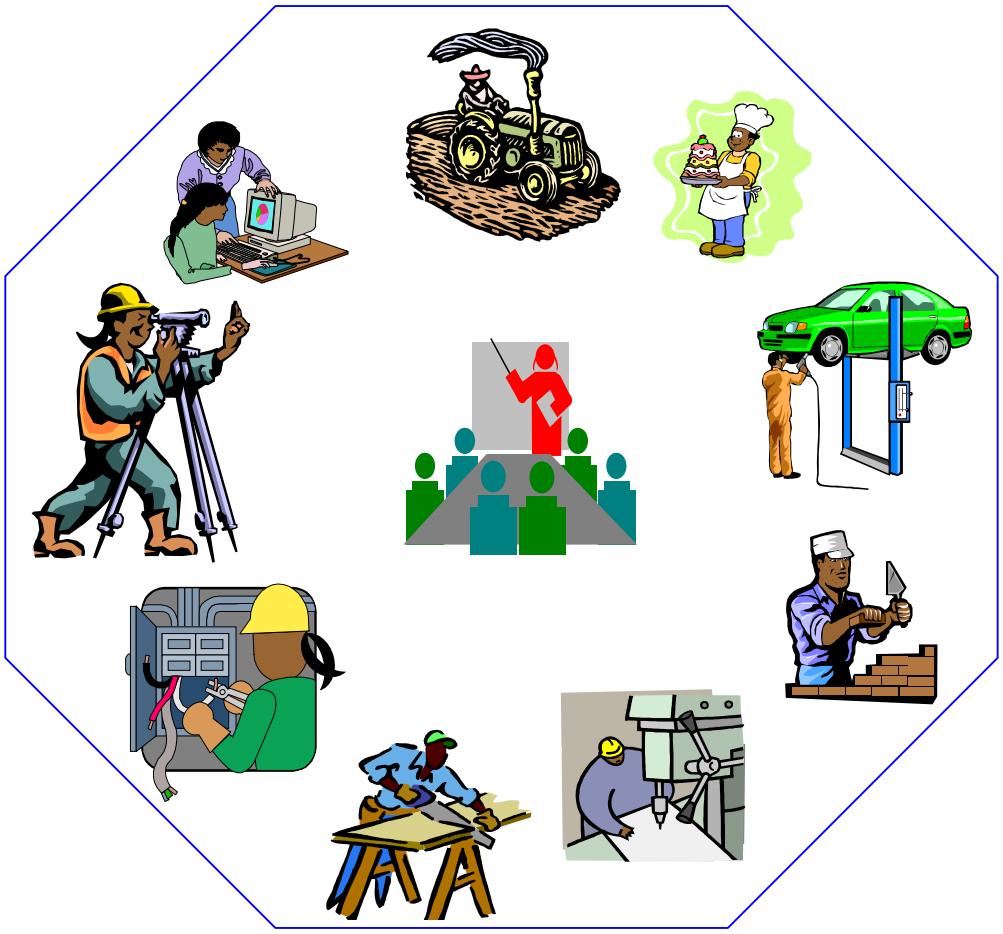
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

SOAP AND DETERGENT MANUFACTURING OPERATIONS SUPERVISION

NTQF Level IV



Ministry of Education
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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competence.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- Chart with an overview of all Units of Competence for the respective level (Unit of Competence Chart) including the Unit Codes and Unit Titles
- Contents of each Unit of Competence (competence standard)
- Occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision		
Occupational Code: IND SDM		
NTQF Level IV		
IND SDM4 01 0613 Trouble Shoot and Optimize Production Process	IND SDM4 02 0613 Apply Statistics to Processes in Manufacturing	IND SDM4 03 0613 Facilitate the Use of Planning Software Systems in
IND SDM4 04 0613 Monitor Remote Production Facilities	IND SDM4 05 0613 Manage Plant Shutdown and Restart	IND SDM4 06 0613 Trial New Process Product
IND SDM4 07 0613 Perform Chemical Tests and Procedures	IND SDM4 08 0613 Analyze Equipment Performance	IND SDM4 09 0613 Lead a Competitive Manufacturing Team Operations
IND SDM4 10 0613 Respond to Abnormal Process Situation	IND SDM4 11 0613 Develop Plant Documentation	IND SDM4 12 0613 Co-ordinate Maintenance
IND SDM4 13 0613 Contribute to Workplace OHS Management System	IND SDM4 14 0613 Implement and Monitor Environmentally Sustainable Work	IND SDM4 15 0613 Plan and Organize Work
IND SDM4 16 0613 Migrate to New Technology	IND SDM4 17 0613 Establish Quality Standards	IND SDM4 18 0613 Develop Individuals and Team
IND SDM4 19 0613 Utilize Specialized Communication Skills	IND SDM4 20 0613 Manage and Monitor Small/Medium Business Operations	IND SDM4 21 0613 Apply Problem Solving Techniques and Tools

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Troubleshoot and Optimize Production Processes**
Unit Code	**IND SDM4 01 0613**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to troubleshoot and optimize the production process. This unit focuses on the systems analysis and design.

Element	Performance Criteria
1. Evaluate production for efficiency purposes	1.1 Machine operations, staff and ***production processes*** are evaluated on an ongoing basis to make production efficiency gains. 1.2 ***Production schedule*** is analyzed according to production output, inventory, procurements, time constraints, supply capacities and requirements. 1.3 Quality standards and safe work practices are examined to ensure compliance. 1.4 Changeover/make ready ***processes*** are reviewed for production efficiency gains. 1.5 Recommendations covering the above areas are developed and documented.
2. Optimize production efficiency	2.1 Compliance to specified requirements is checked to ensure efficiency is maintained. 2.2 Non-compliance is identified and investigated to determine causes. 2.3 Production standards or machines are set and/or changed according to enterprise procedures. 2.4 Changeover/ make ready times and processes are monitored to ensure times are maintained or improved. 2.5 Production schedule is monitored and adjusted according to production output, inventory, procurements, time constraints and supply capacities and requirements to ensure efficiency is maintained.
3. Troubleshoot production efficiency problems	3.1 Corrective or preventive action is implemented where appropriate. 3.2 Changes are communicated to relevant personnel in a logical and easily understood manner. 3.3 Changes are monitored and adjusted to confirm improvement to production efficiency.

4. Troubleshoot material and machining problems	4.1 Evaluation of material or product structure is conducted to identify options for production and required tuning and adjustments are completed. 4.2 Idiosyncrasies of machines are reviewed and adjustments or tuning undertaken to compensate or to exploit the idiosyncrasy within the manufacturer's specifications. 4.3 Options are assessed to determine most effective/efficient method of production, ensuring highest quality and yield from materials and ease of production. 4.4 Options and recommendations are documented for future reference according to enterprise procedures.
5. Document changes and remedies	5.1 Changes to the production process are documented according to enterprise procedures. 5.2 Adjustments to machines are recorded according to enterprise procedures. 5.3 Documentation is circulated according to enterprise procedures, if required.

Variable	**Range**
Production process	May include: • Production processes and associated machines/equipment include those generally operating in the various sectors of the soap and detergent industry.
Production schedules	May include: • Production schedules may apply to daily or production runs, including repetitive production runs, short runs and quick changes.
Range of processes	May include: • Applies to the development of complex new processes or the modification of existing complex processes based on significant judgment. Applies to the overall production process.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • evaluate production for efficiency purposes • optimize production efficiency • troubleshoot production efficiency problems • troubleshoot material and machining problems • document changes and remedies
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • setting quality standards • setting the criteria for inspection of soap and detergent quality

	• the quality of raw material bearing on the quality of the finished product • quality standards that have been set by the customer • inspection specifications determined by standards • identifying production requirements and capacities • job requirements that determine the production processes • identifying special production requirements and possible problems • criteria that are used to determine the availability of machines, materials and labour • OHS concerns that need to be considered when planning production causes of failure • common causes of failure in each production area that need to be monitored • procedures that have been implemented to minimize the effect of these revising schedules • monitoring and amending production schedules if required • consideration that is given to revising production schedules to take into account customer requirements and job complexity • evaluating re-work methods • responsibility for evaluating the re-work of unacceptable items • method of re-work that has been determined • criteria that have been set to monitor the re-work • requirements that have been established for the inspection of re-working material to customer's specifications • determining unacceptable items and evaluating production procedures • determining the cause of unacceptable items • records that are kept of acceptable and rejected items • records that are kept for the reason for the rejection • determining the cause for the rejection and how have you rectified the problem • quality improvements • information that needs to be monitored so as to maintain standards • monitoring quality standards • enterprise improvements affect on quality standards
Underpinning Skills	Must demonstrate skills in: • OHS in relation to operating machinery such as safely switching off machinery before cleaning is started • communication of ideas and information by documenting recommendations to optimize the production process

	• collecting, analyzing and organizing information by reviewing the production schedule and evaluating its effectiveness • planning and organizing activities by determining the most effective production processes • teamwork when communicating with colleagues over changes to production • mathematical ideas and techniques by determining optimized yield for machinery • problem-solving skills by compensating or optimising machine idiosyncrasies • use of technology by evaluating machine operations and making changes to improve the production process
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Apply Statistics to Processes in Manufacturing**
Unit Code	**IND SDM4 02 0613**
Unit Descriptor	This unit covers the knowledge and skills required to apply statistical theory and principles to the analysis and control of processes in manufacturing.

Elements	Performance Criteria
1. Collect process data	1.1 ***Sampling scheme*** is interpreted as appropriate. 1.2 Measurements are obtained in accordance with standard ***procedures***. 1.3 ***Data is handled*** as required.
2. Interpret data	2.1 Data is plotted on appropriate ***control chart***. 2.2 Between ***random*** and ***non-random*** patterns of results are distinguished. 2.3 Results outside the ***control limits*** are identified. 2.4 Situations requiring action is recognized. 2.5 Appropriate action is taken in accordance with standard procedures. 2.6 ***Cost of non-conformance*** is determined.
3. Calculate control limits	3.1 Relevant stakeholders are consulted to determine ***appropriate limits***. 3.2 Relevant methods are used to calculate/revise control limits. 3.3 Limits on control chart are plotted according to work procedures. 3.4 Impact of limit is explained to relevant stakeholders.

