 3.2 Cleaning and maintenance method/basis for laboratory analysis equipment; 3.3 Importance of cleaning and maintenance for laboratory analysis equipment. **4.0 Essential skills** 4.1 Cleaning and maintenance skills; 4.2 Cooperation skills; 4.3 Technical service skills; 4.4 Procedure formulation skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The laboratory analysis equipment is cleaned and maintained according to technical requirements and operation regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Cleaning and maintenance of spectrometer; 2. Cleaning and maintenance of electronic scales; 3. Cleaning and maintenance of smoke (dust) tester; 4. Cleaning and maintenance of noise monitor; 5. Safety operation and protection on site; 6. Occupational health and safety.

<table>
<tr><td>OCCUPATION</td><td>ENVIRONMENTAL MONITORING TECHNICIAN</td><td>OCCUPATION CODE</td><td></td></tr>
<tr><td>DUTY TITLE</td><td>OVERHAUL AND CALIBRATE LABORATORY ANALYTICAL INSTRUMENTS AND EQUIPMENT</td><td>DUTY NO.</td><td>504</td></tr>
<tr><td>TASK TITLE</td><td>CLEAN AND MAINTAIN GLASSWARE</td><td>TASK NO.</td><td>5043</td></tr>
<tr><td>PERFORMANCE CRITERIA</td><td colspan="3">The person performing this task must be able to clean and maintain the laboratory glassware reasonably and correctly according to technical standard requirements and operation regulations.</td></tr>
<tr><td>RANGE STATEMENT</td><td colspan="3">The task may be executed in the laboratory under the supervision of a Senior Technician or an Environmental Engineer. The tools and equipment to be used include:
1. Glass containers, such as beaker, flask, test tube, centrifuge tube, colorimetric tube, reagent bottle, and weighing bottle;
2. Glass measuring instruments, such as measuring cylinder (cup), volumetric flask, burette, and pipette;
3. Other glassware, such as funnel, separation funnel, suction filter bottle, dryer, watch glass, condenser tube, and quartz glass products;
4. Necessary tools and reagents for cleaning and maintenance of instruments/equipment;
5. Cleaning and maintenance instructions and technical standard documents of glassware;
6. PPE, such as safety helmet and boots, gloves and mask.</td></tr>
<tr><td colspan="4">EVIDENCE REQUIREMENT</td></tr>
<tr><td colspan="2">PRACTICAL PERFORMANCE</td><td colspan="2">UNDERPINNING KNOWLEDGE</td></tr>
<tr><td colspan="2">The person performing this task must be able to do the following:
1. Observe the health and safety prevention measures;
2. Choose suitable cleaning method and master the selection, preparation and application of washing liquor;
3. Choose suitable tools, reagents and equipment;
4. Wash the glassware;
5. Dry and store the glassware;
6. Clean and maintain the glassware periodically according to technical requirements and operation procedures;</td><td colspan="2">Detailed knowledge about:
1.0 Methods
The person performing this task must be able to explain how to:
1.1 Clean and maintain the glass containers;
1.2 Clean and maintain the glass measuring instruments;
Clean and maintain other glassware.

2.0 Principle
The person performing this task must be able to explain the following principles:</td></tr>
</table>

7. Arrange the tools, equipment and workplace; 8. Store the tools, reagents and equipment safely.	2.1 Operation regulations for cleaning and maintaining laboratory glassware. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Reasons for cleaning and maintaining laboratory glassware; 3.2 Methods for cleaning and maintaining laboratory glassware; 3.3 Importance of cleaning and maintaining laboratory glassware. **4.0 Essential skills** 4.1 Cleaning and maintenance skills; 4.2 Literature retrieval skills; 4.3 Cooperation skills; 4.4 Technical service skills; 4.5 Procedure formulation skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The laboratory analysis equipment is cleaned and maintained according to technical requirements and operation regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Cleaning and maintenance of glass containers; 2. Cleaning and maintenance of glass measuring instruments; 3. Cleaning and maintenance of other glassware; 4. Selection and configuration of formworks; 5. Safety operation and protection on site; 6. Occupational health and safety.

