NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

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PROPOSED OCCUPATIONAL STANDARDS

OCCUPATION: FOOD INSPECTION AND TESTING TECHNICIAN

LEVEL: NTA 6

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ABBREVIATIONS

CBET	Competency Based Education and Training
ICP	Inductively Coupled Plasma
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
LIMS	Laboratory Information Management System
NACTVET	National Council for Technical and Vocational Education and Training
NOS	National Occupational Standards
OS	Occupational Standards
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
TBS	Tanzania Bureau of Standards
TET	Technical Education and Training
TFDA	Tanzania Food and Drugs Authority
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.
Competence:	The ability to use knowledge, understanding, practical, and thinking skills to effectively meet the job requirements.
Competency:	The ability 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 comprehensive statement about "what is to be learned" by the trainee/student in a particular syllabus; description of " intended learning outcomes".
Educational/Training Programme:	The complete curriculum and instruction that is designed to prepare a person (in content and manner) for employment in a job or other special 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:	Broad groupings of related jobs, such as catering service.
Occupational Standards:	Specific requirements for competencies of personnel in a particular occupational area, including knowledge and relevant attitudes, which can also be adopted to evaluate the performance of a given outcome.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation.
Performance Criteria:	A description of an expected outcome or achievement in the form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skills are conceived of as a composite of three completely interdependent components: cognitive, emotional and conscious activities.
Standards:	A set of statements, which, if proved true under working conditions, means that an individual is meeting an expected level and performance.
Task Analysis:	The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance criteria, tools and

	materials needed, as well as safety concerns required for the 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 products, service, or decisions.
UNDERPINNING KNOWLEDGE	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 that consistently meet the standards required by the working conditions.

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. 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 of Tanzania has begun the job of drafting Occupational Standards that will eventually be adopted as National Occupational Standards for TET in order to ensure that it meets the needs of the labour market and the country's economic agenda.

National Occupational Standards (NOS) are performance criteria that are matched with labour market demands. Each National Occupational Standard describes functions, performance standards, and knowledge/understanding for one important function or task. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruiting, supervision, and appraisal, as well as TET standards. They're also helpful for benchmarking and harmonizing 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 delivery across all public and private institutions.

However, it must be noted that, Occupational Standards and Training Standards/Qualifications Standards are different. 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 fault in electrical wiring, etc.) and they are usually defined by employers following procedures agreed upon by all stakeholders. Education and Training standards are developed from the activities defined in occupational standards, and they include learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him or her to function at an agreed level in an occupation. Education and Training standards are used to define curricula in training institutions. It is however critical that there must be a direct link between the Occupational Standards and the training standards to respond to demands of the labour market.

In TET delivery, Tanzania 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. TET institutions will be required to benchmark their curricula with relevant Occupational Standards.

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 (TET).

The Food Inspection and Testing Technician Occupation has its own set of occupational standards. 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 Occupational Standards development process began with an examination of major documents that guide Tanzanian skill development. The *10-year National Skills Development Strategy (2016-2026)* was one of the documents reviewed, and it outlined six (6) economic sectors that should be prioritized when developing skills development programmes.

These sectors include: Transport and Logistics, Tourism and Hospitality, Agribusiness, Construction, Energy and ICT. NACTE 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 workshop comprised of experts and educators with substantial knowledge and experience in the occupation conducted an occupational analysis utilizing the DACUM approach to produce the occupational profile. The analysis resulted in DACUM Charts, which are attached as **Appendix 1** to this document.

The Occupational Standards were then developed. Experts in Occupational Analysis and the Development of Occupational Standards facilitated the workshop. Interviews, online surveys, and a stakeholder forum were used to validate the Occupational Standards. Engineers, supervisory technicians on the job, and experienced Food Inspection and Testing Technicians were key informants in the survey to discover occupational trends. The information was used to gain insight from the workplaces regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation. A total of ..... online surveys were completed by experts from the labour market across the country. Apart from the survey aiding in defining the scope for the occupational analysis, they also served to engage a wide cross-section of experts in the occupation. Apart from this, the stakeholders' forum was attended by ... participants from different parts of the country representing various companies.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIANS

The standards cover a broad range of duties and tasks that can be performed by a Food Inspection and Testing Technician. However, the occupational standards are not meant to replace individual

job descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. Food Inspection and Testing Technicians may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations, other individuals may be employed or designated to perform specific tasks.

The Food Inspection and Testing Technician shall work under the supervision of engineers, perform sampling management, sample management, reagent and small instruments and equipment management and sample testing (physical and chemical detection, microbe detection), and implement quality control of testing results. They shall also complete the testing of food samples and the whole working procedure of complex sample handling, testing, quality control and report preparation in the laboratory. Generally, the Food Inspection and Testing Technician performs the following responsibilities:

a) Sampling management

b) Sample management

c) Management of reagents and small instruments and equipment

d) Spectral and chromatographic detection

e) Routine microbe detection

f) Record and report preparation

g) Internal quality control of testing results

h) Testing method validation

i) Laboratory safety management

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

4.0. VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR FOOD INSPECTION AND TESTING TECHNICIAN - NTA 6

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SAMPLING SUPERVISION AND TRAINING	**DUTY NO.**	601
TASK TITLE	SAMPLING SUPERVISION	**TASK NO.**	6011
PERFORMANCE CRITERIA	The person performing this task must be able to supervise the sampling in accordance with the sampling plan proposal and standard operation procedures for sampling.		
RANGE STATEMENT	The task can be performed in the food sampling site under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Management manuals of food safety sampling; 2. Standard operation procedures for sampling; 3. Sampling plan proposals; 4. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Verify sampling documents and tools; 2. Inspect the dress of samplers; 3. Supervise the operation of samplers; 4. Verify the sampling quantity; 5. Inspect the packaging of samples; 6. Supervise the sterile sampling; 7. Inspect the sampling records; 8. Supervise the sample sealing operation; 9. Verify the sampling payment bill; 10. Supervise the sample transportation facilities; 11. Inspect the sampling evidence.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Supervise and standardize sampling; 1.2 Inspect sampling records. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of random sampling; 2.2 Principles of sampling representativeness; 2.3 Principles of sampling typicality; 2.4 Detailed rules for the implementation of food safety supervision and sampling inspection. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Measures for the management of food safety sampling; 3.2 Procedures of food sampling inspection by counting; 3.3 Procedures of food sampling inspection by

	variables. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Management skills; 4.3 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The sampling process is supervised in accordance with the standard operation procedures for sampling and sampling plan proposals.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Communication skills.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SAMPLING SUPERVISION AND TRAINING	**DUTY NO.**	601
TASK TITLE	SAMPLER TRAINING	**TASK NO.**	6012
PERFORMANCE CRITERIA	The person performing this task must be able to train samplers in accordance with standards and regulations, sampling plan proposals and standard operation procedures for sampling.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Management manuals of food safety sampling; 2. Standard operation procedures for sampling; 3. Sampling plan proposals; 4. Training materials.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Interpret standards and specifications, sampling plan proposals, and standard operation procedures related to sampling; 2. Prepare training materials; 3. Train the samplers; 4. Record the training process; 5. Clearly describe sampling terms and definitions, principles, workflow, etc.; 6. Demonstrate the standard sampling operation; 7. Assess the samplers.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Conduct standardized sampling; 1.2 Fill in sampling records; 1.3 Prepare training materials. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of random sampling; 2.2 The principle of sampling representativeness and typicality; 2.3 Detailed rules for the implementation of food safety supervision and sampling inspection. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Measures for the management of food safety sampling; 3.2 Procedures of food sampling inspection by counting and by variables. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Management skills;