Variable	Range
Sampling scheme	may include: • sampling for attributes or sampling for variables • batch, continuous or custom made products • number of items/samples • size of sample • timing of sampling • location of sampling points • type of sample • number/type of measurements to be done on each sample

	• sampling equipment • measurement/testing equipment/methods
Procedures	Includes all work instructions, standard operating procedures, formulas/ recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form.
Handle data	May include: • calculating means, ranges, mean of means, standard deviation (using appropriate calculation aids) • entering data into a software package • recording data either in writing or electronically • other required manipulations of the data
Control chart	May include: • run • tally • mean/range • attributes • other relevant charts
Random variation	is the term used in statistical control to refer to those variations for which no cause can be found.
Non-random	Non-random, also called identifiable cause, or assignable cause or special cause is those variations for which a cause can be found and so the cause of the variation eliminated. Non-random variation may also be used to predict possible breaches of the control limits.
Control limits, also referred to as process capability	Are those limits within which the process will operate if it is 'under control'.
Cost of non-conformance	May include: • reprocessing/rework • expediting • unplanned service • excess inventory • downtime • returns • scrap • labour costs • material costs • infrastructure costs/overhead • utility costs
Appropriate limits	May include: • 1 sigma warning limits • 2 sigma warning limits • 3 sigma control limits • 6 sigma limits

Evidence Guide	
Critical Aspects of Competence	The application of statistical theory to a process to interpret and reduce its variation. Generally it includes to: • Collect process data. • Interpret data • Calculate control limits.
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • sampling techniques • purpose of sampling and measurement • random, systematic, stratified sampling • relevance, reliability and representativeness of samples/data collected • purpose of replication of data for statistical control • samples, populations, finite and infinite populations and the differences • methods of calculating means, standard deviations and the like and their purpose in statistical control • the causes of variation in a process • the meaning of broad/ narrow frequency distributions/ range/standard deviations and skewed distributions in process terms • types of control charts and their applications to different types of process/product and for different purposes • process causes of variation and typical cause types of non-random variation • non-process (e.g. measurement) causes of variation • recognition of stable and unstable processes • causes of stability/instability in the process • calculation of control limits/process capability and the applications of different control limits • the standard distribution curve and confidence limits.
Underpinning Skills	Must demonstrate skills of: • analysis • problem solving • communication • documenting • calculations and use of statistics
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Level IV	
Unit Title	**Facilitate the Use of Planning Software Systems in Manufacturing**
Unit Code	**IND SDM4 03 0613**
Unit Descriptor	This unit covers the knowledge and skills required by a team leader or technical expert to use and facilitate the use of planning software systems (known by various names such as ERP, SAP and MRP). This unit also covers the interactions of the person with a planning software system as they both use it for their own work and support their team members use it.

Elements	Performance Criteria
1. Communicate using the planning software system	1.1 Information using planning software is sent and received. 1.2 Messages using planning software are sent and received.
2. Make decisions using planning software	2.1 The ***planning software*** system is interrogated to find required current, historical or predicted information 2.2 Appropriate action is taken to the information in accordance with procedures.
3. Monitor the use of planning software	3.1 Planning software information is routinely monitored and used along the ***value chain***. 3.2 Performance is reviewed and used of planning software with team.
4. Support team use planning software	4.1 Team is regularly communicated with face to face, both using planning software. 4.2 Improvements required are identified. 4.3 Appropriate actions are taken to implement improvements.

Variable	Range
Planning software	May include: • a general term applied to a number of software systems which integrate a range of business information such as finance, logistics maintenance and production. It is frequently referred to by names such as ERP, SAP or MRP/MRPII.In such cases *MSACMT261A Use SCADA* systems in manufacturing may also be required.
Value chain	May include: • Competitive manufacturing organisations encompass the entire production system, beginning with the customer, and include the product sales outlet, the final assembler,

	product design, raw material mining and processing and all tiers of the value chain (sometimes called the supply chain). Any truly 'competitive' system is highly dependent on the demands of its customers and the reliability of its suppliers. No implementation of competitive manufacturing can reach its full potential without including the entire 'enterprise' in its planning

Evidence Guide	
Critical Aspects of Competence	Must demonstrate appropriate knowledge and skills to: • use of planning software and also of assisting their team to use it effectively and efficiently. • Communicate using the planning software system • make decisions using planning software
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • hierarchy of planning software system and operation • information available from/through the planning software system • facilities and information offered by planning software • Support/training/skill development mechanisms available for access by team members.
Underpinning Skills	Must demonstrate skills of: • keyboarding/mousing • communication • teamwork • problem solving. • planning and organizing
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Monitor Remote Production Facilities**
Unit Code	**IND SDM4 04 0613**
Unit Descriptor	The competency covers the operation and management of remote plants, treatment stations or satellite locations. This may be achieved by using ground based or satellite communications systems. Typically these stations may include wellheads, separation facilities, utility systems, remote pumping and compression stations, remote plants and fire and gas safety systems and associated piping and instrumentation. The operations technician would identify and rectify operational problems, conduct well testing and conduct critical function testing.

Elements	Performance Criteria
1. Prepare for work.	1.1 Work requirements as per work plan or request are identified. 1.2 Hazards associated with the job are identified and appropriate action is taken. 1.3 Appropriate personnel are coordinated with.
2. Conduct product separation	2.1 Well products for initial multi-phase separation, storage and distribution as determined by the required production targets and objectives are centralized and prepared. 2.2 Multi-phase high and low pressure separation, utilising heat and chemical treatments are used, to effectively separate the product according to standard operating procedures 2.3 The separation process via control room operation are monitored to ensure all product flows, pressures and temperatures are maintained within correct operating parameters 2.4 All required utility services are operated and monitored to assist in the separation process.
3. Recover and measure product	3.1 Treated waste water from the separation process for further treatment as required prior to re-injection or disposal is transferred. 3.2 Ensure that all available product is recovered and all waste water is made safe for further use or disposal within environmental limits

	3.3 Collected product is measured to determine the level of available stocks for further transfer and for accounting purposes. 3.4 ***Appropriate action*** is taken according to standard work procedures.
4. Transfer product	4.1 Transfer process equipment required is checked to ensure it is working within agreed operating parameters. 4.2 Product is transferred to a processing facility for further treatment and enhancement. 4.3 Transfers are monitored and t appropriate action is taken according to standard work ***procedures***. 4.4 All product transfers and communicate are logged and recorded as required. 4.5 Data collected is distributed to appropriate personnel.
5. Isolate and de-isolate plant	5.1 Plant is properly isolated as to work procedures. 5.2 Plant is made safe for the required work in accordance with workplace guidelines. 5.3 Plant is checked and prepared for return to service according to standard procedures.

Variable	**Range**
Appropriate action	May include: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Procedures	May be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant
Context	This unit of competency includes all such items of equipment and unit operations which form part of the remote facility. For your enterprise this may include :

	• valves • pumps • compressors • separators • instrumentation • storage tanks, ponds • filters • wellheads • hydraulic well control panels • fire and gas safety systems
Typical problems	May include: • contamination of product • control of temperature and pressure • variations in feed • vibration
Health, Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through relevant State or Federal legislation, and these must not be compromised at any time.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate skills and knowledge to: • recognize and analyze potential situations requiring action and then in implementing appropriate corrective action. • Consistent performance in that: ➢ early warning signs of equipment/processes needing attention or with potential problems are recognized ➢ the range of possible causes can be identified and analyzed and the most likely cause determined ➢ appropriate action is taken to ensure a timely return to full performance ➢ obvious problems in related plant areas are recognized and an appropriate contribution made to their solution
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • all items on a schematic of the remote system and the function of each • nature/condition of materials entering and leaving each stage of the process • changes which have occurred in that stage and why they have occurred • methods of changing production rates and the advantages and disadvantages of each • effect of specific climatic and environmental factors • water testing through testing techniques • storage and transfer techniques related to the transport of oil, or water.

	• principles of operation of plant/equipment • physics and chemistry relevant to the process unit and the fluids involved • process parameters and limits, e.g. temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, e.g. radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • correct methods of starting, stopping, operating and controlling plant • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility
Underpinning Skills	Isolate the causes of problems to an item of equipment within the compressor system and to be able to distinguish between causes of problems/alarm/fault indications such as: • product contamination • instrument failure/wrong reading • electrical failure • mechanical failure • operational problems • pressure losses and leakage
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Manage Plant Shutdown and Restart**
Unit Code	**IND SDM4 05 0613**
Unit Descriptor	This unit covers the co-ordination of the shutdown and restarting of a production process in a safe and efficient manner due to a planned or an unplanned shutdown or emergency situation. This unit requires the exercise of discretion as the plant technician's responses are governed by the cause of the shutdown and the plant's responses to that. They are required to adapt normal practice, within the overall guidelines, to the current situation to obtain the best outcome. This competency requires the coordination of all personnel involved in the shutdown to ensure it happens in as orderly a fashion as possible and that the plant is left in the best condition possible for a quick restart. The person exercising this competency needs to balance the varying requirements to ensure the shutdown occurs with maximum safety to personnel, plant, the environment and the business's productivity (in that order).

Elements	Performance Criteria
1. Manage shutdown sequence	1.1 Safety systems are checked and verified to ensure that the unit has been made safe in accordance with company work standards. 1.2 The reason is identified for, or cause of ***the shutdown*** by troubleshooting the system and by utilising all available data and information systems. 1.3 Confirmation of the identified shutdown from field based operators is obtained to verify both the nature and the reliability of the shutdown 1.4 ***Procedures*** are rectified or initiated to rectify the fault or shutdown cause through either repair of the operational fault or readjustment before returning the system to start-up status.
2. Conduct start-up process	2.1 All start-up permissive is satisfied prior to start- up process being commenced 2.2 Start-up is conducted according to procedures and in a safe and efficient manner, ensuring a return to steady state operation is achieved.
3. Document shutdown and start-up process	3.1 All logs and workplace documentation relating to the shutdown/start-up process, ensuring all details, ***actions*** and responses are accurately recorded and completed.

	3.2 Any further ongoing production problems are recorded and reported to appropriate persons or authority.

Variable	Range
The shutdown	May include: • shutdown 'to cold', e.g. complete plant shutdown and purging of all process materials from equipment • short shutdown to allow minor work 'warm shutdown', e.g. partial shutdown, with retention of some or all of process materials • managing a plant trip and restart 'hot shutdown', e.g. short duration shutdown in response to a plant upset or trip • This competency also includes: ➢ coordinating the shift team ➢ implementing emergency procedures ➢ using the permit to work system (for repairs required) • This competency may apply to: ➢ panel technicians ➢ outside technicians ➢ technicians seconded to a shut down role ➢ other relevant personnel
Procedures include:	• all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant
Appropriate action	May include: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Context	of shutdown may be: • planned, e.g. for maintenance or other planned work • unplanned, e.g. in response to a plant upset or equipment failure • emergency, e.g. in response to an automatic shutdown sequence or plant trip
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used.