<table>
<tr><td>OCCUPATION</td><td>ENVIRONMENTAL MONITORING TECHNICIAN</td><td>OCCUPATION CODE</td><td></td></tr>
<tr><td>DUTY TITLE</td><td>CLEAN THE LABORATORY AND DISPOSE WASTE</td><td>DUTY NO.</td><td>505</td></tr>
<tr><td>TASK TITLE</td><td>CLEAN THE LABORATORY</td><td>TASK NO.</td><td>5051</td></tr>
<tr><td>PERFORMANCE CRITERIA</td><td colspan="3">The person performing this task must be able to clean the laboratory according to the cleaning and hygiene regulations and specifications.</td></tr>
<tr><td>RANGE STATEMENT</td><td colspan="3">The task may be executed in the laboratory under the supervision of a Senior Technician or an Environmental Engineer. The tools and equipment to be used include:
1. Locker;
2. Lab coat and rubber gloves;
3. Document holder;
4. Waste liquid tank;
5. Label, mark, pen and mark pen;
6. Broom, mop and rag;
7. Classified trash can and garbage bag;
8. Cardboard box;
9. Needle collection box;
10. Cleaner;
11. Sanitation and cleaning ledger.</td></tr>
<tr><td colspan="4">EVIDENCE REQUIREMENT</td></tr>
<tr><td colspan="2">PRACTICAL PERFORMANCE</td><td colspan="2">UNDERPINNING KNOWLEDGE</td></tr>
<tr><td colspan="2">The person performing this task must be able to do the following:
1. Observe the safety and health prevention knowledge;
2. Determine the treatment method according to the using frequency of laboratory items;
3. Define the items placement place, arrange them according to properties and areas and paste the labels;
4. Arrange the items and experimental instruments on the experimental table reasonably, orderly and stably;
5. Clean the public table and instruments/equipment, sweep and mop the ground, use cleaner if</td><td colspan="2">Detailed knowledge about:
1.0 Methods
The person performing this task must be able to explain how to:
1.1 Check the cleaning and hygiene rules, regulations and specifications;
1.2 Treat the laboratory items used in different frequencies;
1.3 Plan the space and place scientifically and reasonably;
1.4 Arrange the items by areas and categories;
1.5 Collect waste by categories;
1.6 Eliminate the chemical stains.</td></tr>
</table>

necessary and keep the laboratory clean and tidy; 6. Place the laboratory waste by categories and clear it up timely; 7. Record the sanitation and cleaning ledger.	**2.0 Principle** The person performing this task must be able to explain the following principles: 2.1 Treatment procedures of items used in different frequencies; 2.2 Partitioning management principle of items; 2.3 Laboratory waste liquid treatment procedures. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Classification, storage requirement and basic properties of reagents; 3.2 Treatment of different chemical stains; 3.3 Collection and treatment of different waste. **4.0 Essential skills** 4.1 Communication skills; 4.2 Classified arrangement skills; 4.3 Emergency treatment skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The laboratory is cleaned according to cleaning and hygiene regulations, systems and specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CLEAN THE LABORATORY AND DISPOSE WASTE	**DUTY NO.**	505
TASK TITLE	PROTECT AGAINST OCCUPATIONAL HAZARDS	**TASK NO.**	5052
PERFORMANCE CRITERIA	The person performing this task must be able to accomplish occupational hazard protection according to occupational disease prevention guidelines, rules and regulations.		
RANGE STATEMENT	The task may be executed in the laboratory under the supervision of a Senior Technician or an Environmental Engineer. The tools and equipment to be used include: 1. occupational disease protection tools, such as protective caps, clothes, gloves, mask (face mask), googles, earmuffs (plugs), respiratory protective device and skin protection articles; 2. Cleaning agent; 3. Washing equipment, such as eyewash and flushing equipment; 4. First-aid kit; 5. Ledger of ventilation, lighting, cooling and cold-proof facilities, equipment and chemicals.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Participate in occupational disease prevention training; 2. Wear protective articles correctly; 3. Use instruments, equipment and hazardous chemical correctly; 4. Timely record the maintenance and using ledger of occupational disease prevention facilities; 5. Receive occupational health examination on time.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Check the occupational disease prevention guidelines, rules and regulations; 1.2 Check the operation instruction of instruments, equipment and chemicals; 1.3 Check the MSDS of chemicals; 1.4 Use and maintain the protection articles correctly; 1.5 Operate the instruments and equipment correctly; 1.6 Use the hazardous chemicals safely; 1.7 Treat emergencies.