	4.3 Verbal expression skills; 4.4 Summarizing skills; 4.5 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Samplers are trained in accordance with standards, regulations, the sampling plan proposal, and the standard operation procedures for sampling.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Communication skills.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SAMPLE MANAGEMENT	**DUTY NO.**	602
TASK TITLE	SUPERVISION OF SAMPLE PREPARATION	**TASK NO.**	6021
PERFORMANCE CRITERIA	The person performing this task must be able to supervise sample preparation in accordance with standard operation procedures for sample preparation.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Standard operation procedures for sample preparation; 2. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Supervise the receipt and sign-off of samples; 2. Judge whether the sample preparation is standardized; 3. Confirm whether the sample preparation tools is appropriate; 4. Supervise the operation of quartering method; 5. Judge the uniformity of the prepared samples; 6. Confirm whether the particle size of solid sample is appropriate; 7. Determine whether the container meets the requirements; 8. Confirm whether the sample preservation environment is suitable; 9. Confirm whether the sample quantity meets the requirements; 10. Review sample preparation records and identification.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1. Supervise sample preparation; 1.2. Prepare samples according to sample features and testing items. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of sample preparation; 2.2 The principle of sampling using the quartering method. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of food sample preparation; 3.2 Causes and solutions of sample pollution; 3.3 Causes and solutions of sample component loss. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Management skills; 4.3 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Sample preparation is supervised in accordance with standard operation procedures for sample preparation.

CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Laboratory safety management policy; 2. Occupational health and safety; 3. Communication skills.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SAMPLE MANAGEMENT	**DUTY NO.**	602
TASK TITLE	SUPERVISION OF SAMPLE MANAGEMENT	**TASK NO.**	6022
PERFORMANCE CRITERIA	The person performing this task must be able to supervise sample management in accordance with documents of sample management procedures and standard operation procedures for sample management.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Documents of sample management procedures; 2. Standard operation procedures for sample management; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Inspect sample receipt records; 2. Inspect the sample information entry of LIMS; 3. Inspect the uniqueness of sample identification; 4. Inspect the equipment and facilities in the sample room; 5. Inspect the preservation conditions of samples; 6. Inspect whether the samples are classified and stored in accordance with test status and labelled as to be tested, under testing, and tested; 7. Inspect the disposal records of expired samples; 8. Inspect the saving time of sample management records.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Supervise sample management; 1.2 Inspect sample receipt records; 1.3 Identify the received samples; 1.4 Inspect the sample transfer records. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Uniqueness principles of sample identification; 2.2 Traceability principles of samples; 2.3 Food sample retention management system. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 The guidance of laboratory sample management; 3.2 The reason for the change of the original features of samples. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Management skills;

	4.3 Computer application skills; 4.4 Comprehensive analysis and processing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The sample management procedure is supervised in accordance with sample management procedure documents and standard operation procedures for sample management.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Communication skills.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SAMPLE MANAGEMENT	**DUTY NO.**	602
TASK TITLE	TRAINING OF SAMPLE MANAGEMENT PERSONNEL	**TASK NO.**	6023
PERFORMANCE CRITERIA	The person performing this task must be able to train the sample management personnel in accordance with standard regulations, documents of sample management procedures and standard operation procedures for sample management.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. The guidance of laboratory sample management; 2. Documents of sample management procedures; 3. Standard operation procedures for sample management; 4. Training materials.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Interpret the standards and specifications, procedure documents, and standard operation procedures related to sample management; 2. Prepare training materials; 3. Train the samplers; 4. Record the training contents; 5. Articulate the general requirements of sample management, receiving, preservation, packaging, preparation, transportation, disposal and sample record management; 6. Demonstrate the standardized operation of sample management; 7. Examine sample management personnel.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Interpret sample management standards and specifications; 1.2 Interpret program documents and standard operation procedures; 1.3 Implement sample management; 1.4 Prepare training materials. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Uniqueness principles of sample identification; 2.2 Traceability principles of samples; 2.3 Food sample retention management system. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 The guidance of laboratory sample management; 3.2 Solutions to abnormalities in sample management.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Management skills; 4.3 Verbal expression skills; 4.4 Summarizing skills; 4.5 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Sample management personnel are trained in accordance with standards, regulations, sample management procedure documents and standard operation procedures for sample management.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Communication skills; 2. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	MANAGEMENT OF REAGENTS AND SMALL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	603
TASK TITLE	PROCUREMENT AND ACCEPTANCE OF SMALL INSTRUMENTS AND EQUIPMENT	**TASK NO.**	6031
PERFORMANCE CRITERIA	The person performing this task must be able to conduct the procurement and acceptance of small instruments and equipment in accordance with the manufacturer's manual.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Laboratory small instruments and equipment (balances, pH meters, water purifiers, conductivity meters, Abbe refractometers, polarimeters, pipettors, UV-VIS spectrophotometers, constant temperature drying ovens, high temperature furnaces, centrifuges, Kjeldahl apparatus, microscopes, autoclaves, etc.); 2. Documents of management procedures; 3. Manufacturer's manual; 4. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Investigate the market and user feedback of the small instruments and equipment to be procured; 3. Prepare procurement applications and define equipment performance requirements; 4. Make the procurement after approved; 5. Prepare the installation conditions of instruments; 6. Inspect the appearance, quantity and attachments of instruments; 7. Organize the acceptance of technical indicators for instruments and equipment; 8. Fill in the inspection and acceptance records; 9. Submit acceptance reports; 10. Dispose of unqualified instruments and equipment.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Select equipment manufacturers and models; 1.2 Conduct the acceptance of equipment technical indicators; 1.3 Dispose of unqualified instruments and equipment. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle that the procurement contract is the basis of acceptance; 2.2 Detailed rules for the acceptance of instruments and equipment; 2.3 Management system of instruments and equipment; 2.4 Safety operation procedures in the laboratory; 2.5 Safety operation procedures of instruments