Health, Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through relevant State or Federal legislation, and these must not be compromised at any time.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate the ability to: • recognize and analyze potential situations requiring action and then in implementing appropriate corrective action • stay out of trouble rather than on recovery from a disaster consistent performance in that: ➢ early warning signs of equipment/processes needing attention or with potential problems are recognized ➢ the range of possible causes can be identified and analyzed and the most likely cause determined ➢ appropriate action is taken to ensure a timely return to full performance ➢ obvious problems in related plant areas are recognized and an appropriate contribution made to their solution
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • principles of operation of plant/equipment • physics and chemistry relevant to the process unit and the materials processed • process parameters and limits, e.g. temperature, pressure, flow, pH • duty of care obligations • hierarchy of control • communication protocols, e.g. radio, phone, computer, paper, permissions/authorities • routine problems, faults and their resolution • relevant alarms and actions • plant process idiosyncrasies • all items on a schematic of the plant item and the function of each • correct methods of starting, stopping, operating and controlling process • corrective action appropriate to the problem cause • function and troubleshooting of major components and their problems • types and causes of problems within operator's scope of skill level and responsibility • architecture of the process/production systems • the plant • product specifications and tolerances • systems operating parameters • process control philosophies and strategies

	• the process • emergency shutdown procedures • physics, chemistry and mathematics relevant to the process • outside process knowledge and equipment operation • as is relevant to the practical operation of equipment at that job level
Underpinning Skills	Must demonstrate skills of: • efficient and effective planning of shut down/start up • hazard analysis • completing plant records • communication • problem solving
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Trial New Process or Product**
Unit Code	**IND SDM4 06 0613**
Unit Descriptor	Trialling refers to the scale-up and other development steps required to take a new product or process from its design/laboratory trials to full commercial operation on a plant. This competency typically applies to a technician in a plant who is taking a lead technical role in the trialling of a new product or the trialling of a new or significantly altered process. The technician would identify and rectify operational problems within their scope, analyze the trial, both while it is occurring and after completion, and suggest improvements, be alert for indications of developing problems and take required action to ensure the trial remains safe to people, the environment and the plant.

Elements	Performance Criteria
1. Contribute to the selection of equipment/process conditions	1.1 Appropriate technical expert(s) are ***liaised*** with. 1.2 Properties of materials and desired product characteristics are interpreted in accordance with specifications. 1.3 Technical specifications/drawings of plant requirements are interpreted. 1.4 Equipment/ancillary equipment appropriate for the materials, products and conditions are recommended. 1.5 Process conditions appropriate for the equipment, materials and product characteristics are recommended. 1.6 Feed rates/order/condition appropriate to the process conditions, equipment, materials and product characteristics are recommended. 1.7 Ensure ***hazard analysis procedures*** and identification are completed, including consultation with stakeholders, and findings included in plan. 1.8 Recommendations are ensured to meet the identified need.
2. Prepare for trials	2.1 The availability of resources required such as materials, equipment, people and skills are determined. 2.2 Time required for trial based on work procedures is estimated. 2.3 Relevant stakeholders are liaised with.

	2.4 Trial is schedule at a convenient time. 2.5 Documentation is developed for the trial. 2.6 Potential ***hazards*** and required hazard control procedures are identified by applying the hierarchy of control. 2.7 Clearance requirements and special safety and storage requirements are determined. 2.8 Decisions with appropriate experts/stakeholders are verified. 2.9 People are ensured with adequate skills are available for the trial.
3.Conduct test runs/trials	3.1 Ensure hazard controls are implemented prior to commencement. 3.2 Trials are run as to procedures. 3.3 Communication with all relevant people is maintained. 3.4 Critical parameters are closely monitored. 3.5 Actual and potential ***problems*** are recognized. 3.6 Adjustments are made to process conditions as required during trial. 3.7 Product is sampled and tested according to test method requirements. 3.8 Performance data as to procedures are recorded and reported. 3.9 Ensure all materials; products and ***waste are handled correctly.*** 3.10 Plant is left in a condition suitable for routine production to recommence.
4. Evaluate results and identify modifications	4.1 Data from trial is interpreted. 4.2 Factors which might be related to low rates or low charge amounts are identified. 4.3 Modifications and improvements required are recommended. 4.4 Standard operating ***procedures*** are developed and checked***.*** 4.5 Documentation is completed and reported to appropriate personnel. 4.6 All relevant staff has required skill levels for the introduction of the new process is ensured.

Variable	Range
Liaison	with technical experts may (depending on trial requirements and company protocols) include one or more of: • manufacturers • chemists • engineering personnel • designers • OHS advisors • maintenance personnel • potential customers
Hazard analysis procedures	May include: • JSA/JHA (Job Safety Analysis/Job Hazard Analysis) • hazard and operability (HAZOP) studies • hazard analysis (HAZAN) studies • other company specified procedures
Hazards	May be determined from: • materials safety data sheets (MSDSs) • other relevant documentation such as hazard logs, incident reports • company hazard identification procedures • hazard analysis results • standard operating procedures
Typical problems for the trial might	May include: • mixing is poor • materials do not behave as expected • process/reaction does not proceed /proceeds too slowly • process/reaction proceeds too quickly/runs away • yield is low • quality is out of specification • process is unstable • instrumentation is not sufficiently sensitive/too sensitive surging flow/pressure
Waste handling	May include: • collection for re-use • recycling • disposal in accordance with health and environmental regulations
Health, Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time.
Procedures	mean all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • recognize and analyze potential situations requiring action and then in implementing appropriate corrective action • stay out of trouble rather than on recovery from a disaster • Consistent performance in that: ➢ hazards are identified and controlled ➢ early warning signs of equipment/processes needing attention or with potential problems are recognized ➢ the range of possible causes can be identified and analyzed and the most likely cause determined ➢ appropriate and timely action is taken to ensure the safety and success of the trial ➢ obvious problems in related plant areas are recognized and an appropriate contribution made to their solution
Underpinning Knowledge and Attitudes	Must demonstrate knowledge to: • identify all items on a schematic of the plant and describe the function of each • describe the nature/condition of materials entering and leaving each stage of the process, the changes which have occurred in that stage and why they have occurred • state the major design features of plant equipment, plant conditions and variables and the impact of these on the properties of materials passing through them • describe the causes and remedies of common problems such as those selected in the Range Statement • apply the hierarchy of control to minimize the risk of hazards identified • describe methods of changing rate and the advantages and disadvantages of each describe methods of controlling other process variables and the advantages and disadvantages of each
Underpinning Skills	• Must demonstrate skills to: • isolate the causes of problems to an item of equipment within the plant system and to be able to distinguish between causes of problems/alarm/fault indications such as: ➢ process material variations ➢ instrument failure/wrong reading ➢ electrical failure ➢ mechanical failure and operational problem • communicate and liaise with people at a range of levels about technical matters • Reading skills to the level of interpreting technical specifications, manuals and procedures; and writing technical documentation such as specifications and procedures required for the trial.

	• Numeracy skills to the level of interpreting technical specifications and test results, analyzing process data and determining required variations in process variables.
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Perform Chemical Tests and Procedures**
Unit Code	**IND SDM4 07 0613**
Unit Descriptor	This unit of competency covers the ability to interpret chemical test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine chemical tests/procedures. These tests will involve several measurement steps. The unit includes data processing and interpretation of results and tracking of obvious test malfunctions where the procedure is standardized. However, personnel are not required to analyses data, optimize tests/procedures for specific samples or troubleshoot equipment problems where the solution is not apparent.

Elements	Performance Criteria
1. Interpret and schedule test requirements	1.1 Test request, ***chemical principles and concepts*** are reviewed to identify samples to be tested, test method and equipment/instruments involved accordance with chemical testing requirements. 1.2 Hazards and enterprise control measures associated with the sample, preparation/test methods, reagents and/or equipment are identified according to work procedures. 1.3 Work sequences are planned to optimize throughput of multiple samples, if appropriate
2. Receive and prepare samples	2.1 Samples using standard operating ***procedures*** (SOPs) are logged. 2.2 Sample description is recorded and compared with specification and discrepancies are noted and reported. 2.3 Samples and ***standards*** are prepared in accordance with chemical testing requirements 2.4 Traceability of samples from receipt to reporting of results is ensured.
3. Check equipment before use	3.1 ***Types of instrumentation and instrumental techniques*** are identified according to work procedures. 3.2 Equipment/instruments are set up in accordance with test method requirements. 3.3 Pre-use and safety checks are performed in accordance with relevant enterprise and operating procedures 3.4 Faulty or unsafe components and equipment are identified and reported to appropriate personnel.

	3.5 Equipment calibration using specified standards and procedures, if applicable are checked. 3.6 Calibration equipment/instruments are quarantined out. 3.7 Reagents required for ***chemical tests*** are ensured if available and meet quality requirements.
4. Test samples to determine chemical species or properties	4.1 Equipment/instruments are operated in accordance with test method requirements. 4.2 Tests/procedures including ***instrumental*** ones on all samples and standards, if appropriate are performed, in accordance with specified methods. 4.3 Equipment/instruments are shut down in accordance with operating procedures.
5. Process and interpret data	5.1 Test data noting typical observations is ***recorded.*** 5.2 Calibration graphs are constructed, if appropriate, and results for all samples from these graphs are computed. 5.3 Calculated values are ensured if consistent with expectations. 5.4 Results are recorded and reported in accordance with enterprise procedures. 5.5 Uncertainty of measurement are estimated and documented in accordance with enterprise procedures, if required 5.6 Trends in data and/or results are interpreted and of specification or atypical results promptly reported out to appropriate personnel. 5.7 Obvious procedure or equipment problems are determined if it have led to a typical data or results.
6. Maintain a safe work environment	6.1 Established safe work practices and personal protective equipment are used to ensure personal safety and that of other laboratory personnel. 6.2 The generation of wastes and environmental impacts are minimized. 6.3 The safe collection of laboratory and hazardous waste for subsequent disposal as per ***Occupational Health and Safety (OHS) and environmental management requirements*** are ensured. 6.4 Equipment and reagents are cared for and stored as required.

7. Maintain laboratory records	7.1 Approved data is entered into laboratory information management system. 7.2 Confidentiality and security of enterprise information and laboratory data are maintained. 7.3 Equipment and calibration logs are maintained in accordance with enterprise procedures.

