CONDUCT DAIRY PRODUCT QUALITY CONTROL

ISCED UNIT CODE: 0721 451 10A

TVET CDACC UNIT CODE: DA/OS/PM/CR/02/5/MA

UNIT DESCRIPTION

This unit specifies the competencies required by a Dairy Plant Technician level 6 to Conduct Dairy Product quality control. It involves analyzing raw materials and ingredients, monitoring production process, analyzing end product quality and implementing quality control measures.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace functions	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements ***(Bold and italicized terms are elaborated in the range)***
1. Analyse raw materials and ingredients	4.1 ***Laboratory reagents*** are prepared as per manufacturer's instructions. 4.2 ***Laboratory tools and equipment*** are assembled as per instructional manuals. 4.3 ***Raw milk and ingredients*** sample***s*** are collected as per ISO 707:2008 Sampling of milk and milk products. 4.4 ***Raw milk and ingredients samples analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 4.5 AI is applied in raw milk and ingredients samples analysis as per work place procedures. 4.6 Raw milk and ingredients test records are updated as per work instruction manual. 4.7 Laboratory tools and equipment are cleaned according to good laboratory practices. 4.8 Laboratory waste is disposed as per Kenya Standard (KS) 1552: 2016 Code of hygienic practice for milk and milk products. 4.9 Laboratory waste is sustainably managed and disposed as per work place procedures.

2. Monitor production process	2.1 Laboratory reagents are prepared as per KS ISO/TC 34/SC 5 milk and milk products 2.2 Laboratory tools and equipment are assembled as per instructional manuals. 2.3 ***Semi-finished milk product*** sample***s*** are collected as per ISO 707:2008 Sampling of milk and milk products. 2.4 ***Semi-finished milk product samples analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 2.5 Semi-finished milk product sample***s*** test records are updated as per work instruction manual. 2.6 AI is applied in Semi-finished milk product samples analysis as per work place procedures 2.7 Laboratory tools and equipment are cleaned according to good laboratory practices. 2.8 Laboratory waste is disposed per (KS) 1552: 2016 Code of hygienic practice for milk and milk products. 2.9 Laboratory waste is sustainably managed and disposed as per work place procedures.
3. Analyse end product quality	3.1 Laboratory reagents are prepared as per KS ISO/TC 34/SC 5 milk and milk products 3.2 Laboratory tools and equipment are assembled as per instructional manuals 3.3 ***End milk product*** sample***s*** are collected as per ISO 707:2008 Sampling of milk and milk products. 3.4 ***End milk product samples analysis*** in accordance with KS ISO/TC 34/SC 5 milk and milk products 3.5 AI is applied in End milk product sample***s*** analysis as per work place procedures 3.6 Laboratory waste is sustainably managed and disposed as per work place procedures. 3.7 End milk product sample***s*** test records are updated as per work instruction manual

	3.8 ***End product storage conditions*** are monitored as per Kenya Standard (KS) 1552: 2016 Code of hygienic practice for milk and milk products. 3.9 Laboratory tools and equipment are cleaned according to good laboratory practices. 3.10 Laboratory waste is disposed per Kenya Standard (KS) 1552: 2016 Code of hygienic practice for milk and milk products.
4. Analyse product handling condition quality	4.1 Laboratory reagents are prepared as per KS ISO/TC 34/SC 5 milk and milk products 4.2 Laboratory test tools and equipment are assembled as per instructional manuals. 4.3 Laboratory tools and equipment are ***calibrated*** as per KEBS standards. 4.4 ***Specimen samples*** are collected as per ISO 707:2008 sampling of milk and milk products. 4.5 Specimen samples analysis is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 4.6 AI is applied in Specimen samples samples analysis as per work place procedures 4.7 Laboratory tools and equipment are cleaned according to good laboratory practices. 4.8 Laboratory waste is disposed per good laboratory practices 4.9 Laboratory waste is sustainably managed and disposed as per work place procedures. 4.10 Laboratory equipment and reagents inventory is updated as per KS 1552: 2016 Code of hygienic practice for milk and milk products.

RANGE

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

Variable	Range
1. Laboratory reagents may include but are not limited to:	• Media • Diluents • Indicators • Solvent • Buffers • Dyes • Stains
2. Laboratory tools and equipment may include but are not limited to:	• Microscopes • Beakers • Flasks • Test Tube • Pipettes • Burettes • Balances • Scales • Heating • Equipment • Centrifuges • Autoclaves • Sterilizers • Incubators • Gloves • Safety Goggles • Lab Coats • pH Meters • Water Baths
3. Raw milk and ingredients analysis may include but are not limited to:	• Organoleptic • Alcohol • Acidity • Antibiotic • Lactometer • Resazurin • Butter fat • Peroxide
4. Semi-finished milk product analysis may include but are not limited to:	• Phosphatase • Peroxidase • Acidity • Salt content • Moisture content • Butter fat content • pH
5. End milk product analysis may include but are not limited to:	• Phosphatase • Sterility • Peroxidase • Acidity • Salt content • Butter fat content

	• pH • Total plate count • Coliforms plate count • Yeast and mould count
6. Specimen samples may include but are not limited to:	• Churn rinse • Equipment swab • Trapped air • Personnel swab
7. End product storage conditions may include but are not limited to;	• Room temperature • Refrigeration temperature • Humidity • Frozen condition

REQUIRED KNOWLEDGE AND SKILLS

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

The individual needs to demonstrate knowledge of:

- Standards for Dairy products
- Quality control and assurance.
- Dairy microbiology
- Dairy chemistry
- HACCP process
- Codes of hygienic practice (s)
- Relevant regulations
- Sampling techniques
- Principles of sensory evaluation
- Good manufacturing practices
- Good laboratory practices
- Cleaning of quality control facilities
- Laboratory waste and management
- Record keeping

Required skills

The individual needs to demonstrate the following skills:

- Active listening
- Reflecting
- Paraphrasing
- Clarifying
- Questioning
- Basic ICT
- Critical thinking
- Writing

- Problem solving
- Operation of quality control equipment
- Measuring
- Sampling
- Trouble-shooting
- Equipment maintenance
- Milk testing
- Reagent and Media preparation
- Computation

EVIDENCE GUIDE

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

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 End milk product samples analysis is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 1.2 Collected End milk product samples as per ISO 707:2008 Sampling of milk and milk products. 1.3 Specimen samples analysis is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 1.4 Collected specimen samples as per ISO 707:2008 Sampling of milk and milk products. 1.5 Verified production processes are as per instructional manuals. 1.6 Collected raw milk and ingredients sample*s* as per ISO 707:2008 sampling of milk and milk products. 1.7 Raw milk and ingredients samples analysis is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 1.8 Collected Semi-finished milk product samples as per ISO 707:2008 sampling of milk and milk products. 1.9 Semi-finished milk product samples analysis is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Personal Protective Equipment and Apparel

3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Practical report 3.2 Observation 3.3 Oral questioning 3.4 Portfolio of evidence 3.5 Interviews 3.6 Third party report 3.7 Written tests
4. Context of assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.