	and equipment. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Principles and the application of instruments; 3.2 Causes and solutions of the technical indicator deviation of instruments and equipment. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The procurement and acceptance of small instruments and equipment are conducted in accordance with the manufacturer's manual.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	MANAGEMENT OF REAGENTS AND SMALL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	603
TASK TITLE	METROLOGICAL TRACING AND PERIOD VERIFICATION OF SMALL INSTRUMENTS AND EQUIPMENT	**TASK NO.**	6032
PERFORMANCE CRITERIA	The person performing this task must be able to perform metrological tracing and period verification of small instruments and equipment in accordance with procedure documents and the manufacturer's manual.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Small instruments and equipment (balances, pH meters, water purifiers, conductivity meters, Abbe refractometers, polarimeters, pipettors, UV-VIS spectrophotometers, constant temperature drying ovens, high temperature furnaces, Kjeldahl apparatus, microscopes, autoclaves, etc.); 2. Procedure documents; 3. Manufacturer's manual; 4. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Prepare the metrological tracing plan of small instruments and equipment; 3. Confirm parameters of equipment calibration; 4. Confirm the measure of equipment after tracing; 5. Prepare the period verification plan of equipment; 6. Confirm the methods and parameters of period verification; 7. Conduct period verification; 8. Fill in the records of period verification; 9. Deal with the verification results.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Implement the period verification of small instruments and equipment; 1.2 Deal with the verification results. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of ensuring the accuracy and reliability of instruments and equipment; 2.2 The principle of metrological tracing and period verification of instruments and equipment. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 The guidance of period verification of measuring equipment;

	3.2 The guidance of metrological tracing result verification of laboratory instrument and equipment. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The period verification and metrological tracing of small instruments and equipment are conducted in accordance with procedure documents and the manufacturer's manual.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures in the laboratory; 2. Safety operation procedures of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	MANAGEMENT OF REAGENTS AND SMALL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	603
TASK TITLE	MANAGEMENT AND MAINTENANCE OF SMALL INSTRUMENTS AND EQUIPMENT	**TASK NO.**	6033
PERFORMANCE CRITERIA	The person performing this task must be able to perform the management and maintenance of small instruments and equipment in accordance with procedure documents and the manufacturer's manual.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Small instruments and equipment (balances, pH meters, water purifiers, conductivity meters, Abbe refractometers, polarimeters, pipettors, UV-VIS spectrophotometers, constant temperature drying ovens, high temperature furnaces, centrifuges, Kjeldahl apparatus, microscopes, autoclaves, etc.); 2. Documents of management procedures; 3. Manufacturer's manual; 4. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Establish the files of instrument and equipment management; 3. Establish the daily use regulations, safe use regulations and daily maintenance regulations of instruments and equipment; 4. Conduct regular supervision and inspection of instruments and equipment; 5. Make the procurement of instrument spares and vulnerable spare parts; 6. Confirm the verification or calibration results; 7. Identify instruments and equipment and related operation status; 8. Provide the latest version of the instrument description to testing personnel; 9. Prepare daily inspection and maintenance record tables of instruments and	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare the files of instrument and equipment management; 1.2 Conduct supervision and inspection of instruments and equipment; 1.3 Identify instruments and equipment and related operation status; 1.4 Keep instruments and equipment. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of management and maintenance of instruments and equipment; 2.2 The principle of unique identifier of instruments and equipment. **3.0 Theories**

equipment; 10. Keep and maintain instruments and equipment; 11. Arrange equipment maintenance; 12. Dispose of the scrapped equipment.	The person performing this task must be able to explain the following: 3.1 Methods of management and maintenance of instruments and equipment; 3.2 Safety operating procedures of instruments and equipment. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The management and maintenance of small instruments and equipment are conducted in accordance with procedure documents and the manufacturer's manual.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Frontier information of equipment update and upgrading.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	MANAGEMENT OF REAGENTS AND SMALL INSTRUMENTS AND EQUIPMENT	**DUTY NO.**	603
TASK TITLE	STANDARD SUBSTANCE ACCEPTANCE AND PERIOD VERIFICATION	**TASK NO.**	6034
PERFORMANCE CRITERIA	The person performing this task must be able to conduct standard substance acceptance and period verification in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Standard operation procedures for standard substance acceptance and period verification; 2. Testing equipment (calibrated), such as UV-VIS spectrophotometers, atomic absorption spectrophotometers, gas chromatographs and liquid chromatographs; 3. Analytical balances (calibrated); 4. Commonly-used measuring instruments in the laboratory (verified and calibrated), such as transfer pipets, pipets, volumetric flasks, and pipettors; 5. Temperature and humidity monitors (calibrated); 6. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Select appropriate tools and equipment; 3. Verify the relevant information in the procurement plan; 4. Check the integrity (or sealed degree) of packaging and identifiers, and the correspondence between certificates and related objects; 5. Fill in and keep acceptance records; 6. Store the standard substance in accordance with the certificate regulations; 7. Inspect the operating state of temperature and humidity monitor; 8. Design the period verification plan of standard substance; 9. Choose the appropriate method to perform	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Conduct the acceptance of standard substance; 1.2. Confirm the frequency and methods of period verification on standard substance; 1.3 Judge the results of period verification; 1.4 Dispose of unqualified standard substance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of period verification of standard substance; 2.2 Regulations on the use and management of laboratory standard substance.

period verification of the standard substance (unopened/opened); 10. Fill in the period verification record table; 11. Dispose of unqualified standard substance.	**3.0 Theories** The person performing this task must be able to explain the following: 3.1 The testing and calibration of laboratory standard substance/methods of standard sample acceptance and period verification; 3.2 Management methods of laboratory standard substance; 3.3 Waste disposal methods. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The acceptance and period verification of standard substance are conducted in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SPECTRAL AND CHROMATOGRAPHIC DETECTION	**DUTY NO.**	604
TASK TITLE	PRETREATMENT OF COMPLEX SAMPLES	**TASK NO.**	6041
PERFORMANCE CRITERIA	The person performing this task must be able to perform pretreatment of complex samples and provide sample solutions for chromatographic detection and spectral detection in accordance with standards, specifications, or standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Operation instruction for pretreatment of complex samples (generally, the pretreatment process of complex samples includes extraction, separation, purification and concentration); 2. Weighing equipment, such as analytical balances; 3. Sample preparation equipment (homogenizers, pulverizers, etc.); 4. Extraction equipment, such as vortex oscillators, centrifuges, ultrasonic generators, and thermostat water baths; 5. Concentration equipment, such as nitrogen drying devices and rotary evaporators; 6. Digestion equipment, such as microwave digestion systems, adjustable electric heating plates, and muffle furnaces; 7. Glass instruments commonly-used in the laboratory, such as transfer pipets, pipettes, volumetric flasks, measuring cylinders, beakers, conical bottles; 8. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Select appropriate tools and equipment; 3. Select appropriate reagents and materials; 4. Preparing uniform samples; 5. Choose appropriate methods (such as extraction, separation, purification, digestion, and concentration) to treat the sample to obtain the solutions to be tested; 6. Store the solutions to be tested; 7. Conduct blank tests; 8. Conduct parallel tests;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare representative samples; 1.2 Treat samples by organic destruction; 1.3 Treat samples by distillation; 1.4 Extract the constituent to be tested by solvents; 1.5 Separate and purify samples by the chemical method and chromatography method; 1.6 Dispose of waste. **2.0 Principles** The person performing this task must be able to