Variable	Range
Chemical principles and concepts	May include but not limited to: • ions, atoms, molecules, bonding and links to chemical properties • chemical reactions involving acid/base, redox, complex ion formation, solubility and equilibrium • energy levels and absorption/emission spectra
Sample preparation processes	May include but not limited to: • grinding • mulling • digestion • dissolving • ashing • refluxing • filtration • evaporation • precipitation • washing • drying and centrifugation
Hazards	May include but not limited to: • chemicals: acids (e.g. sulphuric acid) • heavy metals • anions (e.g. sulphate ion, phosphate ion) • hydrocarbons (e.g. mono-aromatics) • aerosols from broken centrifuge tubes, pipetting • sharps and broken glassware • flammable liquids and gases • fluids under pressure, such as hydrogen in gas liquid chromatography, acetylene in atomic absorption spectrometry • sources of ignition • high-temperature ashing processes • disturbance or interruption of services
Hazard control measures	May include but not limited to: • ensuring access to service shut-off points • recognizing and observing hazard warnings and safety signs

	• labeling of samples, reagents, aliquoted samples and hazardous materials • handling and storage of hazardous materials and equipment in accordance with labeling, MSDS and manufacturer's instructions • identifying and reporting operating problems or equipment malfunctions • cleaning and decontaminating equipment and work areas regularly using enterprise procedures • using personal protective clothing and equipment, such as gloves, safety glasses and coveralls • using containment facilities • reporting abnormal emissions, discharges and airborne contaminants, such as noise, light, solids, liquids, water/waste water, gases, smoke, vapor, fumes, odor and particulates to appropriate personnel
Standards**,** codes**,** procedures and**/**or enterprise requirements	May include but not limited to: • Ethiopian and international standards, such as: • Recommended practice for chemical analysis by atomic absorption spectrometry - Flame atomic absorption spectrometry • Recommended practice for determining moisture content-Infrared moisture analyzer • Verification and use of volumetric apparatus - General - Volumetric glassware • (Include Standard No)Recommended practice for chemical analysis by ultraviolet/visible spectrophotometry • ISO 1000-1998 The international system of units (SI) and its application • ISO 17025-2005 General requirements for the competence of testing and calibration laboratories • (Include Standard No)Safety in laboratories set • ISO 9000 Set:2008 Quality management systems • Set calibration and maintenance schedules • enterprise recording and reporting procedures • equipment manuals • equipment startup, operation and shutdown procedures • industry methods for inorganic and organic constituents • material safety data sheets (MSDS) and safety procedures • material, production and product specifications • national measurement regulations and guidelines • principles of Good Laboratory Practice (GLP) • production and laboratory schedules • quality manuals and equipment and procedure manuals • SOPs • waste minimization and safe disposal procedures

Non-instrumental test/procedures	May include but not limited to: • Gravimetric analysis: ➢ loss on drying ➢ suspended solids ➢ ashes, such as sulphated and gravimetric assays (e.g. sulphates) • Titrimetric analysis: ➢ acid/base determinations ➢ complexiometric, such as water hardness, Fe by dichromate analysis ➢ redox, such as precipitation of chlorides in water • filtration, separation and solvent extraction techniques
Instrumental tests	May include but not limited to: • spectrometry • chromatography and electrochemistry
Types of instrumentation and instrumental techniques	May include but not limited to: • colorimetric techniques, such as chlorine in water, specific cations and anions • infrared, ultraviolet-visible (UV-VIS) spectrophotometry • Chromatographic techniques: ➢ column and thin layer analytical and preparative chromatography ➢ gas or liquid chromatography for purity, raw material and formulation checks ➢ ion chromatography for detection of nitrates, phosphates, sulphates, chlorides • electrochemical techniques, such as pH ,conductivity and ion-selective electrodes • moisture content • organic matter content • specific anions and cations
Chemical tests methods	May include but not limited to: • control of starting materials, in-process materials and finished products • environmental monitoring • basic troubleshooting and/or problem solving within the scope of SOPs and enterprise processes
Records	May include but not limited to: • test and calibration results • equipment use, maintenance and servicing history • faulty or unsafe equipment
Occupational Health and Safety (OHS) and environmental management requirements	May include but not limited to: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal legislation - these requirements must not be compromised at any time

	• all operations assume the potentially hazardous nature of samples and require standard precautions to be applied
Codes of practice	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, it is expected the latest version will be used

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • interpret test methods/procedures accurately • prepare and test samples using procedures appropriate to the nature of sample • perform calibration checks (if required) • safely operate test equipment/instruments to enterprise standards and/or manufacturer's specification • prepare calibration graphs and calculate results using appropriate units and precision • apply basic theoretical knowledge to interpret gross features of data and make relevant conclusions • identify a typical results as out of normal range • communicate problems to a supervisor or outside service technician • record and communicate results in accordance with enterprise procedures • Maintain security, integrity, traceability of samples, sub-samples, test data and results and documentation.
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • chemical principles and concepts underpinning test/procedure • purpose of the tests • concepts of metrology • principles and concepts related to equipment/instrument operation and testing • function of key components of the equipment/instrument and/or reagents • effects of modifying equipment/instrument variables • use of calibration procedures • enterprise and/or legal traceability requirements • relevant health, safety and environment requirements
Underpinning Skills	Must demonstrate skills to: • interpret test methods and procedures • sample preparation procedures • perform calibration checks • use instruments for qualitative and/or quantitative analysis • maintain and evaluate reagents • troubleshoot basic equipment/method

	• use calculation methods, including appropriate units, uncertainties, balancing equations, and the concentration of the solution given the chemical reaction for the titration • prepare calibration graphs and calculating results using appropriate units and precision • apply theoretical knowledge to interpret gross features of data and make relevant conclusions such as identifying atypical results as out of normal range • record and communicating results in accordance with enterprise procedures • maintain security, integrity, traceability of samples, sub-samples, test data, results and documentation
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Analyze Equipment Performance**
Unit Code	**IND SDM4 08 0613**
Unit Descriptor	In a typical scenario an experienced technician will set up and operate performance verification trials and then analyse the results to determine actual compared to theoretical performance of equipment and equipment components. It includes calculating the theoretical performance of an item of equipment, gathering data to determine the actual performance of the item of equipment, calculation of actual versus theoretical performance and making recommendations as to the appropriate action to be taken based on the performance verification results.

Element	Performance Criteria
1. Determine theoretical performance	1.1 Item of plant or equipment to be analyzed are identified according to work place procedures. 1.2 Design specification is located and interpreted. 1.3 Process materials being processed/to be processed during verification trial as per work procedures are identified. 1.4 Process material properties under process conditions are determined. 1.5 Theoretical performance of component(s) with that material under those conditions is calculated.
2. Conduct trial	2.1 Verification trial is designed to be compatible with theoretical analysis according to standard procedures. 2.2 Measurements needed from trial are determined to yield required data according to work standards. 2.3 Equipment suitable to give required measurements is selected. 2.4 Verification trial is arranged with relevant process personnel. 2.5 Required measurement equipment is set up. 2.6 Trial is supervised and ensured trial conditions are appropriate. 2.7 Trial data for analysis is collected.
3. Verify performance of plant/equipment	3.1 Theoretical is compared with actual performance. 3.2 Significance of variation between theoretical and actual performance is determined.

	3.3 Any suspicious results are investigated and appropriate action is taken.
4. Recommend required action	4.1 Appropriate action to bring performance to desired level is determined. 4.2 The corrective action is initiated in accordance with relevant standards. 4.3 Measures are determined to increase equipment productivity. 4.4 Performance is re-checked after corrective action is implemented.

Variable	**Range**
Codes of practice**/** standards	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used.
Context	• This competency unit includes the analysis of plant, equipment and equipment components. This competency applies to all work environments and sectors within the chemical, hydrocarbons and oil refining industry, but does require both a theoretical/ mathematical and a practical analysis of the process. • The competency does not require knowledge of industry sectors and materials other than that in which the technician works. It assumes an understanding of the operation of all relevant equipment and processes but does not necessarily require them to be used personally. • Typical problems include: ➢ worn equipment/components ➢ validation of new equipment/components to design specification ➢ performance analysis in order to upgrade process performance
Health, Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through relevant State or Federal legislation, and these must not be compromised at any time.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills of: • trial design is appropriate • data taken during trial matches that is required for the analysis • the analysis is carried out in a structured manner • recommended changes can be justified based on the comparison of trial and theoretical data

Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • materials, equipment and process sufficient to predict their interactions and their impacts on performance. • the enterprise procedures and policies along with the ability to implement them within appropriate time constraints and in a manner relevant to the job. • methods of identifying and calculating theoretical performance • ways of trialing, trial design and implementation • methods of data analysis to determine trial outcomes • methods of interpreting information deduced from trial data.
Underpinning Skills	Must demonstrate skills to: • calculate equipment and component performance from the design specification • determine equipment and design performance from practical trials • determine the 'limiting component' in the performance of an item of equipment or a process • determine possible performance of an item of equipment/process if practical improvements were made to the 'limiting item'.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Lead a Competitive Manufacturing Team**
Unit Code	**IND SDM4 09 0613**
Unit Descriptor	This unit covers the knowledge and skills needed by people who lead teams in a competitive manufacturing environment. The team may be operating in manufacturing or in a manufacturing support function e.g. maintenance, office, warehousing etc.

Elements	Performance Criteria
1. Facilitate the development of process and competitive manufacturing knowledge	1.1 Necessary technical documentation and information about the process are ensured and ***competitive manufacturing*** is available to the team 1.2 Mentoring processes for ***team*** members are developed. 1.3 Team activities in a way which facilitates the ongoing development of the skills and knowledge of team members are structured. 1.4 The provision of workforce development and training for team members as appropriate is arranged. 1.5 Team members are encouraged to apply technical knowledge to the process.
2. Facilitate efficiency improvements in team activities	2.1 ***Budgets***, operating procedures and other related documentation are ensured if it is available to the team. 2.2 Team members are assisted to apply this information to the process responsibilities of the team 2.3 Team members are encouraged to identify ***waste***. 2.4 An environment is developed where efficiency improvements are recommended by team members
3. Resource and encourage a proactive maintenance approach	3.1 Communications between specialists outside the team and team members are developed. 3.2 Strategies are developed to monitor and deal with ***key reliability issues***. 3.3 Team members are resourced and encouraged to identify and take appropriate action on potential equipment problems. 3.4 Workforce development and training for team members are arranged as required in proactive maintenance procedures and techniques. 3.5 Team members are involved in relating identified problems to the maintenance strategy, and developing any required changes, to ensure awareness, learning and commitment

4. Implement process and organization improvements	4.1 The implementation of team as suggested and externally directed improvements is planned. 4.2 Team member commitment to, and involvement in, the implementation planning of improvements are facilitated and improvements to their conclusion are followed to. 4.3 The application of the 'plan, do, measure, improve, control' approach to the job is encouraged. 4.4 Workforce development and training as required are arranged to facilitate continued team involvement in improvement processes. 4.5 Team and other key personnel are involved in identification of skill needs and means of skills acquisition to fill any identified gaps.