	2.0 Principle The person performing this task must be able to explain the following principles: 2.1 Law abiding principle; 2.2 Institutional constraints; 2.3 Principles of safety production; 2.4 Occupational health principles. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Standard operation of instruments and equipment; 3.2 Selection and wearing of protection articles; 3.3 Emergency treatment of accidents. **4.0 Essential skills** 4.1 Communication skills; 4.2 Problem-solving ability; 4.3 Emergency treatment skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	Occupational hazards are avoided according to occupational disease prevention guidelines, rules and regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Chemical knowledge.

OCCUPATION	ENVIRONMENTAL MONITORING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CLEAN THE LABORATORY AND DISPOSE WASTE	**DUTY NO.**	505
TASK TITLE	TREAT WASTE	**TASK NO.**	5053
PERFORMANCE CRITERIA	The person performing this task must be able to treat the waste according to the standard for pollution control of laboratory waste and safety management system.		
RANGE STATEMENT	The task may be executed in the laboratory under the supervision of a Senior Technician or an Environmental Engineer. The tools and equipment to be used include: 1. Waste collection box; 2. Waste temporary storage cabinet; 3. Waste liquid collection bucket; 4. Garbage bag; 5. Cleaner and disinfectant; 6. Sharps box; 7. Protection articles (protective clothes, gloves, googles and face mask); 8. Autoclave; 9. Seal pot; 10. Waste treatment record ledger.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the laboratory waste treatment principles; 2. Classify the waste; 3. Choose suitable package and paste labels according to standards; 4. Pretreat, collect and dispose the waste; 5. Store the waste; 6. Wear protection articles; 7. Accident emergency treatment; 8. Keep waste treatment record ledger.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Check the MSDS of chemicals; 1.2 Classify the waste; 1.3 Pretreat, collect and dispose the waste; 1.4 Store the waste correctly; 1.5 Choose and wear protection articles correctly; 1.6 Treat emergencies. **2.0 Principle** The person performing this task must be able to explain the following principles:

	2.1 Law abiding principles; 2.2 Institutional constraints; 2.3 Principles of safety production; 2.4 Occupational health principles. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Pretreatment, collection and disposal of waste. 3.2 Selection and wearing of protection articles; 3.3 Emergency treatment of accidents. **4.0 Essential skills** 4.1 Emergency treatment skills.
DESCRIPTION OF THE FINAL SKILLS / SERVICE	The waste is treated and disposed of according to the safety treatment management system of laboratory waste.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Environmental laws, regulations and standards; 2. Quality assurance policies and manual; 3. Occupational safety and health; 4. Chemical knowledge.