9. Fill in the experimental records; 10. Dispose of waste; 11. Clean tools, equipment and workplaces; 12. Arrange and store the reagents, tools and equipment.	explain the following principles: 2.1 Principles of sample pretreatment; 2.2 Safety operation procedures in the laboratory; 2.3 Safety operation procedures of instruments and equipment. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Organic destruction; 3.2 Solvent extraction; 3.3 Distillation separation; 3.4 Chemical separation; 3.5 Chromatographic separation; 3.6 Methods of sample pretreatment; 3.7 Waste disposal methods. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The pretreatment of complex samples is performed in accordance with standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety; 2. Environmental protection.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SPECTRAL AND CHROMATOGRAPHIC DETECTION	**DUTY NO.**	604
TASK TITLE	SPECTRAL DETECTION	**TASK NO.**	6042
PERFORMANCE CRITERIA	The person performing this task must be able to select spectral equipment to detect trace elements in food samples to ensure food quality and safety in accordance with standard specifications or standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Spectral equipment operation manuals; 2. Spectral equipment, such as UV-VIS spectrophotometers, atomic absorption spectrophotometers, and ICP spectrometers; 3. Analytical balances; 4. Commonly-used measuring instruments in the laboratory, such as transfer pipets, pipets, volumetric flasks, and pipettors; 5. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Prepare standard solutions and reagent solutions; 3. Use spectral equipment (UV-Vis spectrophotometers, atomic absorption spectrophotometers, and ICP spectrometers) in a standardized manner; 4. Optimize and set the testing parameters of instruments; 5. Draw the standard curves; 6. Determine the sample solutions and blank solutions to be tested; 7. Conduct quality control tests; 8. Fill in the experimental records; 9. Calculate testing results; 10. Submit the testing result report; 11. Dispose of waste; 12. Clean the tools, equipment and workplaces.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Optimize and set the parameters of spectral instruments; 1.2 Use spectral instruments to measure light absorbance or spectral line intensity in a standardized way; 1.3 Draw the standard curves showing the relationship between light absorbance (spectral line intensity) and concentration; 1.4 Conduct quality control tests. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of selecting spectral analysis lines; 2.2 Principles of selecting internal standard elements and analysis line pairs; 2.3 Significant figures and calculation rules; 2.4 The structure and working principles of spectral instruments and equipment; 2.5 Principles of spectral analysis.

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Basic theory of spectral analysis; 3.2 Spectral interference and corresponding elimination methods; 3.3 Methods to improve the precision and accuracy of analysis results; 3.4 Operation methods and precautions of spectral instruments and equipment; 3.5 Physical and chemical inspection methods of food; 3.6 Waste disposal methods. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Spectral detection is conducted in accordance with standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Errors in analysis and data processing; 2. Safety operation procedures in the laboratory; 3. Safety operation procedures of instruments and equipment; 4. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	SPECTRAL AND CHROMATOGRAPHIC DETECTION	**DUTY NO.**	604
TASK TITLE	CHROMATOGRAPHIC DETECTION	**TASK NO.**	6043
PERFORMANCE CRITERIA	The person performing this task must be able to select chromatographic equipment to determine additives and pollutants in food samples in accordance with standard specifications or standard operation procedures to ensure food quality and safety.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Chromatographic equipment operation manuals; 2. Chromatographic equipment, such as gas chromatographs and liquid chromatographs; 3. Analytical balances; 4. Mobile phase filtration system of liquid chromatography; Filter devices, filter membranes and liquid storage bottles; 5. Sample filter devices; Syringe filters and chromatography vials; 6. Ultrasonic generators; 7. Commonly-used measuring instruments in the laboratory, such as transfer pipets, pipets, volumetric flasks, and pipettors; 8. Laboratory ultrapure water purifiers; 9. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Prepare standard solutions and reagent solutions; 3. Prepare the mobile phase used for liquid chromatography (including preparation, filtration and bubble removal); 4. Conduct sample pretreatment; 5. Optimize the determining parameter setting of instruments (such as selecting chromatographic columns, setting column temperature, mobile phase flow rate, temperature programming or gradient elution programs, detector parameters, and sample sizes); 6. Determine the standard solutions and draw the standard curves;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare the mobile phase for liquid chromatography; 1.2 Optimize and set the determination parameters of instruments; 1.3 Conduct qualitative analysis; 1.4 Conduct quantitative analysis; 1.5 Conduct quality control tests. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle that like dissolves like; 2.2 Principles of selecting the mobile phase and stationary phase in liquid chromatography;

7. Determine the sample solutions and blank solutions to be tested; 8. Conduct quality control tests; 9. Fill in the experimental records; 10. Calculate testing results; 11. Submit the testing result report; 12. Dispose of waste; 13. Clean the tools, equipment and workplaces.	2.3 Principles of selecting the stationary phase in gas chromatography; 2.4 Significant figures and calculation rules; 2.5 Working principles of chromatographic instruments; 2.6 Principles of qualitative and quantitative analysis by chromatography. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Basic theory of chromatography; 3.2 Plate theory and rate theory; 3.3 Structure of chromatographic instruments; 3.4 Selection of chromatographic separation conditions; 3.5 Physical and chemical inspection techniques of food; **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Chromatographic equipment is selected to determine the additives and pollutants in food samples in accordance with standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Errors in analysis and data processing; 2. Safety operation procedures in the laboratory; 3. Safety operation procedures of instruments and equipment; 4. Occupational health and safety; 5. Waste disposal methods.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	TESTING OF CONVENTIONAL MICROORGANISMS	**DUTY NO.**	605
TASK TITLE	TESTING OF COMMON INDICATOR BACTERIA	**TASK NO.**	6051
PERFORMANCE CRITERIA	The person performing this task must be able to detect the indicator bacteria (colony counts, coliform groups, molds, yeasts, etc.) of food samples in accordance with standard specifications or standard operation procedures to ensure the quality and safety of food.		
RANGE STATEMENT	The task can be performed in the microbe detection laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Standard operation procedures for the inspection of common indicator bacteria; 2. Clean benches; 3. Autoclaves; 4. Constant temperature incubators; 5. Microscopes; 6. Balances; 7. Homogenizers; 8. Oscillators; 9. Thermostat water baths; 10. Colony counters; 11. Refrigerators; 12. pH meters or precise pH indicator paper; 13. Alcohol burners, scissors, tweezers, etc.; 14. Full set of sterile glassware (straws, petri dishes, conical bottles, etc.); 15. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Prepare experimental equipment; 3. Prepare and sterile culture mediums and reagent solutions; 4. Conduct aseptic operation; 5. Dilute the sample to obtain three sample homogenates with suitable dilution; 6. Inoculate and culture sample homogenates, and operate in parallel for samples in each dilution;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Conduct aseptic operation; 1.2 Conduct sample dilution, fermentation test, plate streaking and culture; 1.3 Count colonies, coliforms, molds and yeasts; 1.4 Dispose of waste. **2.0 Principles** The person performing this task must be able to