Variable	Range
Competitive manufacturing	Is used to describe the range of systemic manufacturing practice concepts and approaches. It covers but is not limited to: • agile manufacturing • preventative and predictive maintenance approaches • monitoring and data gathering systems such as Systems Control and Data Acquisition Software (SCADA), enterprise resource planning systems (ERP), Manufacturing Resource Planning (MRP), and proprietary systems such as SAP etc. • statistical process control systems including six sigma and three sigma • just in time and other pull related manufacturing control systems • supply, value, and demand chain monitoring and analysis • other continuous improvement systems. Competitive manufacturing should be interpreted so as to take into account the stage of implementation of competitive manufacturing approaches, the enterprise's size and work organisation, culture, regulatory environment and manufacturing sector..
Team	May include work teams from all sections of the organisation including production, maintenance, technical, administration/finance, sales/marketing.
Budgets	Include financial, time, materials/product and other business plans which are relevant to the team and the work area.
Waste	Within manufacturing, categories of waste include: • excess production and early production • delays • movement and transport

	• poor process design • inventory • inefficient performance of a process • making defective items Waste for this unit may include activities which do not yield any benefit to the organisation or any benefit to the organisations customers.
Key reliability issues	Are typically things like cleanliness, lubrication and correct adjustment which are most likely to lead to failure.

Evidence Guide	
Critical Aspects of Competence	Must confirm appropriate knowledge and skills to: • Facilitate the development of process and competitive manufacturing knowledge • Facilitate efficiency improvements in team activities • Resource and encourage a proactive maintenance approach • Implement process and organization improvements
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • the competitive manufacturing process or processes used at the enterprise
Underpinning Skills	Must demonstrate skills of: • communication techniques • negotiation skills • information finding and analyzing/using skills • team work • planning and organizing • problem solving
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Respond to Abnormal Process Situations**
Unit Code	**IND SDM 4 10 0613**
Unit Descriptor	This unit applies an in depth knowledge of process and plant to the recognition and solving of more complex/less obvious process/plant/ technical problems. The corrective action may well be beyond the scope of competency and responsibility of the person to implement. This unit applies to problems which are not solvable by direct observation and require systematic investigation damage to/wear of tower, internal leaks of heat exchangers, collapse of/channelling in tower. The technician would clarify the problem, analyze problem cause(s) and recommend a solution to the problem.

Elements	Performance Criteria
1. Recognize there is a problem	1.1 Current performance is compared with expected/historic performance. 1.2 Plant/process areas with poor performance are identified. 1.3 The impact of routine adjustments are checked to improve performance 1.4 Problems not solved by the routine solutions are identified.
2. Define the problem	2.1 Problem isolation techniques are applied to isolate problem to a small part of the plant/process. 2.2 The effect of the problem in operational terms is quantified. 2.3 Possible causes of the problem are postulated. 2.4 Types of evidence for each possible cause are identified. 2.5 Problem is investigated to accumulate evidence of cause type. 2.6 Data is analyzed to confirm cause of problem. 2.7 The level of severity of the problem, priority of any required action is determined.
3. Develop solution	3.1 Possible solutions are discussed to cause with relevant people. 3.2 A quick fix is determined whether if it is needed. 3.3 Implementation of quick fix is arranged if required. 3.4 Effectiveness of quick fix is checked and appropriate action is taken.

	3.5 Required solution is agreed with appropriate people. 3.6 For required solution to be undertaken in appropriate time frame is arranged. 3.7 Items initiated through until final resolution has occurred are followed. 3.8 Effectiveness of solution is checked and appropriate action taken. 3.9 Reports are completed as to procedure.

Variable	**Range**
Context	• This unit of competency includes problems in the plant, plant equipment or process which may make itself evident through lower quality, lower rates, greater variability or greater difficulty in control.
Health, Safety and Environment (HSE)	• All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through relevant State or Federal legislation, and these must not be compromised at any time.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • Define and analyse the problem as well as deal with the stakeholders. consistent performance in that: ➢ different types of problems can be analyzed and resolved ➢ different types of stakeholders can be satisfied ➢ the range of possible causes can be identified and analyzed and the most likely cause determined ➢ appropriate action is taken
Underpinning Knowledge and Attitudes	Must demonstrate a deep understanding of: • plant equipment, its characteristics and limitations • impact of variations in plant/process and the distinctive signs of each variation • process chemistry and physics as relevant, e.g. to the extent of writing chemical equations and identifying factors controlling reaction rate and yield or equivalent • problem isolation techniques • problem analysis techniques • organization approval processes
Underpinning Skills	Must demonstrate skills of: • analysis • problem solving • negotiation

	• communication • basic mathematics
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Develop Plant Documentation**
Unit Code	**IND SDM 4 11 0613**
Unit Descriptor	This unit of competency covers the development, establishment and evaluation of plant documentation in response to identified information requirements including the development of workplace documents for the introduction of new systems, processes, equipment and record keeping requirements. The competency unit applies to a wide range of plant documentation. Typically, the employee would investigate the need for new plant documentation, determine operating principles and best practice in consultation with others, draft plant documentation, validate and modify plant documentation in response to feedback and communicate changes and amendments.

Elements	Performance Criteria
1. Identify information need/deficiency	1.1 The need for documentation is identified in accordance with company requirements. 1.2 Current ***documentation*** where existent is evaluated. 1.3 ***Information*** need/deficiency is defined. 1.4 Information requirements are discussed with appropriate personnel.
2. Develop plant documentation	2.1 Information need and set/prioritise objectives is specified. 2.2 Existing documentation/records are analyzed in accordance with specified requirements. 2.3 Operating principles and best practice where required are determined. 2.4 Documentation as a draft is developed/amended in accordance with specifications to standard format. 2.5 Documentation is issued to appropriate personnel for review. 2.6 Documentation is edited and amended in accordance with review requirements. 2.7 Documentation is completed to satisfy the initial identified need/deficiency.
3. Communicate changes to plant documentation	3.1 Documentation is explained and communicated to all relevant personnel.

	3.2 Documentation is distributed to all appropriate personnel. 3.3 Implementation of documentation is evaluated. 3.4 Documents if required are amended.

Variable	Range
Documentation	Includes the following indicative plant documentation: • operating procedures • work instructions • incident procedures • operating manuals • quality manuals and procedures • training program contents/materials • safety data sheets • job cards • maintenance logs • non-compliance reports • incidence and accident reports • permits schematics/process flows/engineering drawings.
Sources of information	May include: • manufacturing specifications • product specifications • company policies and procedures • customer requirements • industry/work place codes of practice • State/industry OHS legislation and regulations • ISO and other industry standards and regulations • industry associations, networks and professional bodies.
Equipment	Items of equipment for this competency include computer
Procedures	May be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant..
Health, Safety and Environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through relevant State or Federal legislation, and these must not be compromised at any time.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate performance in that: • effective maintenance and evaluation of workplace documentation is carried out • effective research and consultation is undertaken to ensure the development of best practice documentation • feedback is provided on how to improve workplace documentation • completed documentation is user friendly, accurate and in accordance with the intended use/requirements • adequate documentation is produced, including documentation for the introduction of new systems, policies, equipment or processes • non routine problems in relation to plant documentation are recognized and appropriate solutions are presented • changes to workplace documentation is communicated in the appropriate manner
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • organization policies, standard procedures and work instructions and relevant regulatory requirements for the development of plant documentation • standard codes of practice relevant to developing plant documentation.
Underpinning Skills	Develop and amend work place documentation, includes the ability to apply and explain: • enterprise information systems and work place documentation • enterprise quality and safety procedures • principles of policy and procedure development • principles of information/data management • importance of effective consultation in developing documentation • relevant equipment and operational processes.
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Co-Ordinate Maintenance**
Unit Code	**IND CPP4 12 0613**
Unit Descriptor	This unit applies to employees who coordinate maintenance of a manufacturing facility. This competency is typically performed by experienced technicians, supervisors, maintenance coordinators or team leaders, working either independently or as part of a team.

Element	Performance Criteria
1. Plan maintenance	1.1 Work plans for scheduled routine maintenance activities with reference to production requirements are developed. 1.2 Maintenance plans are developed for unscheduled maintenance activities as per standard operational procedure. 1.3 Costing for maintenance work is developed. 1.4 Measures are implemented to control identified ***hazards*** in line with procedures and duty of care. 1.5 Required production interruptions, processes and procedures are documented and recorded. 1.6 Clearances are obtained for the maintenance work.
2. Organize maintenance	2.1 Maintenance activities, with reference to production requirements and availability of resources are scheduled. 2.2 Available maintenance expertise is reviewed and appropriate training and assessment where necessary is arranged. 2.3 Approvals for maintenance schedule as necessary are obtained to coordinate with production requirements.
3. Assemble maintenance requirements	3.1 Resources required (equipment, personnel and consumables) are determined to meet maintenance schedule. 3.2 Supply of consumables, ***equipment*** and expertise are located and coordinated to meet maintenance schedule. 3.3 Equipment, consumables and expertise as required are purchased.
4. Complete maintenance	4.1 Maintenance schedule is completed according to company work ***procedures***. 4.2 Appropriate readings, measurements and recordings are made and compared to equipment, product and other relevant specifications.

	4.3 Areas requiring further testing are identified and appropriate procedures are recommended to supervisory staff. 4.4 Appropriate adjustments are made to the maintenance schedule. 4.5 ***Records*** are completed as required, noting areas where changes to equipment operation or routine maintenance are required.