APPENDIX: DACUM CHARTS FOR ENVIRONMENTAL MONITORING

TECHNICIAN – NTA – LEVEL 5

DUTIES	TASKS	ENABLERS
1.0 Detect and analyse wastewater	1.1 Analyse water quality indexes. 1.2 Operate the analysis equipment and instruments such as spectrophotometer and electronic scales. 1.3 Fill in the wastewater detection record.	**General skills and knowledge** · Being familiar with and abiding by the environmental laws, regulations and standards · Skills and knowledge for measuring flow rate, flow, pH value, chemical oxygen demand, ammonia nitrogen, total phosphorous and suspended solids · Laboratory detection and analysis · Instrument use · Quality control of the laboratory · Recording of the data **Tools and equipment** · PPE, such as lab coat, rubber gloves and protective mask · Glassware, such as beaker, measuring cylinder and colorimetric vessel · Electronic scale · pH meter · Spectral photometer · First aid tools **Materials** · Labels · Glassware · Chemical reagents · Paper records

		Worker behaviors · Have teamwork spirit and be honest, trustworthy, careful and meticulous.
2.0 Detect and analyse waste gas	2.1 Analyse atmospheric indexes. 2.2 Operate analysis equipment/instruments such as smoke (dust) tester and electronic scales. 2.3 Fill in the waste gas detection record.	**General skills and knowledge** · Being familiar with and abiding by the environmental laws, regulations and standards · Skills and knowledge for determining the particulate matter, sulfur dioxide, nitrogen oxides, Ringmann blackness, carbon monoxide, oxygen content, moisture content, smoke temperature, flow rate and flow · Laboratory detection and analysis · Instrument use · Quality control of the laboratory · Recording of the data **Tools and equipment** · PPE, such as lab coat, rubber gloves and protective mask · Glassware, such as beaker, measuring cylinder and colorimetric vessel · Electronic scale · Smoke gas (dust) tester · Spectral photometer · First aid tools **Materials** · Labels · Glassware · Chemical reagents · Paper records

		Worker behaviors · Have teamwork spirit and be honest, trustworthy, careful and meticulous.
3.0 Detect and analyse industrial enterprise noise	3.1 Analyse the noise of industrial enterprise. 3.2 Operate the noise meter. 3.3 Monitor the noise of site pollution source. 3.4 Fill in the noise detection record of industrial enterprise.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Operation instruction of instruments · Knowledge and skills for analysing the noise on site · Knowledge and skills of the noise monitoring instrument · Formulation of the monitoring plan · Data processing and recording **Tools and equipment** · PPE, such as safety helmet, safety boots, gloves, mask, lab coat and reflective vest · Whole set of noise monitoring instrument · Aerovane **Materials** · Noise emission source · Noise detection record form **Worker behaviors** · Teamwork spirit, integrity, quality and safety awareness
4.0 Overhaul and calibrate the laboratory analytical instruments/equipment	4.1 Calibrate analysis and inspection equipment. 4.2 Clean and maintain analytical instruments. 4.3 Clean and maintain glassware.	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Operation instruction of instruments · Knowledge and skills of spectrometer, electronic

		scales, smoke (dust) tester and noise monitoring instrument · Knowledge and skills related to containers, measuring instruments and other glassware · Preparation of washing liquor · Basic chemistry **Tools and equipment** · PPE, such as safety helmet, safety boots, gloves, mask, lab coat and reflective vest · Whole set of instrument maintenance toolkit · Chemical reagent **Materials** · Spectrometer, electronic scales, smoke (dust) tester and noise monitoring instrument · Containers, measuring instruments and other glassware **Worker behaviors** · Teamwork spirit, integrity, quality and safety awareness
5.0 Clean the laboratory and dispose waste	5.1 Clean the laboratory. 5.2 Protect against occupational hazards 5.3 Treat waste.	**General skills and knowledge** · Check the MSDS of chemicals · Check the operation instruction of instruments/equipment · Items partitioning management · Selection and wearing of protection articles · Circumstantial knowledge of waste classified management **Tools and equipment**

		· Hygiene and cleaning tools, such as broom, mop and rag · PPE, such as lab coat, rubber gloves and protective mask · Sterilization and disinfection equipment · First aid tools · Emergency response equipment · **Materials** · Special cleaner · Storage box and cabinet · Waste storage device · Paper records **Worker behaviors** · Be careful, meticulous, responsible and honest