7. Conduct blank tests; 8. Conduct confirmatory tests; 9. Test the total number of colonies, coliforms and molds; 10. Count and report; 11. Dispose of waste; 12. Clean the tools, equipment and workplaces.	explain the following principles: 2.1 Principles of random sampling; 2.2 Principles of selective sampling; 2.3 Principles of aseptic operation; 2.4 Principles of suitable dilution; 2.5 Principles of rounding off; 2.6 General principles for food microbiological inspection; 2.7 Safety operation procedures in the microbiological laboratory; 2.8 Waste disposal requirements in the microbiological laboratory. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Basic theory of indicator bacteria testing; 3.2 Inspection procedures of colony counts; 3.3 Inspection procedures of coliforms; 3.4 Inspection procedures of molds and yeasts; 3.5 Food microbiological inspection technology. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Indicator bacteria in samples are tested in accordance with standard specifications and standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures of equipment; 2. General requirements for laboratory biosafety; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	TESTING OF CONVENTIONAL MICROORGANISMS	**DUTY NO.**	605
TASK TITLE	COMMERCIAL STERILITY INSPECTION	**TASK NO.**	6052
PERFORMANCE CRITERIA	The person performing this task must be able to conduct commercial sterility inspection in food samples in accordance with standard specifications and standard operation procedures to ensure food quality and safety.		
RANGE STATEMENT	The task can be performed in the microbe detection laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Clean benches; 2. Autoclaves; 3. Constant temperature incubators; 4. Thermostat water baths; 5. Balances; 6. Homogenizers, sterile homogeneous bags, homogeneous cups or mortars; 7. Microscopes; 8. Refrigerators; 9. Electric potential pH meters; 10. Can openers and perforators; 11. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Prepare sterile saline solutions, crystalline violet stains, xylene and ethanol solutions containing 4% iodine; 3. Mark and record the test samples; 4. Prepare control samples; 5. Weigh samples; 6. Insulate samples; 7. Open samples; 8. Retain samples; 9. Perform sensory inspection to samples; 10. Determine the pH value of samples (parallel determination for two times); 11. Stain samples and conduct microscopic examination; 12. Judge the results;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Label the samples to be tested; 1.2 Obtain control samples; 1.3 Insulate samples; 1.4 Open the insulated samples; 1.5 Retain samples; 1.6 Perform sensory inspection of samples; 1.7 Determine the pH value of samples; 1.8 Stain samples and conduct microscopic examination; 1.9 Make the determination of commercial sterility; 1.10 Dispose of waste. **2.0 Principles** The person performing this task must be able to

13. Dispose of waste; 14. Clean the tools, equipment and workplaces.	explain the following principles: 2.1 Principles of random sampling; 2.2 Principles of aseptic operation; 2.3 Safety operation procedures in the microbiological laboratory; 2.4 Waste disposal requirements in the microbiological laboratory. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Basic theory of commercial sterility inspection; 3.2 Procedures of commercial sterility inspection; 3.2 Causes of abnormal inspection results and solutions; 3.3 Food microbiological inspection technology. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Commercial sterility inspection of samples is conducted in accordance with standard specifications or standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures of equipment; 2. General requirements for laboratory biosafety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	TESTING OF CONVENTIONAL MICROORGANISMS	**DUTY NO.**	605
TASK TITLE	STRAIN MANAGEMENT	**TASK NO.**	6053
PERFORMANCE CRITERIA	The person performing this task must be able to perform strain management in accordance with the strain management manual.		
RANGE STATEMENT	The task can be performed in the microbe detection laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Strain management manuals; 2. Standard operation procedures for strain subculture and preservation; 3. Clean benches; 4. Autoclaves; 5. Constant temperature incubators; 6. Microscopes; 7. Refrigerators; 8. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Purchase and receive strains; 3. Keep strains; 4. Conduct strain subculture (lyophilized strains purchased from culture preservation institutions are regarded as the 0th generation); 5. Conduct corresponding physical and chemical inspection of the purity and features of strains; 6. Issue and use strains; 7. Conduct the destruction and harmless treatment of strains; 8. Fill in the record.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Conduct the subculture of strains; 1.2 Keep strains; 1.3 Check the purity and property of strains; 1.4 Destroy strains. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principle of aseptic operation; 2.2 Principles of pollution avoidance. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Subculture and preservation of strains; 3.2 Operating procedures of subculture of strains; 3.3 Causes of abnormal strains and handling methods.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Strain management is carried out in accordance with corresponding specifications.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures in the laboratory; 2. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	REPORT RECORDING AND PREPARATION	**DUTY NO.**	606
TASK TITLE	PREPARATION OF ORIGINAL INSPECTION AND TESTING RECORDINGS	**TASK NO.**	6061
PERFORMANCE CRITERIA	The person performing this task must be able to prepare the original inspection and testing record in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Standard operation procedures on the preparation of original records; 2. Computers.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select appropriate tools and equipment; 2. Design the original inspection and testing record form (record number, testing items, standards, sample information, environmental conditions, instruments and equipment, date, data result records, result judgment or description, calculation formula, standard curves, information of testing personnel/auditors, page number identification, etc.); 3. Prepare the requirements for filling in the original record; 4. Prepare the requirements for modifying the original record; 5. Prepare the requirements for the archive management of original records.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Design the original inspection and testing record; 1.2 Fill in the original inspection and testing record; 1.3 Keep the original inspection and testing record. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The originality principle of original records; 2.2 The genuineness principle of original records; 2.3 The traceability principle of original records; 2.4 Food safety laws and regulations. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Management guidelines for the laboratory sample record and the testing record; 3.2 Commonly-used terms of technical requirements for food inspection. **4.0 Essential Skills**