Variable	**Range**
Hazards	May include: • isolations of energy sources, motive power and process materials • manual handling of machinery components and the need for lifting devices • hot or components containing dangerous materials • external hazards (e.g. traffic into a maintenance area)
Tools and equipment	This competency includes use of equipment and tools such as: • hand tools specific for the task • testing equipment • measuring and aligning equipment • computer equipment • relevant personal protective equipment
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
Data and Records	Typical information sources, observed data and plant records may include: • plant data • log sheets • production schedules • operational and performance reports • physical aspects such as noise, smell, feel and pressure • condition monitoring information • planned maintenance schedules • standard operating procedures • manufacturer instructions, specifications and service manuals • machine circuit diagrams for hydraulic/pneumatic and electrical/electronic circuits • plant description manuals.
Problems	Respond to/rectify 'non-routine problems' means 'apply known solutions to a variety of predictable problems'. Typical process and product problems which may require maintenance, include:

	• equipment performance outside of specification or requirements • equipment breakdown • equipment wear and tear.
Variables	Key variables to be monitored include: • relationship of maintenance plan to production requirements • costs of maintenance • availability of materials and services • documentation and record keeping.
Context	This competency applies to all work environments and sectors within the soap and detergent manufacturing industry. It does not include maintenance which would require trade level skills. It is not intended that this competency would cover performing maintenance which is carried on in a workshop. This may include: • predictive and preventative operational maintenance • proactive maintenance • reactive maintenance.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • recognize potential situations requiring action • implement appropriate action. Consistent performance should be demonstrated. For example, look to see that: ➢ early warning signs of equipment in need of attention/with potential problems are recognized ➢ planned work sequences are logical and conform with production schedules and work rosters ➢ maintenance schedules for reactive, planned and proactive maintenance are coordinated based upon the most appropriate and cost effective method to ensure equipment reliability and optimum performance ➢ plans are initiated and monitored, with activities modified for variations in workplace contexts and the environment, until final resolution has occurred.
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • the enterprise's procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards. • of managing risks using the hierarchy of controls applied to the process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and clean up. • solving processing and material problems, including: ➢ characteristics and capabilities of equipment, materials and processes used

	➢ functions and troubleshooting of internal components and their problems ➢ routine and non-routine causes of equipment failures and the service conditions which may increase maintenance ➢ urgency and timeliness factors in planning maintenance activities in relation to production requirements ➢ proactive, predictive, preventative and reactive maintenance principles ➢ implications of maintenance for production and work activities ➢ source requirements for maintenance ➢ safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup ➢ the hierarchy of control including engineering controls.
Underpinning Skills	Must demonstrate skills of: • equipment operation, planning and maintenance practices sufficient to plan for maintenance requirements in standard and non-standard situations and then determine appropriate action which is consistent with operation guidelines is required. • identify factors in production schedules, time and resource requirements (including external sources) in scheduling maintenance activities • schedule maintenance functions in the most timely and cost effective manner • apply relevant agreements, codes of practice or other legislative requirements • ensure workplace is safe for maintenance activities. • Language**,** literacy and numeracy requirements: • This unit requires the ability to read and interpret typical manufacturer specifications, equipment procedures, production schedules and material labels as provided to coordinators. • Writing is required to the level of completing workplace reports and proposals. • Numeracy is also required, eg analysing statistical information/historical data in the form of tables and graphs
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Contribute to Workplace OHS Management System**
Unit Code	**IND SDM4 13 0613**
Unit Descriptor	Occupational Health and Safety (OHS) management system and ensure that the workplace is, as far as is practicable, safe and without risks to the health of workers.

Element	Performance Criteria
1. Establish and review procedures for identifying hazards, and assessing and controlling risk	1.1 Current, relevant information on legislative and industry requirements are accessed for ***hazard*** identification and risk assessment and control. 1.2 Gaps in ***procedures*** are identified. 1.3 Workplace procedures are developed to meet requirements. 1.4 Relevant stakeholders are involved in procedures development. 1.5 The procedures on a regular basis are reviewed by consulting stakeholder groups for feedback. 1.6 Relevant stakeholders and other work groups are informed of any changes and implement changes in the procedures.
2. Establish and review incident procedures	2.1 Legal and organization requirements are identified. 2.2 Gaps in procedures are identified. 2.3 Workplace procedures for dealing with incidents are developed. 2.4 The procedures are reviewed by consulting stakeholder groups for feedback. 2.5 Relevant stakeholders and other work groups of any changes are informed and changes in the procedures are implemented.
3. Implement and review training program from an OHS perspective	3.1 The legal, organizational and practical requirements for OHS training are identified. 3.2 The workplace training program for OHS gaps are evaluated. 3.3 The program on a regular basis is reviewed by consulting stakeholders and work groups for feedback. 3.4 Appropriate action is taken to incorporate relevant feedback into the revised program.

	3.5 Relevant work groups of any changes are informed and changes in the OHS training program are implemented.
4. Implement and review OHS recording system	4.1 The legal and organizational requirements for OHS records are identified. 4.2 The workplace OHS recording system for gaps is evaluated. 4.3 The system on a regular basis is reviewed by consulting stakeholders and work groups for feedback. 4.4 Relevant feedback is incorporated into the revised system in consultation with stakeholders. 4.5 Relevant work groups of any changes are informed and changes in the management of ***OHS*** record are implemented.

Variable	**Range**
Hazards	May include: • handling chemicals and hazardous materials • chemical and or hazardous materials spillage • gases and liquids under pressure • moving machinery • materials handling • working at heights, in restricted or confined spaces, or environments subjected to heat, noise, dusts or vapours • fire and explosion.
Procedures	All operations are performed in accordance with procedures. Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.
OHS Information include:	• OHS legislation and codes of practice • industry standards for materials, process, equipment etc • ISO standards • OHS authorities • unions and industry associations • Internet, journals, magazines • manufacturer/supplier manuals/specifications • policies and procedures • JSA, risk assessments, HAZOPs • hazard, incident and injury records • training resources • employee information brochures, newsletters etc • OHS reports such as inspections, technical reports.
Context	• This unit covers live, real time and ongoing routine hazard identification and risk assessment.

	• This unit describes OHS requirements applicable for those with responsibilities for contributing to the workplace OHS management system within a work group or area. This may be as a team leader or as a supervisor. Roles and responsibilities will vary from organisation to organisation. • Review of activities may include review of written reports, performance appraisal or auditing procedures. • Competence is demonstrated in the context of an organisation where the OHS system with related policies, procedures and programs is already established. The role will relate to the maintenance and upkeep of the system.

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • identify/describe the workplace OHS system and State OHS legislative requirements as well as the importance of critical procedures • recognize and analyses potential situations that require action • implement appropriate corrective action. • Consistent performance should be demonstrated. For example, demonstrated knowledge and understanding of: ➢ all relevant workplace procedures ➢ the requirements that the workplace procedures should meet ➢ the consultation processes, either general or specific to OHS ➢ training and assessment of training needs ➢ hazard identification, risk assessment and risk control methods ➢ the need for specific hazard management policies and procedures ➢ types and sources of OHS information ➢ OHS record keeping systems ➢ the system for and process of maintenance of plant and equipment ➢ OHS issue resolution processes.
Underpinning Knowledge and Attitudes	Must demonstrate knowledge of: • the workplace OHS system and State OHS legislative requirements, codes of practice and relevant industry standards sufficient to contribute to the workplace OHS management system for a work group or area within the scope of their responsibilities and competencies. • In these industries which are characterised by high potential hazard, team leaders and supervisors must be aware that employees need to exercise their duty of care responsibilities. This will be not only within the general OHS

	Acts and regulations, but also within those State and national standards applying to hazardous substances, dangerous goods and major hazards.
Underpinning Skills	Must demonstrate skills in: • identification of hazards common to the industry and standard controls • rights and responsibilities of employees under OHS legislation • obligations of employers under the OHS legislation • legislative requirements for information and consultation • legislative requirements for record keeping and reporting • appropriate consultation arrangements for the industry • numeracy, literacy and other communication skills of work group(s) • duty of care of employers and employees • hierarchy of control. • Competence also requires the ability to: ➢ access and use the current OHSMS ➢ access and interpret training records ➢ identify and communicate with all key personnel in the organization ➢ identify and access relevant sources of information
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Implement and Monitor Environmentally Sustainable Work Practices**
Unit Code	**IND SDM4 14 0613**
Unit Descriptor	This competency covers the outcomes required to effectively analyse the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness. This competency addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools. It includes identifying areas for improvement, developing plans to make improvements and implementing and monitoring improvements in environmental performance.

Elements	Performance Criteria
1. Investigate current practices in relation to resource usage	1.1 Environmental regulations applying to the enterprise is identified. 1.2 ***Procedures*** are assessed for assessing ***compliance*** with environmental regulations. 1.3 Information on ***environmental and resource efficiency*** systems and procedures are collected, and provided to the work group where appropriate. 1.4 Current resource usage by members of the work group is ***measured*** and recorded. 1.5 Current ***purchasing strategies*** as to procedures are analyzed and recorded. 1.6 Current work processes is analysed to access information and data and assist in identifying areas for improvement.
2. Set targets for improvements	2.1 Input from ***stakeholders, key personnel and specialists*** are sought. 2.2 External sources of information and data as required are accessed. 2.3 Alternative solutions to workplace environmental issues are evaluated. 2.4 Efficiency targets are set.
3. Implement performance improvement strategies	3.1 ***Techniques/tools*** are sourced to assist in achieving targets. 3.2 Continuous improvement strategies to own work area of responsibility and ideas are communicated and possible solutions to the work group and management are applied.

	3.3 Environmental and resource efficiency improvement plans are integrated for own work group with other operational activities and implement them. 3.4 ***Suggestions*** and ideas about environmental and resource efficiency management are sought from stakeholders and acted upon them where appropriate. 3.5 Costing strategies are implemented to fully value environmental assets.
4. Monitor performance	4.1 Outcomes are documented and reports on targets are communicated to key personnel and stakeholders. 4.2 Strategies are evaluated. 4.3 New targets are set and new tools and strategies are investigated and applied. 4.4 Successful strategies are promoted and participants are rewarded where possible.