	4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The original inspection and testing record table is prepared in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. The international system of units and its application; 2. Rules of significant figures and rounding-off for numerical values.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	REPORT RECORDING AND PREPARATION	**DUTY NO.**	606
TASK TITLE	PREPARATION OF INSPECTION AND TESTING REPORTS	**TASK NO.**	6062
PERFORMANCE CRITERIA	The person performing this task must be able to prepare the testing report in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Standard operation procedures on the preparation of testing reports; 2. Computers.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Design the report cover, including the logo, title, sample name, client, inspection category, and testing institution; 2. Design the report declaration page, including declaration items and testing institution information; 3. Design the report homepage, including basic information and information of sample providers, samples and sampling; 4. Design the basic information, including the name of testing institutions, report numbers, page numbers, inspection and testing types, sample receipt date, testing date, testing items, test principles, judgment principles, testing conclusions, issuance date and signature of the approver, auditor and preparing personnel; 5. Design the page number in the form of "Page X of X"; 6. Design the report data page, including the name of testing institutions, titles, report numbers, page numbers, inspection and testing data, and description of results; 7. Prepare the requirements of filling in the test report; 8. Prepare the requirements for the archive management of test reports.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Design the content of inspection and testing reports; 1.2 Fill in the inspection and testing report; 1.3 Keep the inspection and testing report. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of ensuring the accuracy, clarity, and objectiveness of the report; 2.2 The principle of ensuring simple, accurate and logical expression; 2.3 The principle of ensuring unique identifiers in the report; 2.4 General requirement of inspection and testing institutions. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Preparation principles of inspection and testing reports. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills;

	4.3 Report writing skills; 4.4 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The inspection and testing report is prepared in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. The international system of units and its application; 2. Rules of significant figures and rounding-off for numerical values.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	INTERNAL QUALITY CONTROL OF TESTING RESULTS	**DUTY NO.**	607
TASK TITLE	INTERNAL QUALITY CONTROL	**TASK NO.**	6071
PERFORMANCE CRITERIA	The person performing this task must be able to carry out the internal quality control of inspection and testing results in accordance with relevant procedures and documents.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Testing equipment (calibrated), such as UV-VIS spectrophotometers, atomic absorption spectrophotometers, gas chromatographs and liquid chromatographs; 2. Commonly-used measuring instruments in the laboratory (verified and calibrated), such as transfer pipets, pipets, volumetric flasks, and pipettors; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Confirm the internal quality control method; 2. Judge the linearity of standard curves; 3. Draw the quality control chart; 4. Conduct blank tests; 5. Carry out the spike and recovery test; 6. Carry out the standard substance monitoring test; 7. Carry out the repetitive test; 8. Carry out the comparative test between testing personnel, instruments and methods; 9. Keep the sample for retesting; 10. Dispose of waste; 11. Clean the tools, equipment and workplaces.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Control quality with the quality control chart; 1.2 Control quality through the spike and recovery test; 1.3 Control quality through the comparative test between testing personnel, instruments and methods; 1.4 Handle the error and data during the analysis; 1.5 Control quality through the standard substance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of ensuring reliable and accurate testing results; 2.2 Significant figures and calculation rules. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Quality control methods in the laboratory;

	3.2 Internal quality control requirements for chemical analysis methods. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills; 4.6 Summarizing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The internal quality control of testing results is carried out in accordance with relevant procedures and documents.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures in the laboratory; 2. Safety operation procedures of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	INTERNAL QUALITY CONTROL OF TESTING RESULTS	**DUTY NO.**	607
TASK TITLE	SUPERVISION AND MONITORING OF THE TESTING PERSONNEL	**TASK NO.**	6072
PERFORMANCE CRITERIA	The person performing this task must be able to supervise and monitor the testing personnel in accordance with relevant procedures and documents to ensure the effectiveness of testing results.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Testing equipment (calibrated); 2. Commonly-used measuring instruments in the laboratory (verified and calibrated), such as transfer pipets, pipets, volumetric flasks, and pipettors; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Select proper methods (field observation, written verification, questioning interviews, quality control tests, etc.) to supervise and monitor the testing personnel; 2. Supervise and monitor the actual operation ability of the testing personnel through field observation; 3. Supervise and monitor the ability of the testing personnel through the comparative test between testing personnel or blind sample test; 4. Validate the result report and original record; 5. Interview the testing personnel; 6. Record supervision and monitoring data; 7. Submit supervision and monitoring reports; 8. Train the unqualified personnel.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Design the post ability evaluation form for the testing personnel; 1.2 Evaluate the post ability of the testing personnel. **2.0 Principles** The person performing this task must be able to explain the following: 2.1 The principle of ensuring the accuracy of testing results; 2.2 The principle of correcting or stopping the deviation in the testing process; 2.3 Assessment specifications for legal metrological verification institutions. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Guidelines for the implementation of supervision and monitoring of the inspection and testing personnel; 3.2 Personnel management procedures of

	inspection and testing institutions. **4.0 Essential Skills** 4.1 Observation and communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The supervision and monitoring of the testing personnel are carried out in accordance with relevant procedures and documents.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Courseware making; 2. Safety operation procedures in the laboratory; 3. Safety operation procedures of instruments and equipment; 4. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	INSPECTION METHOD VALIDATION	**DUTY NO.**	608
TASK TITLE	STANDARD METHOD VALIDATION	**TASK NO.**	6081
PERFORMANCE CRITERIA	The person performing this task must be able to carry out standard method validation in accordance with relevant procedures and documents.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Testing equipment (calibrated), such as UV-VIS spectrophotometers, atomic absorption spectrophotometers, gas chromatographs and liquid chromatographs; 2. Commonly-used measuring instruments in the laboratory (verified and calibrated), such as transfer pipets, pipets, volumetric flasks, and pipettors; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Ensure that the judgment standard is valid at present; 3. Confirm that laboratory resources meet the verification requirements; 4. Submit the *Application Form for Development Review of New Projects*; 5. Prepare standard solutions and reagent solutions; 6. Prepare and treat samples; 7. Carry out the method validation test (linearity of standard curves, testing limits and quantitative limits of methods, accuracy, precision, typical actual sample tests, etc.); 8. Fill in the method validation record; 9. Dispose of waste; 10. Clean the tools, equipment and workplaces.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Validate the linearity of standard curves; 1.2 Validate the testing limit and quantitative line of the testing method; 1.3 Validate the accuracy and precision of the testing method. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of ensuring reliable and accurate testing data; 2.2 Significant figures and calculation rules; 2.3 Laboratory qualification accreditation review criteria; 2.4 Accreditation criteria for the competence of testing and calibration laboratories (ISO/IEC 17025). **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Guide for the validation and verification of chemical analysis methods;

	3.2 Quality control methods in the laboratory. **4.0 Essential Skills** 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The standard method validation is carried out in accordance with relevant procedures and documents.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Laboratory safety operation; 2. Safety operation of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	INSPECTION METHOD VALIDATION	**DUTY NO.**	608
TASK TITLE	PREPARATION OF METHOD VALIDATION REPORTS	**TASK NO.**	6082
PERFORMANCE CRITERIA	The person performing this task must be able to prepare standard method validation reports in accordance with relevant procedures and documents.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. Procedure documents; 2. Standard operation procedures; 3. Computers.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Design the method validation report format; 2. Clarify the personnel engaged in the method validation; 3. Clarify the process and conclusion of resource demand verification; 4. Clarify the determination process and conclusion of method performance (linearity of standard curves, testing limits and quantitative limits, accuracy and precision, etc.); 5. Clarify the test results of typical samples; 6. Attach the original data record table or diagram; 7. Summarize the validation conclusion (detail whether it meets the requirements); 8. Clarify the identification and date of reviewers and approvers.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Evaluate the linearity of testing methods; 1.2 Evaluate the testing limit and quantitative property of the testing method; 1.3 Evaluate the accuracy of testing methods; 1.4 Evaluate the precision of testing methods. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Preparation of inspection and testing method validation reports; 2.2 Significant figures and calculation rules; 2.3 Preparation specifications of inspection and testing method validation reports; 2.4 Laboratory qualification accreditation review criteria; 2.5 Accreditation criteria for the competence of testing and calibration laboratories. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Guide for the validation and verification of chemical analysis methods; 3.2 Preparation specifications of inspection and testing method validation reports.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills; 4.5 Data processing and analysis skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Standard method validation reports are prepared in accordance with relevant procedures and documents.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures in the laboratory; 2. Safety operation procedures of instruments and equipment; 3. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	LABORATORY SAFETY MANAGEMENT	**DUTY NO.**	609
TASK TITLE	LABORATORY BIOSAFETY MANAGEMENT	**TASK NO.**	6091
PERFORMANCE CRITERIA	The person performing this task must be able to carry out laboratory biosafety management in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. The manual of laboratory biosafety management; 2. Biosafety cabinets; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Comply with the measures of occupational health and biosafety precautions; 2. Check the qualifications of personnel entering the laboratory; 3. Register entry and exit personnel; 4. Supervise the biosafety protection and operation of the testing personnel; 5. Maintain the laboratory biosafety equipment; 6. Record the use of equipment; 7. Check the storage of sterilized articles; 8. Disinfect the laboratory; 9. Dispose of biological waste; 10. Check the compliance of strains and biological sample management; 11. Solve laboratory biosafety emergencies.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Supervise the biosafety protection and operation of the testing personnel; 1.2 Disinfect the biosafety laboratory; 1.3 Dispose of biological waste. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Principles of laboratory biosafety management; 2.2 Regulation on biosafety management of pathogenic microorganism laboratories; 2.3 Safety operation procedures of laboratory biosafety; 2.4 Biosafety laws and regulations. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Guidelines for evaluation of operation and maintenance of biosafety laboratories; 3.2 Relationship between biosafety and human health.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills 4.3 Report writing skills; 4.4 Computer application skills
DESCRIPTION OF THE END PRODUCT / SERVICE	Laboratory biosafety management is carried out in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Occupational health and safety.

OCCUPATION	FOOD INSPECTION AND TESTING TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	LABORATORY SAFETY MANAGEMENT	**DUTY NO.**	609
TASK TITLE	SAFETY MANAGEMENT OF HAZARDOUS CHEMICALS	**TASK NO.**	6092
PERFORMANCE CRITERIA	The person performing this task must be able to perform safety management of hazardous chemicals in accordance with standard operation procedures.		
RANGE STATEMENT	The task can be performed in the food testing laboratory under the supervision of food inspection and testing engineers. The tools and equipment to be used include: 1. The manual of safety management of hazardous chemicals; 2. Fire-fighting equipment; 3. Personal protective equipment (PPE), such as goggles, gloves and work clothes.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe occupational health and safety precautions; 2. Set up designated warehouses (counters) to store hazardous chemicals; 3. Carry out classified storage and identification of hazardous chemicals by properties; 4. Implement double-person and double-lock management; 5. Implement information management; 6. Regularly check labels, packaging and status; 7. Equip with corresponding fire-fighting equipment; 8. Implement the registration system; 9. Collect and dispose of hazardous wastes (waste gas, waste liquid and waste residue) generated or left in the experiment according to regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Carry out classified storage of hazardous chemicals; 1.2 Control flammable and hazardous chemicals; 1.3 Control hazardous chemicals prone to poisoning and corrosion accidents; 1.4 Control radioactive hazardous chemicals; 1.5 Control explosive hazardous chemicals. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Regulations on safety management of hazardous chemicals; 2.2 General rules for storage of hazardous chemicals in warehouses. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Classification and storage methods of hazardous chemicals; 3.2 Emergency disposal methods of hazardous chemicals; 3.3 Catalogue of hazardous chemicals.

	4.0 Essential Skills 4.1 Communication skills; 4.2 Teamwork skills; 4.3 Report writing skills; 4.4 Computer application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The safety management of hazardous chemicals is carried out in accordance with standard operation procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation procedures in the laboratory; 2. Occupational health and safety; 3. Relevant laws and regulations.

TABLE 1: DACUM CHARTS FOR FOOD INSPECTION AND TESTING TECHNICIAN - NTA 6

DUTIES	TASKS	ENABLERS
1.0 Sampling supervision and training	1.1 Sampling supervision. 1.2 Sampler training.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Abilities in expression, observation, organization, flexibility and learning · Computer application skills · Skills and knowledge in sampling · Interpretation of relevant laws and regulations on sampling · Basic knowledge of food inspection (physical and chemical inspection, microbiological inspection) · Basic knowledge of testing laboratory management · Report preparation skills **Tools and equipment** · Standard operation procedures for sampling · Sampling plan proposals · Management manuals of food safety sampling · Computers, projection equipment · PPE (goggles, gloves, work clothes, etc.) · Protective equipment **Materials** · Highlighters, marker pens, signature pens, recording pens, printing paper **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics

DUTIES	TASKS	ENABLERS
2.0 Sample management	2.1 Supervision of sample preparation. 2.2 Supervision of sample management. 2.3 Training of sample management personnel.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Abilities in expression, observation, organization, flexibility and learning · Computer application skills · Knowledge and skills of sample management · Interpretation of standards and specifications related to sample management · Basic knowledge of food inspection · Basic knowledge of testing laboratory management · Report preparation skills **Tools and equipment** · Documents of sample management procedures · Standard operation procedures for sample management · Computers, projection equipment · Personal protective equipment (PPE), such as goggles, gloves and work clothes **Materials** · Highlighters, marker pens, signature pens, recording pens, printing paper **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
3.0 Management of reagents and small instruments and equipment	3.1 Procurement and acceptance of small instruments and equipment. 3.2 Metrological tracing and	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence

DUTIES	TASKS	ENABLERS
	period verification of small instruments and equipment.	· Computer application skills · Use of the manufacturer's manual · Knowledge and skills of instrument management · Interpretation of standards and specifications related to instrument management · Basic knowledge of instrument analysis · Basic knowledge of testing laboratory management · Report preparation skills **Tools and equipment** · Procedures and documents related to laboratory instrument and equipment management · Manufacturer's manual · Testing equipment · Analytical balances · Commonly-used measuring instruments in laboratories · Temperature and humidity monitors · Filtering funnels, funnel supports, centrifuge tubes · Weighing scoops, glass rods, rubber suction bulbs, goggles, gloves, work clothes and other personal protective equipment **Materials** · Standard substances, reagents, distilled water · Weighing paper, filter paper, filter membrane · Needle filters, pipettor heads · Chromatography vials, chromatographic columns **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness
	3.3 Management and maintenance of small instruments and equipment.	
	3.4 Standard substance acceptance and period verification.	