Variable	**Range**
Procedures	May include: • All operations are performed in accordance with procedures. • Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards. • Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used.
Compliance	May include meeting relevant federal, state and local government laws, by-laws, regulations and codes of practice.
Environmental and resource efficiency issues	May include: • addressing environmental and resource sustainability initiatives such as Environmental Management Systems, action plans, surveys and audits • reference to standards, guidelines and approaches such as: ➢ ISO 14001 Environmental Management Systems ➢ Life Cycle Analyses • determining enterprise's most appropriate waste treatment including waste to landfill, recycling, re-use and wastewater treatment • applying the waste management hierarchy in the workplace • initiating and/or maintaining appropriate enterprise procedures for operational energy consumption, including stationary energy and non stationary (transport) • efficient use of water • use of controls to minimize the risk of environmental damage from hazardous substances

Measure	Measuring techniques may include: • material fed to/consumed by plant/equipment • plant meters and gauges • job cards • examination of safety data sheets from suppliers • measurements made under different conditions • examination of relevant information and data • others as appropriate to the specific industry contexts.
Purchasing strategies	May include: • influencing suppliers to take up environmental sustainability • selecting materials/components with a lower environmental profile
Stakeholders, key personnel and specialists	May include Individuals and groups both inside and outside the organization that have some direct interest in the enterprise's conduct, actions, products and services, including: • employees at all levels of the organization • customers • suppliers • other organizations • key personnel within the organization, and specialists outside it who may have particular technical expertise
Techniques and tools	May include: • visual workplace concepts • measurement, display and/or recording devices • changed work practices/procedures • competence development and awareness training • process and equipment items
Incidents	May include: • breaches or potential breaches of regulations • occurrences outside of standard procedure which may lead to lower environmental performance
Suggestions	Includes ideas that help to: • prevent and minimize environmental risks and maximize opportunities • reduce emissions of greenhouse gases • reduce use of non-renewable resources • make more efficient use of energy, water and other resources • maximize opportunities to re use and recycle materials • identify strategies to offset or mitigate environmental impacts. e.g. purchasing of carbon credits • Eliminate the use of hazardous and toxic materials increasing the reusability/recyclability of wastes/products

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills to: • implement and monitor integrated environmental and resource efficiency management policies and procedures within an organisation. These may include the ability to: ➢ monitor and investigate current resource usage ➢ develop plans to improve sustainability ➢ implement environmental improvements • consistently demonstrate that: ➢ environmental performance is routinely monitored and investigated ➢ areas for improvements are followed through and the implemented changes are in turn monitored and investigated
Underpinning Knowledge and Attitudes	• how to access and use relevant environmental and resource efficiency systems, tools and procedures • understanding of best practice approaches relevant to own area of responsibility • strategies to maximize opportunities and minimize impacts relevant to own work area • relevant environmental and resource efficiency issues specific to industry practices methods for measuring and calculating resource usage
Underpinning Skills	• using relevant environmental and resource efficiency systems, tools and procedures • applying quality assurance systems relevant to own work area • applying relevant supply chain procedures • measurement and calculation techniques • communication/consultation skills to ensure information is supplied to the work group • Reading and writing skills to comprehend documentation and interpret environmental and energy efficiency requirements and to document and maintain records • Numeracy is required to interpret numeric workplace information, readings and measurements, handle data as required and complete numeric components of workplace forms/reports.
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Plan and Organize Work**
Unit Code	**IND SDM4 15 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	Performance Criteria
1. Set objectives	1.1 ***Objectives*** are consistent with and linked to work activities in accordance with organizational aims. 1.2 Objectives are stated as measurable targets with clear time frames. 1.3 Support and commitment of team members are reflected in the objectives. 1.4 Realistic and attainable objectives are identified.
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed. 2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components. 2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions. 2.4 ***Resources*** are allocated as per requirements of the activity. 2.5 ***Schedule of work activities*** is coordinated with personnel concerned.
3. Implement work plans	3.1 ***Work methods and practices*** are identified in consultation with personnel concerned. 3.2 ***Work plans*** are implemented in accordance with set time frames, resources and ***standards***.
4. Monitor work activities	4.1 Work activities are monitored and compared with set objectives. 4.2 Work performance is monitored. 4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards. 4.4 Reporting requirements are complied with in accordance with recommended format. 4.5 Timeliness of report is observed.

	4.6 Files are established and maintained in accordance with standard operating procedures.
5. Review and evaluate work plans and activities	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information. 5.2 Review is based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback. 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities. 5.4 Performance appraisal is conducted in accordance with organization rules and regulations. 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to ***appropriate personnel/authorities***. 5.7 ***Feedback mechanisms*** are implemented in line with organization policies.

Variable	**Range**
Objectives	May include but not limited to: • Specific • General
Resources	May include but not limited to: • Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	May include but not limited to: • Daily • Work-based • Contractual Regular
Work methods and practices	May include but not limited to: • Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	May include but not limited to: • Daily work plans • Project plans • Program plans • Resource plans

	• Skills development plans • Management strategies and objectives
Standards	May include but not limited to: • Performance targets • Performance management and evaluation systems • Occupational standards • Employment contracts • Client contracts • Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards • Safety Standards
Appropriate personnel/ authorities	May include but not limited to: • Appropriate personnel include: • Management • Line Staff
Feedback mechanisms	May include but not limited to: • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey • Group discussion

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • set objectives • plan and schedule work activities • implement work plans • monitor work activities • review and evaluate work plans and activities
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities and priorities • organizations policies, strategic plans, guidelines related to the role of the work unit • team work and consultation strategies
Underpinning Skills	Demonstrates skill to: • plan • lead • organize • coordinate • communicate

	• inter-and intra-person/motivation skills • present
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Migrate to New Technology**
Unit Code	**IND SDM4 16 0613**
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded equipment is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment is used for solving organizational problems 2.4 Sources of information is accessed and used relating to new or upgraded equipment
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards**.** 3.2 ***Environmental considerations*** are determined from new or upgraded equipment. 3.3 ***Feedback*** is sought from users where appropriate.

Variables	Range
Environmental Considerations	May include but is not limited to: • recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body

Feedback	May include but is not limited to: • surveys, • questionnaires, • interviews and meetings.

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) • Vendor product directions • Ability to locate appropriate sources of information regarding metal manufacturing and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	Demonstrate skills of: • Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Establish Quality Standards**
Unit Code	**IND SDM4 17 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	1.1 Market specifications are ***sourced*** and ***legislated requirements*** identified. 1.2 Quality specifications developed and agreed upon 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes to monitor the effectiveness of quality assurance procedures are developed.
4. Implement quality assurance procedures	4.1 Responsibilities for carrying out procedures are allocated to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated procedures.
5. Monitor quality of work outcome	5.1 Quality requirements are identified. 5.2 Inputs are inspected to confirm capability to meet quality requirements.

	5.3 Work is conducted to produce required outcomes. 5.4 Work processes are monitored to confirm quality of output and/or service. 5.5 Processes are adjusted to maintain outputs within specification.
6. Participate in maintaining and improving quality at work	6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements 6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements 6.3 Corrective action is taken within level of responsibility, to maintain quality standards 6.4 Quality issues are raised with designated personnel
7. Report problems that affect quality	7.1 Recognize potential or existing quality problems. 7.2 Identify instances of variation in quality from specifications or work instructions. 7.3 Report variation and potential problems to supervisor/manager according to enterprise guidelines.

Variable	Range
Sourced	• End-users • Customers or stakeholders
Legislated requirements	May include verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures	May include but is not limited to: • Use of tools and equipment for fabrication/production/ manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication works
Materials	May include but is not limited to: • gloves, bucket, scrubbing brush, gauze, cotton and plasters • aluminum foils, gowns, apron, rubber boots, disinfectants, antiseptics, scalpel blade, stationeries, tap water, alcohol, and soap, detergents, protective eyewear, overall, cleaning reagents cleaning materials
Tools and Equipment	May include projector, white board, computers, printers, calculators, copying machines, bucket, wheelbarrow/trolley for disposal of carcass, different quality evaluating equipment

Evidence Guide	
Critical Aspect of Competence	Demonstrates skills and knowledge to: • Monitor quality of work • Establish quality specifications for product • Participate in maintaining and improving quality at work • Identify hazards and critical control points in the production of quality product • Assist in planning of quality assurance procedures • Report problems that affect quality • Implement quality assurance procedures
Underpinning Knowledge	Demonstrates knowledge of: • work and product quality specifications • quality policies and procedures • improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today work activities • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing
Underpinning Skills	Demonstrates skills to: • monitor quality of work • establish quality specifications for product • participate in maintaining and improving quality at work • identify hazards and critical control points in the production of quality product • assist in planning of quality assurance procedures • report problems that affect quality • implement quality assurance procedures
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Develop Individuals and Team**
Unit Code	**IND SDM4 18 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements***. 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented. 1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement. 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process.
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competence standards. 2.2 ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources. 2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies. 2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements. 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support. 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning. 3.4 Records and reports of Competence are maintained within organizational requirement.

4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team. 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities. 4.3 Mutual concern and camaraderie are developed in the team.
5. Facilitate accomplishment of organizational goals	5.1 Team members actively participated in team activities and communication processes. 5.2 Teams' members developed individual and joint responsibility for their actions. 5.3 Collaborative efforts are sustained to attain organizational goals.

Variable	Range
Learning and development needs	May include but is not limited to: • Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	May include but is not limited to: • Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	May include but is not limited to: • Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	May include but is not limited to: • On the job coaching or monitoring • Problem solving

	• Presentation/demonstration • Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate plans to improve the effectiveness of learning • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and monitoring principles • how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • how to facilitate team development and improvement • methods and techniques to obtain and interpreting feedback • methods for identifying and prioritizing personal development opportunities and options • career paths and competence standards in the industry
Underpinning Skills	Demonstrates skills to: • read and understand a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communicate including receiving feedback and reporting, maintaining effective relationships and conflict management • plan and organize required resources and equipment to meet learning needs • coach and mentor skills to provide support to colleagues • report to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitate and conduct small group training sessions • relate to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Utilize Specialized Communication Skills**
Unit Code	**IND SDM4 19 0613**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met. 1.2 Different approaches are used to meet communication needs of clients and colleagues. 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization.
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required. 2.2 Channels of communication are established and reviewed regularly. 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary. 2.5 Negotiation and conflict resolution strategies are used where required. 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives.
3. Represent the organization	3.1 When participating in internal or external fora, presentation is relevant, appropriately researched and presented in a manner to promote the organization. 3.2 Presentation is clear and sequential and delivered within a predetermined time. 3.3 Appropriate media is utilized to enhance presentation. 3.4 Differences in views are respected. 3.5 Written communication is consistent with organizational standards. 3.6 Inquiries are responded in a manner consistent with organizational standard.

4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** are defined and implemented. 4.2 Strategies which encourage all group members to participate are used routinely. 4.3 Objectives and agenda for meetings and discussions are routinely set and followed. 4.4 Relevant information is provided to group to facilitate outcomes. 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties. 4.6 Specific communication needs of individuals are identified and addressed.
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations***. 5.2 Records of interviews are made and maintained in accordance with organizational procedures. 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated.