DUTIES	TASKS	ENABLERS
		· Being practical and realistic · Meticulousness and seriousness · Professional ethics
4.0 Spectral and chromatographic detection	4.1 Pretreatment of complex samples. 4.2 Spectral detection. 4.3 Chromatographic detection.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Computer application skills · Use of instrument manufacturer's manuals · Knowledge and skills of sample pretreatment · Skills and knowledge of spectral and chromatographic detection · Interpretation of standards and specifications on food physical and chemical inspection · Knowledge and skills in analytical chemistry and instrumental analysis · Basic knowledge of food inspection · Data analysis and handling · Report preparation skills **Tools and equipment** · Standard operation procedures · Instrument manufacturer's manual · Spectral detection equipment, chromatographic detection equipment · Sample preparation equipment, pretreatment equipment · Analytical balances · Commonly-used measuring instruments in laboratories · Temperature and humidity monitors · Personal protective equipment (PPE), such as goggles, gloves and work clothes **Materials** · Samples to be tested, standard substances, reagents, ultrapure water · Weighing paper, medicine spoons, filter paper, filter membrane · Needle filters, pipettor heads

DUTIES	TASKS	ENABLERS
		· Chromatography vials, chromatographic columns **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
5.0 Testing of conventional microorganisms	5.1 Testing of common indicator bacteria. 5.2 Commercial sterility inspection. 5.3 Strain management.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Computer application skills · Use of instrument manufacturer's manuals · Skills and knowledge in food microbiological inspection · Interpretation of relevant standards and specifications on food microbiological inspection · Basic knowledge of fundamentals of microbiology; · Data analysis and handling · Report preparation **Tools and equipment** · Standard operation procedures · Instrument manufacturer's manual · Clean benches, autoclaves · Constant temperature incubators, microscopes · Balances, pH meters, colony counters · Thermostat water baths, homogenizers, oscillators · Full set of sterile glassware (straws, Petri dishes, and conical bottles); · Personal protective equipment (PPE), such as goggles, gloves and work clothes

DUTIES	TASKS	ENABLERS
		Materials · Sample to be tested, culture medium, reagents · Weighing paper, medicine spoons, precision pH test strips · Test tubes, test tube racks, inoculation rings · Glass rods, rubber suction bulbs, labels · Alcohol burners, scissors, tweezers, marker pens **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
6.0 Report recording and preparation	6.1 Preparation of original inspection and testing recordings. 6.2 Preparation of inspection and testing reports.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Skills and knowledge in preparation of inspection and testing records and reports · Interpretation of relevant standards and specifications on preparation of inspection and testing records and reports · Basic knowledge of food inspection · Basic knowledge of testing laboratory management · Report preparation **Tools and equipment** · Standard operation procedures on the preparation of original records · Standard operation procedures on the preparation of inspection and testing reports · Computers

DUTIES	TASKS	ENABLERS
		Materials · Printing paper, signature pens **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
7.0 Internal quality control of testing results	7.1 Internal quality control. 7.2 Supervision and monitoring of the testing personnel.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Abilities in expression, observation, organization, flexibility and learning · Computer application skills · Use of instrument manufacturer's manuals · Knowledge of internal quality control · Interpretation of relevant standards and specifications on internal quality control · Interpretation of standards and specifications related to food inspection · Knowledge and skills of food inspection · Data analysis and handling · Report preparation skills **Tools and equipment** · Standard operation procedures · Instrument manufacturer's manual · Food testing equipment · Sample preparation and pretreatment equipment · Analytical balances · Commonly-used measuring instruments in laboratories · Temperature and humidity monitors · Personal protective equipment

DUTIES	TASKS	ENABLERS
		(PPE), such as goggles, gloves and work clothes **Materials** · Typical samples, standard substances, reagents, distilled water · Weighing paper, medicine spoons, filter paper, filter membrane · Needle filters, pipettor heads · Chromatography vials, chromatographic columns **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
8.0 Testing method validation	8.1 Standard method validation. 8.2 Preparation of method validation reports.	**General skills and knowledge** · Use of communication skills to cooperate with others · Situation reporting competence · Computer application skills · Use of instrument manufacturer's manuals · Knowledge of standard method validation · Interpretation of relevant standards and specifications on standard method validation · Interpretation of standards and specifications related to food inspection · Knowledge and skills of food inspection · Data analysis and handling · Report preparation skills **Tools and equipment** · Standard operation procedures · Instrument manufacturer's manual · Food testing equipment

DUTIES	TASKS	ENABLERS
		· Sample preparation and pretreatment equipment · Analytical balances · Commonly-used measuring instruments in laboratories · Temperature and humidity monitors · Personal protective equipment (PPE), such as goggles, gloves and work clothes **Materials** · Typical samples, standard substances, reagents, distilled water · Weighing paper, medicine spoons, filter paper, filter membrane · Needle filters, pipettor heads · Chromatography vials, chromatographic columns **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Being practical and realistic · Meticulousness and seriousness · Professional ethics
9.0 Laboratory safety management	9.1 Implementation of biosafety management 9.2 Implementation of safety management of hazardous chemicals	**General skills and knowledge** · Cooperating with others using communication skills and reporting to the superiors · Abilities in expression, observation, organization, flexibility and learning · Computer application skills · Skills and knowledge of laboratory safety management · Interpretation of standards and specifications on laboratory safety management · Knowledge of biosafety and hazardous chemicals · Report preparation **Tools and equipment**

DUTIES	TASKS	ENABLERS
		· Laboratory safety management manual · Computers, projection equipment · Personal protective equipment (PPE), such as goggles, gloves and work clothes **Materials** · Highlighters, marker pens, sign pens, recording pens, printing paper **Requirements for employees** · Teamwork spirit · Communication skills · Legal consciousness · Quality consciousness · Safety consciousness · Environmental protection awareness · Being practical and realistic · Meticulousness and seriousness · Professional ethics