Variable	**Range**
Strategies	May include but is not limited to: • Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non verbal communication
Effective group interaction	May include but is not limited to: • Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Interview situations	May include but is not limited to: • Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation
Types of Interview	May include but is not limited to: • Related to staff issues • Routine

	• Confidential • Evidential • Non-disclosure • Disclosure

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge to: • Demonstrated effective communication skills with clients and work colleagues accessing service • Adopted relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Values	Demonstrates knowledge of: • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	Demonstrates skills of: • full range of communication techniques including: ➢ active listening ➢ feedback ➢ interpretation ➢ role boundaries setting ➢ negotiation ➢ establishing empathy ➢ communication strategies • communicate to fulfill job roles as specified by the organization
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Manage and Monitor Small/Medium Business Operations**
Unit Code	**IND SDM4 20 0613**
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements for a given time period are identified taking into consideration ***resources*** and constraints. 1.2 Work activities are prioritized based on business needs, requirements and deadlines. 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency.
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results. 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to ***business goals*** or timelines. 2.3 ***Problem solving techniques*** are applied to work situations to overcome difficulties and achieve positive outcomes.
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate ***time management strategies***. 3.2 Input from ***internal and external sources*** is sought and used to develop and refine new ideas and approaches. 3.3 Business or inquiries are responded to promptly and effectively. 3.4 Information is presented in a format appropriate to the industry and audience.
4. Interpret financial information	4.1 Relevant documents and reports are identified. 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons. 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled. 4.4 Daily financial records and cash flow are maintained correctly and in accordance with legal and accounting requirements.

	4.5 Invoices and payments are prepared and distributed in a timely manner and in accordance with legal requirements. 4.6 Outstanding accounts are collected or followed-up on.
5. Evaluate work performance	5.1 Opportunities for improvements are monitored according to business demands. 5.2 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements. 5.3 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation. 5.4 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions.

Variable	Range
Resources	May include but is not limited to: • staff • money • time • equipment • space
Business goals	May include but is not limited to: • sales targets • budgetary targets • team and individual goals • production targets • reporting deadlines
Problem solving techniques	May include but is not limited to: • gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies	May include but is not limited to: • prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary

Internal and external sources	May include but is not limited to: • staff and colleagues • management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants and professional associations

Evidence Guide	
Critical Aspects of Competence	A person must be able to demonstrate: • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Federal and Local Government legislative requirements affecting business operations, especially in regard to Occupational Health and Safety (OHS), Equal Employment Opportunity, industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	Demonstrate skills to: • interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communicate using questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business document, reports and financial statements and projections • relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • solve problem and develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluate using assessment work and outcomes • observe for identifying appropriate people, resources and to monitor work

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Soap and Detergent Manufacturing Operations Supervision Level IV	
Unit Title	**Apply Problem Solving Techniques and Tools**
Unit Code	**IND SDM4 21 0613**
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude required to apply scientific problem solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis.

Elements	Performance criteria
1. Identify and select theme/problem.	1.1 ***Safety requirements*** are followed in accordance with safety plans and procedures. 1.2 All possible problems related to the process /Kaizen elements are listed using ***statistical tools and techniques***. 1.3 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board. 1.4 Problems are classified based on obviousness of cause and action. 1.5 Critical factors like the number of customers affected, Potentials for bottlenecks, and number of complaints etc… is selected. 1.6 Problems related to priorities of ***Kaizen Elements*** are given due emphasis and selected.
2. Grasp current status and set goal.	2.1 The extent of the problem is defined. 2.2 Appropriate and achievable goal is set.
3. Establish activity plan.	3.1 The problem is confirmed. 3.2 High priority problem is selected. 3.3 The extent of the problem is defined. 3.4 Activity plan is established as per ***5W1H***.
4. Analyze causes of a problem.	4.1 All possible causes of a problem are listed. 4.2 Cause relationships are analyzed using***4M1E***. 4.3 Causes of the problems are identified. 4.4 Root causes are selected. 4.5 The root cause which is most directly related to the problem is selected.

	4.6 All possible ways are listed using ***creative idea generation*** to eliminate the most critical root cause. 4.7 The suggested solutions are carefully tested and evaluated for potential complications. 4.8 Detailed summaries of the action plan are prepared to implement the suggested solution.
5. Examine countermeasures and their implementation.	5.1 Action plan is implemented by ***medium KPT*** members. 5.2 Implementation is monitored according to the agreed procedure and activities are checked with preset plan.
6. Assess effectiveness of the solution.	6.1 ***Tangible and intangible results*** are identified. 6.2 The results are verified over time. 6.3 Tangible results are compared with targets using ***various types of diagram***.
7. Standardize and sustain operation.	7.1 If the goal is achieved, the new procedures are standardized and made part of daily activities. 7.2 All employees are trained on the new ***Standard Operating Procedures (SOPs)***. 7.3 SOP is verified and followed by all employees. 7.4 The next problem is selected to be tackled by the team.

Variables	**Range**
Safety requirements	may include but not limited to: • OHS requirements include legislation, material safety, managements system, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislations, relevant health regulation, manual handling procedure and organization insurance requirements
Statistical tools and techniques	may include but not limited to: • 7 QC tools may include: ➢ Stratification ➢ Pareto Diagram ➢ Cause and Effect Diagram ➢ Check Sheet ➢ Control Chart/Graph ➢ Histogram ➢ Scatter Diagram • QC techniques may include: ➢ Brain storming ➢ Why analysis

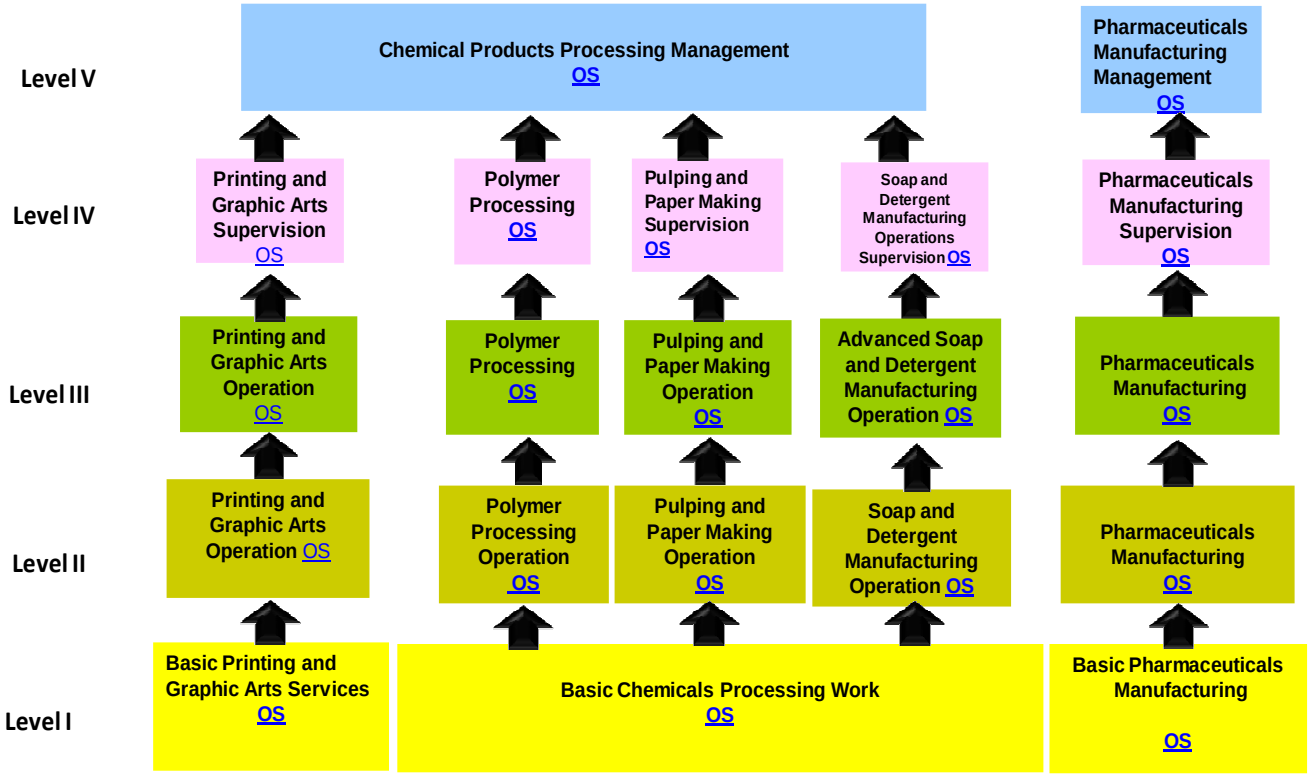
	➢ What if analysis ➢ 5W1H
Kaizen Elements	may include but not limited to: • Quality • Cost • Productivity • Delivery • Safety • Moral • Environment • Gender equality
5W1H	may include but not limited to: • Who: person in charge • Why: objective • What: item to be implemented • Where: location • When: time frame • How: method
4M1E	may include but not limited to: • Man • Machine • Method • Material and • Environment
Creative idea generation	may include but not limited to: • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	may include but not limited to: • 5S • 4M (machine, method, material and man) • 4P (Policy, procedures, People and Plant) • PDCA cycle • Basics of IE tools and techniques
Tangible and intangible results	may include but not limited to: • Tangible result may include: ➢ Quantifiable data • Intangible result may include: ➢ Qualitative data
Various types of diagram	may include but not limited to: • Line graph • Bar graph • Pie-chart • Scatter and Affinity diagrams

Standard Operating Procedures (SOPs)	may include but not limited to: • The customer demand • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide	
Critical Aspects of Assessment	Demonstrates skills and knowledge competencies to: • Apply all relevant procedures and regulatory requirements to ensure quality and productivity of an organization. • Detect non-conforming products/services in the work area • Apply effective problem solving approaches/strategies. • Implement and monitor improved practices and procedures • Apply statistical quality control tools and techniques.
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • Basic IE tools and techniques. • SOP • Quality requirements associated with the individual's job function and/or work area • Workplace procedures associated with the candidate's regular technical duties • Relevant health, safety and environment requirements • organizational structure of the enterprise • Lines of communication • Methods of making/recommending improvements. • Reporting procedures
Underpinning Skills	Demonstrates skills to: • Apply problem solving techniques and tools • Apply statistical analysis tools • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Document and report information about quality, productivity and other kaizen elements. • Contribute effectively within a team to recognize and recommend improvements in quality, productivity and other kaizen elements. • Implement and monitor improved practices and procedures.

	• Organize and prioritize activities and items. • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Industry
Chemical Products Processing



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This occupational standard was developed on May 2013 at Ethiopian Management Institute (EMI), Debre Zeyit.

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